Does Interface Design Influence Consumers' Security Perception?

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INTRODUCTION

E-commerce has been providing organizations with unprecedented opportunities to enlarge their customer base and establish competitive business models. A Forester research report predicts that e-commerce sales in the U.S. will keep growing at a 10 percent compound annual growth rate, reaching nearly $250 billion in 2014 (Schonfeld, 2010). A more recent Forester Research predicts that e-commerce sales volume will increase to $279 billion by 2015. Unfortunately, this growth in e-commerce has been accompanied by an increase in the number and sophistication of fraudulent web practices; thus raising consumer concerns about online security (VeriSign, 2009). Earlier studies (Kurnia & Benjamin, 2007; Özkan et al., 2010; Yulihasri et al., 2011) have shown that low perceived security and trust in e-commerce and e-payment systems negatively affects consumers' intention to purchase online. Further, a Gartner study (Gartner, 2006) reported that US retailers lost near $2 Billion in e-commerce sales because of the security fears of online shoppers. In particular, about half of the $2 Billion losses were due to consumers who avoided sites that they perceived to be less secure, while the remaining losses were attributed to people who, in the first place, were afraid to engage in e-commerce transactions. As a result, customers' positive perception of security is an essential pre-requisite to their willingness to engage in online transactions with a site (Zhao-Fu et al., 2010; Turner, 2003; Fogg et al., 2001).

Security Perception Defined

Previous research defined security perception as the extent of users' "beliefs" that their personal information is secure when conducting transactions online (Lallmahamood, 2007; Yenisey et al., 2005; Chellappa & Pavlou, 2002; Salisbury et al., 2001). Security perception is therefore a subjective issue (Halaweh, 2011; Pousttchi & Wiedemann, 2007; Linck et al., 2006). Halaweh (2011) differentiated between perceived security and the actual security, with the latter being enforced by security technologies and mechanisms. He argues that some users' perceptions of security may include actual security, therefore being termed the perception of reality (actual security). For example, if a user perceives that using SSL (Secure Socket Layer) protocol, through the appearance of "http" followed by an "s" in the address bar, makes a website more secure, then this provides a perception that is relevant to actual security. On the other hand, perceived security does not necessarily imply actual security. For example, if a customer perceives the presence of a company's address information (e.g. location, fax and telephone numbers) as an indicator of e-commerce security, then this perception might not reflect the actual security of the website. Therefore security perception is merely a 'feeling' and/or 'belief' that the website is credible

in the user's own mind set. However, although these security perceptions differ from actual (objective) security, they are still important (Halaweh, 2011). Theses perceptions are usually related to usability and design aspects that have influence on the feeling and belief on security (Göktürk & Şişaneci, 2014; Chang & Chen, 2009, Sharma & Yurcik, 2004). This is a very relevant issue for many online shoppers as many of them are not familiar with the technical aspects of security.

Research Motivation

Most earlier studies that investigated the role of user interface design on e-commerce security perception have looked to the influence of a single construct (such as design aesthetics or website content) on e-trust and purchase behavior through the lens of website usability. Other studies have focused on the overall influence of user interface design on the perception of security and trust. It is however important to develop an integrated model that incorporates the individual multifaceted design elements of the customer interface. There is also a need to identify the top design elements that influence e-commerce security perception so that design priorities can be allocated accordingly.

Motivated by the above research gap, this study aims to address the following two questions:

1. Does interface design influence consumers' security perception? and
2. Which design elements have the strongest impact on perceived e-commerce website security.

To address the above research questions, we outline five hypotheses that are grounded in previous theories and conduct a case study to test their validity.

The remaining of this paper is organized as follows: Section 2 summarizes the literature relevant to this empirical study. Section 3 presents our research methodology. Section 4 outlines the research results and discusses the main findings of the paper. In section 5, the implications of this study on researchers and practitioners are highlighted. Finally, in section 6, some suggestions for future research are provided.

LITERATURE REVIEW

Understanding the nature of end users' perception of security and the factors that influence this perception has been the subject of extensive research during the past few years. Most of the earlier contributions have focused on the impact of website security and privacy features on users' security perception and trust (see for e.g., Xiaoyan & Zhiying, 2010; Chellappa & Pavlou, 2002).

Shah et al. (2014) investigated the determinants of online perceived security and found that overall website design features influence perceived technical protection which in turn affects individuals' perceptions about security. However no specific design elements were identified. Göktürk and Şişaneci (2014) proposed the Users' Perception of InfoSec Model (EUPoIM) to guide towards the development of secure and usable interfaces. The authors recognize the need to take into account important features of user interface design and usability principles. Yet they acknowledge that perceived security is a multi-dimensional research area that is still in early stages of development. Based on an empirical study, Trang (2014) found that website design and website trust have a significant impact on consumers' attitude towards online shopping in Hanoi City. Tsai and Yeh (2010) reported some empirical evidence that showed that website design style has an impact on perceived security and privacy.

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