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Impact of flow on mobile shopping intention

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ABSTRACT

This study integrated flow into a technology acceptance model (TAM) to explore whether flow plays a mediating role in the TAM. An online questionnaire was used to collect data. The survey involved a sample of 310 consumers who had experienced various types of mobile shopping service. Structural equation modeling using partial least squares was adopted for data analysis. The results indicated that both perceived usefulness and perceived ease of use were significantly related to flow. Flow functioned as a full mediator between perceived usefulness and attitude. Flow was significantly related to attitude and purchase intention. Understanding how flow mediates consumers' mobile shopping intention can help online companies to formulate effective marketing strategies. Theoretical implications and suggestions for future research are provided.

1. Introduction

The Market Intelligence & Consulting Institute (MIC, 2015) conducted a mobile shopping survey of 1068 consumers in Taiwan who owned mobile devices. The survey results revealed that 62.5% of respondents had engaged in mobile shopping, whereas a total of 32.1% had no mobile shopping experience; however, the latter tended to browse product information online by using their mobile devices. Over 50% of the respondents indicated that they were willing to use mobile shopping in the future. On the basis of the prevalence of mobile shopping, many physical retailers (e.g., Forever 21, Starbucks, and Walmart) have developed mobile shopping applications (apps) to expand their market share. Through mobile technology, consumers can utilize fragmented time, shop online anywhere, and obtain instant satisfaction. In this paper, mobile shopping involves consumers engaged in such via mobile phones or tablets. Mobile shopping, which includes information searching, decision making, and transactions, constitutes a comprehensive environment.

The technology acceptance model (TAM) is employed to describe users' acceptance of a particular technology and their usage behaviors (Agrebi and Jallais, 2015). TAM is the most frequently applied model in research regarding online shopping (Chan and Chong, 2013; Liao et al., 2007; Wei et al., 2009). Perceived usefulness (PU) and perceived ease of use (PEOU) are two essential factors in the evaluation of a technology (Harris and Figg, 2000).

Hoffman and Novak (1996) proposed that flow can facilitate users to shop commercial websites, thereby offering marketers a way to examine how consumers experience the environments produced by new technology. Flow describes optimal experiences that can occur when performing activities (Csikszentmihalyi, 1975; Csikszentmihalyi and Csikszentmihalyi, 1992). Csikszentmihalyi (1975) defined flow as the holistic experience of acting with total involvement. Previous studies have focused on exploring the flow experience in online environments (Hoffman and Novak, 1996; Novak et al., 2000; Koufaris, 2002) including shopping (Gao and Bai, 2014; Koufaris et al., 2001). However, studies that have focused on examining flow in mobile contexts are scarce. There are those which have investigated mobile TV (Jung et al., 2009), gaming (Hsu and Lu, 2004; Ha et al., 2007; Zhou, 2013; Holsapple and Wu, 2008), none were found that have addressed the role of flow in mobile shopping environments. The role of flow in modern technology environments (e.g., mobile environments) is different from the role of flow in web-based environments (Hoffman and Novak, 2009). Mobile devices are on-the-go (Nielsen, 2014), have smaller screen sizes than a computer (Chae and Kim, 2004; Jones et al., 1999; Laukkanen, 2007), and take shorter time to complete a transaction (Search Engine Journal, 2014); therefore, we believe it is worth investigating the role of flow in mobile environments.

Literature has also revealed the same perspective. Based on previous studies that integrated flow and TAM in online settings (Ha et al., 2007; Harris and Figg, 2000; Holsapple and Wu, 2008; Hsu and Lu, 2004; Hsu et al., 2013; Jung et al., 2009; Skadberg and Kimmel, 2004; Zhou, 2013), we discovered an inconsistent relationship between flow and TAM. One group of studies determined that flow triggered PEOU (Holsapple and Wu, 2008; Jung et al., 2009), whereas another found that PEOU triggered flow (Ha et al., 2007; Harris and Figg, 2000; Hsu and Lu, 2004; Hsu et al., 2013; Skadberg and Kimmel, 2004; Zhou,

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2013). Later, Hoffman and Novak (2009) reviewed 22 selective studies on flow in human–computer interaction that were published in top-tier journals from 1996 to 2008; they concluded that the role of flow in modern technology environments (e.g., mobile environments) is different from the role of flow in web-based environments. The role of flow in mobile shopping environments remains unclear. Therefore, the current study seeks to address this gap.

There are three main objectives of this study. First, to apply flow and TAM in mobile shopping settings. Second, to answer whether flow triggers PEOU or PEOU triggers flow. Third, to evidence whether or not consumers' attitudes and intentions are influenced by flow and TAM. The first sections of this paper involve theory and literature review for the purpose of developing the study hypotheses; the methodology, hypothesis testing, and discussion sections follow. Finally, the implications and limitations of the study are provided.

2. Theory

2.1. Flow

Csikszentmihalyi (1975) explained that the main idea of flow is enjoyment. In order to explore flow, previous studies have conducted in-depth interviews. Interviewees, such as rock climbers, chess players, music composers, modern dancers, and basketball players, have reported being immersed in their activities and achieving high levels of concentration and pleasure (Zwick, 2005).

