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# Electronic Commerce Research and Applications

journal homepage: [www.elsevier.com/locate/ecra](http://www.elsevier.com/locate/ecra)

## E-service quality competition through personalization under consumer privacy concerns

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### ARTICLE INFO

#### Article history:

Received 26 November 2007

Received in revised form 1 April 2009

Accepted 1 April 2009

Available online 9 April 2009

#### Keywords:

E-service

Service quality

Personalization

Information privacy

Economic analysis

Analytical modeling

Firm strategy

### ABSTRACT

One important factor that determines the quality of web-based customer service is the ability of a firm's website to provide individual caring and attention. In this sense, online vendors try to offer varieties of web-based personalization. However, many previous studies show that there is an obvious trade off between personalization and customer privacy. The main objective of this research is, therefore, to verify the impact of consumers' information privacy concerns on firms' collection and use of consumer information for web-based personalization where firms compete with different levels of ability in consumer information utilization for personalization. Our result shows that a firm of inferior ability in customer information utilization is more affected by privacy concerns than a firm of superior ability in choosing to collect and use consumer information for personalization. However, this does not mean that a firm of inferior ability, which chooses not to provide personalization due to privacy concerns, is worse off than a firm of superior ability, which chooses to provide personalization, in generating profits. On the contrary, a firm of superior ability can become worse off than a firm with inferior ability.

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### 1. Introduction

With the plethora of choices available today, delivering customized, value-added, interactive services to customers online with 24–7 access gained great importance in the electronic marketplace (Ruyter et al., 2001). For example, in establishing MySchwab, Charles Schwab allowed customers to create personal Web pages linked to all Schwab services, including stock quotes, trading, and retirement planning analyses (Winer, 2001). In this way, the company empowered customers to deliver their own service. Also, web-based customer service applications considerably decreased service costs (Forbes, 2002). Therefore, web-based customer service defined as an Internet-based computerized information system that delivers services to customers became the core infrastructure for customer service provision nowadays (Feeny, 2001; Gonsalves et al., 1999; Piccoli et al., 2004).

Consumer service can be conceptualized as fulfillment of needs that arise during the lifecycle of interaction with a firm and its products (Piccoli et al., 2001). Therefore, it has been widely recognized that customer services are as important a source of customer value and of competitive advantage as much as the characteristics of the product itself (Anderson and Narus, 1995; Bharadwaj et al., 1993; Ives and Vitale, 1988; Lovelock and Yip, 1996). Also, studies

show that service improvement efforts increase levels of customer satisfaction and repurchase intention (Zeithaml et al., 1996) resulting in improved profitability and other financial outcomes (Zeithaml et al., 2001). Firms can fulfill these strategic purposes by providing customers with improved Internet-based customer services, which offer immediate answers, information, and personalized interaction (Forbes, 2002; Riel et al., 2001; Ruyter et al., 2001). Supplementary service provided via the web-based customer service system includes (1) general information regarding the firm, (2) specific information requested by the customer via a dialogue with the website, (3) consultation and advice that address customers' individual needs by helping them find their way toward a tailored solution, (4) order taking, (5) billing and payment, (6) hospitality, (7) caretaking and safekeeping, (8) handling of exceptions, and (9) new products and services (Lovelock, 1994; Piccoli et al., 2004).

As e-commerce becomes more and more generalized, it is becoming more and more important for firms to be able to enhance web-based customer service quality, which is defined as the extent to which services based on the web technology facilitate the effective and efficient online communication, purchase and delivery of products/services (Li et al., 2002). Li et al. (2002) noted several factors that determine web-based customer service quality including the ability of the web based system to perform the online service consistently and accurately, to convey trust and confidence, to provide individual care and attention and so on. Among the factors

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that determine the web-based customer service quality, the ability of website to provide individual care and attention is mostly determined by firms' effort in terms of personalization. Personalization fulfills the interaction value, and a way to reconcile the imperatives of increasing functionality and simplification (Lovelock, 1994). It is also known that perceived personalization significantly increases customers' intention to adopt personalization technologies (Komiak and Benbasat, 2006). Personalization affects information processing and decision outcomes of customers (Tam and Ho, 2006). Now, firms are expected to know the kinds of services that consumers want, and to customize consumers' Web experience based on their individual needs (Piccoli et al., 2004). It is verified that personalization is critically dependent on two factors: firms' ability to acquire and process consumer information, and consumers' willingness to share information and use personalization services (Chellappa and Sin, 2005). In this research, among the various factors that affect the web-based customer service quality, we focus on the ability of a website to provide individual care and attention, more specifically the personalization.

