Contrasting risk perceptions of technology-based service innovations in inter-organizational settings

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ABSTRACT

Despite the rapid growth and potential of technology-based services, managers' greatest challenges are gaining customer acceptance and increasing usage of these new innovative services. In the B2C field, studies of self-service technology show that perceived risk is an important factor influencing the use of service technology. Though prior research explores different risk types that emerge in consumer settings, risk perception in the B2B setting lacks a detailed examination of different risk types influencing technology-based service adoption. Data from 49 qualitative interviews with providers and customers in two different B2B industries inform this study. The findings emphasize the importance of functional and financial risks in a B2B context and show that business customers' personal and psychological fears hinder their use of technology-based services. Results highlight differences in risk perception and evaluation between customers and providers.

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1. Introduction

In recent decades, traditional manufacturers and industrial sellers offer additional services and customer solutions, responding to increasingly competitive markets (Ulaga & Reinartz, 2011). To provide efficient and effective service, these companies often integrate new technology into their business processes (Rust & Huang, 2012). In the business-to-consumer (B2C) setting, new service technologies such as self-services receive considerable research interest (Dabholkar, 1996); however, studies on service technology innovations in business-to-business settings (B2B) remain limited.

Emerging industrial service innovations are technology-based and they are provided remotely as product support (Mathieu, 2001). These innovative services include remote services (Schumann, Wünderlich, & v. Wangenheim, 2012), smart services (Wünderlich, v. Wangenheim, & Bitner, 2013) and separate services (Paluch & Blut, 2013).They allow service providers to access and modify objects over long distances (Schumann et al., 2012). Technology-based services help high technology industries (e.g., information and communication technologies (ICT), medical equipment, and mechanical engineering) provide remote diagnosis and maintenance services or remote repair (Biehl, Prater, & McIntyre, 2004). In the ICT sector, technology-based services comprise system administration, software deployment, error analysis, and systems troubleshooting. Implementing technology-based services offer substantial efficiency gains for both providers and customers. Often technology-based services replace on-site personal services, reduce costs, increase flexibility, improve access, and save time (Allmendinger & Lombreglia, 2005). Some providers deliver services remotely, even when the customers are unaware and do not request the service response.

Despite technology-based services' rapid growth and upside potential, gaining customer acceptance continues to challenge managers (Paluch, 2014). In the B2C field, self-service technology studies show that the consumer's perceived risk influences service technology use (Meuter, Ostrom, Bitner, & Roundtree, 2003; Ratchford & Barnhart, 2012). Prior research explores different risk types that emerge in consumer settings (e.g., functional and psychological risk) (see Jacoby & Kaplan, 1972). To date, risk perception research in the B2B setting remains limited. No known study explores differences in risk perceptions by B2B *customers* and *providers* of technology-based service innovations.

This study aims to develop a holistic understanding of the risk types that customers perceive when using technology-based services, and investigates the following research questions. What different types of risk are emergent in B2B technology-based service encounters? Do customers and providers perceive these risks differently?

Employing a qualitative empirical approach, this study contributes to the literature by: (1) identifying and establishing different types of perceived risk of technology-based service innovations in a B2B context, (2) developing a conceptual model of the underlying dimensions of risk perception in inter-organizational settings, (3) deriving propositions on

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different views of customers and providers regarding the magnitude and importance of risk dimensions, and (4) suggesting important implications for further research and managerial practice.

2. Risk perception in service encounters

2.1. Perceived risk in face-to-face service encounters

Perceived risk is the uncertainty arising from possible negative consequences of using a product or service (Featherman, Valacich, & Wells, 2006). Consumer behavior studies offer an intensive investigation of risk (e.g., Brosdahl & Almousa, 2013; Kaplan, Szybillo, & Jacoby, 1974). Jacoby and Kaplan (1972) identify five consumer risk categories: functional, physical, financial, social, and psychological. Because service intangibility creates a high risk perception for service consumers (Zeithaml, 1981), service usage studies identify risk as an important driver for service adoption (Murray & Schlacter, 1990). Given the credence properties of services, security (or freedom from risk) strongly determines consumers' perceptions of service quality (Parasuraman, Zeithaml, & Berry, 1985). In the service context, research emphasizes the existence of a sixth risk category—sensory risk—that pertains specifically to fears of an undesirable impact on any of five senses (Lovelock & Wirtz, 2007).