The concept of flow has been increasingly applied to the experience of using information technology (Huang, 2012; Lee and Tsai, 2010; Novak et al., 2000, 2003; Zwick, 2005). Users become mentally immersed when browsing a website (Hoffman and Novak, 1996). Flow refers to the process in which a person enters an experiential mode of complete absorption in the activity he or she is undertaking. When experiencing flow, people become highly focused and filter out irrelevant perceptions and thoughts. Their field of consciousness is gradually narrowed, and they respond only to specific targets and definitive feedback (Csikszentmihalyi, 1975).

In a flow experience, a sense of control is generated through manipulating the environment. When skill levels and challenge levels are balanced, flow can be generated; when they are imbalanced, a person perceives either boredom (skill level > challenge level) or anxiety (skill level < challenge level) (Csikszentmihalyi, 1975). Hoffman and Novak (1996) applied flow to computer-mediated environments and developed the four categories of high levels of skill and control, high levels of challenge and arousal, focused attention, and interactivity and telepresence. Online shopping comprises various types of interaction that create a sense of immersion or telepresence (Mollen and Wilson, 2010) and can produce flow experiences (Teng et al., 2012).

Flow has been applied to various disciplines, resulting in many different concepts of flow being adopted according to specific contexts (Hoffman and Novak, 2009). Table 1 summarizes the dimensions of flow from previous studies. Ghani et al. (1991), Ghani and Deshpande (1994), and Ghani (1995) have adopted enjoyment and concentration to measure flow in human-computer interactions. Numerous extended dimensions have been added to flow, such as control (Chen et al., 1999; Huang, 2006; Koufairs, 2002; Landers et al., 2015; Trevino and Webster, 1992; Zhou et al., 2010), curiosity (Chen et al., 1999; Trevino and Webster, 1992), telepresence (Haffman and Novak, 1996; Novak et al., 2003), interest (Chen et al., 1999; Huang, 2006), involvement (Hsu and Lu, 2004), and time distortion (Novak et al., 2003). We discovered that concentration and enjoyment are the two most common dimensions that researchers have adopted.

When consumers browse online stores, a positive human–computer interaction can induce the flow state (Gao and Bai, 2014; Koufaris et al., 2001). Moreover, their physical environment might not be comfortable. Limited time encourages consumers to concentrate on the mobile platform (such as via an app or website) from the searching phase to the transaction phase in order to maximize enjoyment (Ghani and Deshpande, 1994; Hsu et al., 2012; Lin and Bhattacherjee, 2008; Wang and Hsiao, 2012; Zaman et al., 2010). When consumers enjoy such moments, they are more likely to purchase goods or services. Therefore, we adopted enjoyment and concentration to measure the flow level of mobile shoppers.

2.2. Technology acceptance model

The TAM developed by Davis (1989) is considered the most influential model for the usage of information technology (Agrebi and Jallais, 2015; Arning and Ziefle, 2007; Djamasbi et al., 2010; Li and Bai, 2011). In our context, TAM provides a connection between consumers acceptance of a particular technology and their usage behaviors. PU and PEOU are the core variables of the TAM (Davis et al., 1989). PU describes the degree to which a person believes that mobile shopping services are useful for elevating his or her online shopping performance (Lu and Su, 2009). PEOU is the degree to which customers can use a technological product effortlessly (Lu and Su, 2009). PU and PEOU are the determinants of users' attitude toward a technology. Attitude is the determinant of intention to use a technology.

The TAM posits that people tend to decide whether to use a technology according to the degree in which they believe that the platform will help them to complete their tasks effectively. As indicated by Harris and Fig (2000), PU and PEOU are the primary factors that induce flow experience; they are also the antecedents that elicit flow states (Hsu et al., 2013). Moreover, Ha et al. (2007), Hsu and Lu (2004), and Zhou (2013) have proposed that PEOU is the prerequisite of flow in mobile gaming contexts. In contrast, other studies have considered flow

Table 1
Dimensions of flow.

Authors	Application	Flow dimension
Ghani et al. (1991)	Human–computer interactions	Enjoyment, concentration
Trevino and Webster (1992)	Human–computer interactions	Enjoyment, concentration, perceived control, curiosity
Ghani and Deshpande (1994)	Human–computer interactions	Enjoyment, concentration
Ghani (1995)	Human–computer interactions	Enjoyment, concentration
Hoffman and Novak (1996)	Web sites	Telepresence, focused attention
Chen et al. (1999)	Web sites	Control, attention focus, curiosity, intrinsic interest
Koufaris (2002)	Web sites	Perceived enjoyment, perceived control, attention focus
Novak et al. (2003)	Web sites	Time distortion, enjoyment, telepresence
Hsu and Lu (2004)	Online game	Involvement, enjoyment, concentration
Huang (2006)	Web sites	Control, enjoyment, attention focus, interest
Holsapple and Wu (2008)	Online game	Enjoyment
Zhou et al. (2010)	Mobile SNS	Perceived enjoyment, perceived control, attention focus
Landers et al. (2015)	Web sites	Enjoyment, concentration, perceived control