Chapter 55
Perceived Mobile Information Security and Adoption of Mobile Payment Services in China

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ABSTRACT

The rapid deployment of mobile devices and the development of mobile services and applications require to address the mobile information security from the human side. This study was aimed at identifying factors influencing people's perception of mobile information security, to investigate the impact of these factors and to facilitate related service design. A survey was conducted and analyzed with exploratory factor analysis. Five factors were identified, including perceived familiarity, perceived impact, perceived controllability, perceived awareness and perceived possibility. Thereinto, the impact of controllability, impact and familiarity on the adoption of mobile payment was investigated. Impact significantly affected the intention to use, but not the perceived security of payment systems. Control level significantly affected the intention to use and the perceived security. Familiarity was found to have an effect on neither the intention to use nor the perceived security. Related design implications for mobile payment systems were discussed.

RESEARCH SIGNIFICANCE AND OBJECTIVE

Recent advances in hardware and software technologies have equipped personal mobile devices with a wide range of communication, computing and storage capabilities. Mobile platforms such as Android, iOS and Windows Phone OS provide capabilities that simplify business, enrich entertainment and make personal transactions convenient for users. However, they have also opened the door to a lot of security

threats. The mass outbreak of the Cabir virus during World Athletic Championship in Helsinki raised people's attention to mobile information security (Leyden, 2005). Since then, several other security accidents happened on various mobile platforms. In recent years, the percentage of security issues experienced by mobile device users has increased greatly. According to McAFee's mobile security report, from 2006 to 2008, phishing attacks increased from 13% to 42%, and virus/spyware infections increased from 18% to 50%. Malware on the Android platform has increased by 400% since the summer of 2010 (La Polla, Martinelli, & Sgandurra, 2013). Mobile payment is now facing dramatic growth in China. According to People's Bank of China, the mobile payment customer base had an increase of 61.11% by the end of 2011 over 2010 and the volume of mobile payment transactions had reached 247 million by the end of 2011 (Deloitte, 2012). Considering such a large scale of mobile payment, it is obvious that the threats to mobile information security not only have serious effects on the economy and society, but influence mobile device users' perception and behavior related to mobile information security such as mobile payment.

Although there are various advanced technologies dedicated to deal with the threats to mobile information security, researchers still think that it is the "people" problem that we must solve to enhance information security (Hardee, West, & Mayhorn, 2006). Taking the Cabir virus for example, although users can refuse the unsecure connection, some of them cannot bear the continuing requests and press "yes" in an attempt to get rid of the annoying harassment and other similar notifications. This implies that any security mechanism needs to be designed and used properly to be truly effective.

Perception is a major part of human intelligence and a key component of understanding human behavior (Salvendy, 2012). Previous studies on risk perception point out that perceived risk can affect people' behavior and their attitude towards a variety of products (Slovic, 1987; Weber & Milliman, 1997). As for mobile payment, one of the reasons that prevent people's adoption of mobile payment is their concern over privacy and security issues, which are essential for the success of mobile payment. Many studies have found that security issues can impact users' adoption of mobile payment (Anckar & Incau, 2002; Chiu, Wang, Fang, & Huang, 2014; Gunawan & Huarng, 2015; Kindberg, Sellen, & Geelhoed, 2004; Linck, Pousttchi, & Wiedemann, 2006). Therefore, studying people's perception of mobile information security and how they subsequently behave is a matter of great importance to the deep understanding of acceptance issues on mobile information security in China. It is also of great significance to provide implications for designing the security mechanism for mobile payment systems.

The objective of this research is two-fold. First, a multi-factor model is constructed to reveal factors which impact people's perception of mobile information security. Second, an experiment is conducted to investigate the impact of factors in the model on people's perception of mobile information security and their adoption of mobile payment.

RELATED WORK

Factors Affecting Perceived Mobile Information Security

While numerous solutions and technologies have been developed to ensure the information security, it has been realized that information security is not just a technical problem. It is important to know how people think of security or risk and how their perception of security or risk guides their behavior. Risk perception is "the subjective assessment of the probability of a specified type of accident happening and

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