2.2. Perceived risk in online service encounters

With increasing importance of digitalization and e-commerce, the literature re-examines consumers' risk perception in the light of technology-based services. Studies investigating e-service use define risk as the potential for loss during pursuit of a desired outcome (Featherman & Pavlou, 2003). For technology-based services, risk perception's importance is even more accelerated. Consumers cannot observe the service production. Given the potential for a technology-based service to be accessed by another party, they also worry about the data security of high-investment products (Wünderlich et al., 2013). Existing studies on technology-based service provision mainly focus on risk perceptions and dimensions in B2C settings (Gabriel & Nyshadham, 2008), such as Internet banking (Aldás-Manzano, Lassala-Navarré, Ruiz-Mafé, & Sanz-Blas, 2009; Frambach, Barkema, Nooteboom, & Wedel, 1998) and e-commerce transactions (Glover & Benbasat, 2010). Moreover, numerous studies find empirical evidence supporting risk perception's effect on e-commerce adoption (Brosdahl & Almousa, 2013; Joines, Scherer, & Scheufele, 2003; Osmonbekov, 2010), transaction frequency (Miyazaki & Fernandez, 2001), future intention to shop (Liao & Cheung, 2001), attitudes toward the channel (Hsu & Chiu, 2004), and new service technology use (Lee & Song, 2013).

Featherman and Pavlou (2003) are among the first to study perceived risk's effect on consumers' e-service adoption, employing Jacoby and Kaplan's (1972) risk classifications. Jacoby and Kaplan identify six types of risk—functional, financial, time, psychological, social, and privacy. Performance-based risk facets, which include time, privacy, and financial risk, are more salient for the adoption of e-services than are the other risk facets. In online encounters, consumers' privacy concerns strongly connect to risk perceptions. The literature identifies privacy issues as a major concern for consumers, particularly the loss of control or influence over private data (Bélanger & Crossler, 2011; Pavlou, 2011).

2.3. Perceived risk in B2B relationships

Arguably, risk perception in a B2B online environment differs from B2C or C2C online environments (see Frambach & Schillewaert, 2002; Gabriel & Nyshadham, 2008). To date, few studies provide insights into B2B-specific risk perceptions. Vaidyanathan and Devaraj (2003) develop a framework for online risk in B2B e-business that comprises five factors (new service, new business model, new processes, new technology, and new fulfillment), but they do not differentiate between risk perceptions. Examining IT offshoring business models, Aundhe and Mathew (2009) differentiate between relational and project-specific risks. Few studies address perceived risk from a B2B customer perspective (Benlian & Hess, 2011; Nicolaou, Ibrahim, & van Heck, 2013). Keh and Pang (2010) show that the absence from service production causes customers to perceive technology-based services as risky, influencing their purchase decisions and post-experience evaluations. To date, no known studies investigate the particular risk facets in B2B contexts, nor do they investigate the different views on risk that might arise in technology-based service encounters.

3. Methods

3.1. Research setting

This study aims to obtain in-depth knowledge about business customers' feelings and evaluations toward technology-based service innovations. In business-to-business settings, qualitative research plays an important role in identifying respondents' subconscious motives and perceptions. Thus, qualitative research is most suitable for an explorative approach, emphasizing discovery over confirmation (de Ruyter & Scholl, 1998). In this study, the researchers use in-depth interviews to capture underlying risk perception dimensions in technology-based service encounters. In-depth interviews are effective in business-to-business marketing research because they enable interviewers to integrate a respondent's individualized knowledge and background into the interview situation (Wagner, Lukassen, & Mahlendorf, 2010). The researchers used purposeful sampling for choosing the interviewees (Patton, 2001) and systematically selected the major markets and key industries that employing remote service technology. The interviewees were managers as well as machine operators, engineers, and technicians, who directly interacted with the service technology. The study context comprises the printing and healthcare industries, because these sectors are essential in service technology research, technology-based services are well-established within these industries, and users have developed a depth of experience and an extended institutional history that provides a solid body of evidence for research. In both industries, technology-based services provide the ability to avoid machine downtime through prompt service, thereby ensuring an efficiently functioning service system through system troubleshooting, error analysis, software deployment, and remote system administration. In the healthcare sector specifically, the critical importance of medical equipment requires flawless functionality for every use. Because technology failures in the medical sector can result in life-threatening situations, the risk that business customers and patients face is very high.

3.2. Qualitative interview study

The researchers chose to conduct focused interviews with both customer employees (representatives of the customer firm) and provider employees (representatives of the service-provider firm). Interviews were based on a semi-structured interview guide that consisted of open-ended questions, focusing on individual risk perceptions (e.g., "How do you evaluate the service delivery process?" or "What were your feelings during the remote access?"). This study is based on 49 extensive qualitative focused interviews that include 23 service providers and 37 customers from the U.S., Germany, China, and Sweden. In some cases, the interviewers met with two or more interviewees for one interview. After approximately 45 interviews, the data reached a theoretical saturation (Glaser & Strauss, 2012). The interviews lasted between 60 and 120 min and took place on-site at the interviewees' respective offices or workplaces. The researchers recorded each interview and translated the audio material into written transcripts. Table 1 displays the characteristics of all interviews and interviewees.