Perceived Innovation and Quick Response Codes in an Online-to-Offline E-Commerce Service Model

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ABSTRACT

The prevalent consumption channel with portable devices has led to an emerging pattern of online-to-offline (O2O) purchasing behavior. By applying the technology acceptance model (TAM) and the theory of planned behavior as the theoretical framework, this study investigated consumers’ perceptions toward applying quick response codes (QR codes) for shopping. Of the research sample, a total of 338 valid returns were investigated using a structural analysis with the partial least squares method. The results indicate that perceived innovation leads to greater perception of usefulness and ease of use. From the view of the TAM, the ease of QR code use does not influence the attitude of users regarding employing QR codes for shopping. The results lend support to the practical implications of the emerging O2O consuming behavior using QR codes with portable devices. Further findings and discussion are elaborated in this paper.

KEYWORDS

O2O E-Commerce, Partial Least Squares (PLS-SEM), Perceived Cost, Perceived Innovation, QR Code, Social Media, Technology Acceptance Model (TAM), Theory of Planned Behavior (TPB)

1. INTRODUCTION

With the arrival of the Web 2.0 and Web 3.0 era, commercial vendors have been challenged to apply electronic commerce practices dedicatedly through portable devices by online-to-offline (O2O) conceptual service model. Under the trends of the Web 2.0 era along with the prevalent use of social media, social commerce (s-commerce) has become a steadfast market. In light of s-commerce, a variety of innovative applications and strategies have accordingly entered the market, beginning a promising new area of research. Busalim and Hussin (2016) conducted a systematic review of s-commerce research published from 2010 to 2015 and concluded that most studies have stressed user behavior and website design, while other themes have been given limited attention. Therefore, this study examined a specific purchasing pattern that individual consumers apply, namely the use of quick response codes (QR codes), accessed through a user’s social networking service (SNS) from his or her portable device, to undertake actual purchasing behavior.

Mobile commerce (m-commerce) refers to e-commerce activities performed using mobile/portable devices (Kim, Chan, & Gupta, 2007; Yen, Wu, Cheng, & Huang, 2010). M-commerce is executed
in coordination with other technological applications that belong to the O2O service model such as QR codes for mobile shopping. The O2O model involves purchasing a product online and receiving it at a specific physical location. Business markets currently apply the O2O model and the use of QR codes, which have become a shopping model. QR codes are a type of two-dimensional barcode. Each QR code is a square grid that consists of black and white pixels and distinctive black and white squares at three of its corners, which enable decoding software to position their scans. Thus, mobile device users can apply QR codes in a variety of purposes. Currently, empirical studies of using QR code consumption still have its practical needs (Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2014a, 2014b; Yang, 2012). No studies have employed this perspective to establish conceptual models that explore or predict the consideration factors and user intentions for QR-code shopping. Most studies on related shopping approaches such as mobile payments (Kim, Mirusmonov, & Lee, 2010; Liébana-Cabanillas et al., 2014a, 2014b; Schierz, Schilke, & Wirtz, 2010) and mobile shopping (Yang, 2012). The studies tend to employ single theories such as the theory of planned behavior (TPB), the behavior belief model, and the technology acceptance model (TAM) as their theoretical bases. Moreover, studies on m-commerce have indicated that people’s use of mobile information systems is affected by their perceived costs (PCs), perceived risks (PRs), and perceived innovation (PI) regarding the use of the information technology (Chong, Chan, & Ooi, 2012; Lu, Yao, & Yu, 2005; Lu, Yang, Chau, & Cao, 2011; Tan, Ooi, Chong, & Hew, 2014; Wu & Wang, 2005). Accordingly, few studies have investigated the use of QR codes in O2O shopping integrating TAM and TPB to explore the PI of individual consumers regarding mobile shopping. The consumption model in simultaneous consideration of PCs, PRs, and the main consumer groups is of importance in mobile shopping. Therefore, this study examines the consumer motivations to use QR codes in mobile shopping with the following two objectives: (a) to clarify the factors associated with the behavioral intentions (BIs) of consumers regarding using QR codes in O2O shopping on the basis of an integrated model of the TAM and TPB; and (b) to explore the effects of predisposing factors such as PI, PCs, and PRs on consumers regarding their use of QR codes in O2O shopping.

2. LITERATURE REVIEW

2.1. Technology Acceptance Model (TAM)

Davis, Bagozzi, and Warshaw (1989) maintained that individuals’ actual information technology usage behaviors are defined by their intentions to apply this technology. The user intentions to apply this QR code technology refer to their subjective decisions of whether or not to use this technology. The user intentions to adopt QR code tend to be the most predictive factor of their actual behaviors (Shin, 2009). Studies on mobile technology have employed the TAM to examine the actual usage behaviors of consumers in multiple domains (Kim & Woo, 2016; Lin & Kim, 2016; Ooi & Tan, 2016; Sánchez-Prieto, Olmos-Migueláñez, & García-Peñalvo, 2016). Kim and Woo (2016) incorporated the extended TAM to explore the adoption of QR codes by consumers in a food traceability system. Consumers’ attitudes toward information technology define their usage intentions for using it (Davis et al., 1989) and involve their perceptions of the potential advantages or disadvantages by the technology (Liébana-Cabanillas et al., 2014a, 2014b). In addition, attitudes are an antecedent factor to the intentions of people for using mobile information technology (Hsu, Wang, & Lin, 2011; Lin & Hsu, 2009; Nyssen, Pedersen, & Thorbjørnsen, 2005; Schierz et al., 2010).

One’s attitude is affected by perceived ease of use (PEU) and perceived usefulness (PU) regarding the specific information technology (Davis et al., 1989). PEU indicates the efforts perceived by individuals that are required to use a specific technology (Davis, 1989; Davis et al., 1989). The PEU of an information technology experienced by individuals reflects its complexity. When easy to use, the perception of system complexity tends to be lower, and users’ self-control and self-efficacy becomes relatively more satisfactory (Liébana-Cabanillas et al., 2014a, 2014b). When individuals
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