

Chapter 39

An Exploration of the Impact of Virtual Reality Interfaces on Online Shopping

Wen-Chin Hsu

Dept. of Information Management, National Central University, Taoyuan City, Taiwan

Po-Han Chen

Dept. of Information Management, National Central University, Taoyuan City, Taiwan

Chung-Yang Chen

Dept. of Information Management, National Central University, Taoyuan City, Taiwan

ABSTRACT

Virtual reality presents exciting new opportunities for e-commerce with regard to the development of innovative shopping services. This article reports on an experimental investigation into the coordinated use of two human-computer interfaces (HCIs) for online shopping: virtual reality (VR) and webpages. We adopted the uses and gratification theory and technology acceptance model to determine how these HCIs affect online shopping intentions. Data from 98 participants revealed that entertainment value, informativeness, perceived ease-of-use, and perceived usefulness are the primary factors influencing the intention to use the VR HCI for online shopping ($p < 0.05$). Informativeness, perceived ease-of-use, and perceived usefulness are the main factors influencing the intention to use the webpage HCI for online shopping ($p < 0.05$). This study provides insights for businesses how to develop innovative shopping services using VR.

1. INTRODUCTION

The human-computer interfaces (HCIs) of online shopping platforms guide consumers in understanding the company's brand, products, prices, and services. Online shopping platforms that offer user-friendly and convenient HCIs bring customers significantly higher satisfaction (Jiang, Chan, Tan, & Chua,

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2010; Visinescu, Sidorova, Jones, & Prybutok, 2015). Furthermore, when users become accustomed to a certain service method (e.g., the way an online platform HCI is operated), the habit will induce them to continue using this service and prevent them from easily changing to another service (Hsu, Chang, & Chuang, 2015; Chou & Hsu, 2016). To meet consumer needs (e.g., search for products quickly or compare prices), many online shopping platforms use text, photos, videos, and hyperlinks to construct their HCIs. However, such designs mainly provide 2D visuals and lack 3D elements for senses such as sight, hearing, and touch. As virtual reality (VR) technology matures, some online shopping platforms are converting their HCI designs from webpages to VR. For instance, Amazon plans to launch VR shopping services using PlayStation VR and HTC Vive, and Chinese conglomerate Alibaba was the first to launch VR shopping services in 2016. With the preliminary introduction of VR shopping into the market, understanding the acceptance and usage motives of consumers is crucial. Webpage shopping is already mature, so whether it is necessary to invest in VR shopping and whether VR can attract more consumers are both issues of concern for e-commerce businesses. In terms of HCI, webpages and VR obviously offer different shopping environments; webpages provide abundant shopping information swiftly, whereas VR provides experiences of near-real shopping environments. Specifically, VR makes use of sensory devices to immerse users in a simulated world. Specially designed headsets and glasses can be used for visual immersion, while hand-held devices provide tactile immersion. This capacity for complete immersion means that businesses are now able to create custom, unique experiences for their customers (Violante, Vezzetti, & Piazzolla, 2019). Previous research involving VR has focused on improving VR technology (Postma & Katz, 2015) or applied VR to medical treatment (Chen et al., 2016), education (North, North, & Coble, 2015), and games (Seibert & Shafer, 2018). Few studies have applied VR to shopping, so the influence of different HCIs (VR and webpages) on the shopping intentions of consumers is unclear. Furthermore, compared to physical stores, VR can offer richer stimuli to promote consumption without time or space constraints (e.g., product, brand, and music). As a result, many VR-related studies used the S(stimuli)-O(organism)-R(response) model to identify effective stimuli (Eroglu, Machleit, & Davis, 2003; Roschk, Loureiro, & Breitsohl, 2017). The SOR model holds that stimuli have a strong influence on the emotions and perceptual state of consumers (organism) and ultimately result in acceptance or avoidance in consumers (response) (e.g., decide to make a purchase or not). For example, Martínez-Navarro, Bigné, Guixeres, Alcañiz, and Torrecilla (2018) examined the external stimuli that influence consumers (e.g., brand or product) and the emotions or perceptual responses (e.g., discomfort felt in a VR experience) of consumers regarding VR (Martínez-Navarro et al. 2018), and Bigne, Llinares, and Torrecilla (2016) used eye trackers to analyze the shopping choices of consumers. Despite the good explanatory power of the SOR model, it focuses on what businesses can use to attract consumers and overlooks the fact that the psychological motives of the consumers themselves also have a strong influence on consumer decisions. In other words, even though the development of new technology (e.g., VR and augmented reality) is amazing and can offer consumers rich and diverse stimuli, the acceptance and psychological perceptions of consumers with regard to new technology are often crucial factors determining whether a business can profit. For these factors, the uses and gratifications (U&G) theory and the technology acceptance model (TAM) provide a reliable theoretical foundation. The former indicates that the psychological motives of consumers (e.g., entertainment, convenience, and informativeness) are important factors that impact consumer decisions, whereas the latter explains the acceptance of consumers with regard to new technology (e.g., VR shopping) from the perspective of perceived ease-of-use and perceived usefulness (see literature review for details). This study thus examined how HCIs (WEB/

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