Due to the strategic significance of personalization in delivering high quality customer service online, firms invest in personalization and information acquisition tools such as customer relationship management (CRM) systems and personalization engines (Chellappa and Sin, 2005). To enjoy personalized support, a customer must often directly or indirectly provide personal information for the firm. This personal information includes not only name and address, but also preference information and perhaps valuation information (Chellappa and Sin, 2005; Culnan, 2000; Payton, 2001). However, many recent studies show that consumers may not be willing to share information about themselves due to concerns about privacy online (Culnan, 2000; Chellappa and Sin, 2005). Each time a customer enters her personal, financial, or medical information at the portal of a firm, she is concerned about whether the firm will distribute information or mine the information in a way that causes her any harm. As much as 70–84% of all participants in various surveys indicate that privacy concerns made them resist providing personal data (Culnan and Milne, 2001; Fox et al., 2000). Also, 24–34% of the people in the surveys indicated they had provided false or fictitious information when asked to register because of concerns about privacy violation. Almost everybody (91% of respondents) indicates feeling uncomfortable about being tracked across websites (Harris Interactive, 2000). Therefore, consumer concern about information privacy is one of the most important issues in today's technology-based environment (Miyazaki and Fernandez, 2000; Stewart and Segars, 2002). Moreover, it relates to the issue of personalization privacy paradox that consumers who value information transparency are also less willing to be profiled (Awad and Krishnan, 2006).

Smith et al. (1996) identified four factors of concern for information privacy: collection, errors, secondary use, and unauthorized access, which are confirmed as reliable and distinct by Stewart and Segars (2002). In the recognition that individuals make choices in which they surrender a certain degree of privacy in exchange for outcomes that are perceived to be worthy, Dinev and Hart (2006) showed that although Internet privacy concerns inhibit e-commerce transactions, the cumulative influence of Internet trust and personal Internet interest are important factors that can outweigh privacy risk perceptions in the decision to disclose personal information. Hann et al. (2007) showed that financial gains and convenience can significantly increase individuals' motivational score of registering with a website. Behavioral research suggests that consumers engage in a privacy calculus where they trade off their privacy costs from sharing information against their value from personalization (Chellappa and Sin, 2005; Dinev and Hart, 2006; Hann et al., 2007; Laufer and Wolfe, 1977). In this regard, Chellappa and Shivendu (2007) economically formalize this

nonmonetary exchange so as to investigate social welfare-maximizing approaches for a regulator.

Similar to the previous research on information privacy, we are interested in the tradeoffs between personalization and the loss of privacy to customers. However, we do not aim at analyzing factors for information privacy concern *per se* but are interested in firms' strategic choice of personalization as a result of web-service quality competition under the tension between privacy concern and need for higher quality service.

Our research focus is the analysis of firms' web-based customer service quality competition through personalization under consumers' information privacy concern. The main objective of our research is to verify the impact of customers' privacy concerns on firms' policies regarding consumer information where firms compete with different ability in consumer information utilization for personalization. The specific research questions from a strategic perspective are: (1) is a high level of privacy concern always detrimental to firms since such concern limits their collecting and use of consumer information? (2) in such an environment, does the difference in firms' ability to utilize consumer information matter to their policies regarding collecting and using the information?

To answer the above research questions, we develop a game-theoretic model of a duopoly. Our result shows that in duopoly competition with players of different ability in terms of consumer information utilization, a firm of inferior ability in consumer information utilization is more affected by consumer privacy concern than a firm of superior ability in making decisions regarding collecting and using consumer information for personalization. However, this does not mean that higher privacy concern harms an inferior firm by depriving the firm of the chance to use personalization as a way to improve web-based service quality and make more profit. On the contrary, a firm of superior ability can become worse off than a firm of inferior ability.

The rest of the paper is organized as follows: In Section 2, we describe the model. We then analyze the model and discuss our findings in section 3. We offer some conclusions from our research and discuss its limitations in the final section.

## 2. The model

In this section, we first show our model assumptions. Next, as a benchmark case, we derive equilibrium strategies of firms in the absence of information privacy concerns of consumers for further analysis of the effect of consumer privacy concern on restrictions against firms' collecting and using consumer information for personalization.

### 2.1. Assumptions of the model

We present a duopoly game with two stages. In the first stage, under the presence of consumer privacy concerns and firms' different abilities to utilize consumer information for web-based personalization, duopoly firms (online vendors) decide whether or not to collect personal and preference information of consumers and provide web-based personalization. Firms' decision to provide personalization affects the web-based customer service quality. Of course, as noted in the previous section, there are other factors that affect the web-based customer service quality of firms. However, to focus on the effect of personalization on web-based customer service quality, we assume that other factors that can have impact on firms' web-based customer service quality are homogenous for both firms. That is, the modeling is done in the spirit of "*ceteris paribus*" – all else is held equal. In the second stage, firms engage in price competition given the level of web-based customer service quality. The details of our model are given in Table 1.

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