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Adoption of in-store mobile payment: Are perceived risk and convenience the only drivers?

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ABSTRACT

Smartphones are changing the way consumers shop, even in brick-and-mortar settings. This study explores consumers' adoption of proximity mobile payment technology (p-m-payment), which enables them to pay with their smartphones for purchases in a physical store. With a perceived value perspective, the authors identify utilitarian, hedonic, and social benefits and financial and privacy risks as key drivers. They also investigate differences compared with the drivers of more familiar mobile shopping usages and highlight the role of experience. The paper discusses implications for both mobile and channel research and recommendations to help retailers take advantage of p-m-payment technology.

1. Introduction

Recently, new technologies have modified the way customers pay for their purchase from traditional credit card to contactless devices. Innovations have rapidly developed in payment methods, with new technological enablers such as NFC, Quick response code, wearables and applications such as mobile wallets, P2P apps (Capgemini, 2016). For instance, Barclaycard in the UK provides several new wearable ways to pay such as a wristband, a fob, a sticker and even a contactless coat, which is the result of a partnership with Lyle & Scott.

However, the smartphone remains the key technological device and in 2016, many countries will have reached majority smartphone penetration among their populations (eMarketer, 2014). Consumers use smartphones as personal digital assistants and shopping devices; 79% of U.S. smartphone users also are mobile shoppers. Supported by retailer-specific apps, such as those from Best Buy, Kohl's, or Macy's, most mobile shoppers use mobile devices to check product prices and discounts, find additional product information and reviews, compare product features, and ask friends their opinions (Kang et al., 2015). Smartphone manufacturers such as Apple and Samsung have recently launched mobile payment m-payment services respectively named Apple Pay and Samsung Pay, which have raised customers' awareness regarding m-payment options. Yet only half of them actually purchase through these devices (eMarketer, 2015) and among adopters only 15% use m-payment regularly (First Annapolis, 2016). In this sense, mobile shopping seems to have a greater impact on traditional in-store sales than on mobile commerce sales (Groß, 2015).

Similar to Taylor and Levin (2014), we can differentiate two main in-store mobile behaviors: information search and purchase transactions. *In-store mobile information search* (hereafter in-store m-infosearch) consists of collecting information about products (e.g., scanning quick response [QR] codes, comparing prices), collecting and sharing opinions with others (e.g., accessing online reviews, sending pictures to friends), or finding a specific product in the store (e.g., navigating aisles using the retailer's interactive map). *In-store contactless mobile payment* enables customers to access and redeem coupons through their smartphones, link their loyalty program membership to the payment app, save receipts digitally, pay without queuing at the cashier, or load value onto a store account.

The rate of adoption for m-payment services appears much lower than for any other task performed with the mobile device, and particularly compared with m-infosearch (GfK, 2015). Yet the payment stage of the shopping process is part of every transaction, so it seems especially worthwhile to investigate its specificities. Prior literature defines m-payment as activities that use mobile terminals to complete economic transactions (Liébana-Cabanillas et al., 2014), and most studies investigate the adoption of m-payment, without distinguishing among its different types. Dahlberg et al. (2008) argue that researchers investigating

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m-payment systems should consider the underlying technology though, such that m-payment systems might be classified into two categories: remote and proximity (Slade et al., 2013). *Remote m-payment systems* enable consumers to pay for digital content or online purchases through their short message service or mobile Internet connection, similar to the payment systems for e-commerce. *Proximity m-payment systems* (hereafter, p-m-payment) instead represent a payment mode for purchases such as ticketing, vending, and point-of-sale items, such that consumers scan a QR code with their m-payment app or briefly hold up their smartphones for reading by the store Near Field Communication (NFC) device or Bluetooth low energy proximity sensing technology (e.g., iBeacon). Unlike remote technologies, the more recent proximity systems represent direct substitutes for common payment methods such as cash or credit cards (Dahlberg et al., 2008; Slade et al., 2013). Yet p-m-payments have not reached the levels of adoption success attained by remote m-payments. Therefore, we focus specifically on p-m-payment systems in stores, which we define as mobile point-of-sale technologies that enable customers to pay for their purchases while in store, and we seek to understand determinants of their penetration rate.

With the help of a value-based approach, we seek to evaluate how various benefits and risks, as perceived by shoppers, drive intentions to adopt p-m-payments. Most previous studies instead investigate the adoption of remote m-payment systems (Groß, 2015; Ström et al., 2014; Zhang et al., 2012), using dominant theoretical approaches such as the technology acceptance model (Venkatesh and Davis, 2000), unified theory of acceptance and use of technology (Venkatesh et al., 2012), innovation diffusion theory (Rogers, 1995), or the theory of planned behavior (Taylor and Todd, 1995). These results highlight the importance of usage intentions, as determined by ease of use, usefulness, trust, relative advantages, risk, and device-specific attributes (e.g., compatibility, convenience, speed, mobility, reachability; Arvidsson, 2014; Daskapan et al., 2010; Kim et al., 2010; Smith and Sankaranarayanan, 2012; Teo et al., 2015; Yang et al., 2012; Zhou, 2014). Along with their contributions, these studies feature several limitations, such as the lack of focus on the different sources of perceived value associated with m-payments (Ström et al., 2014), in the form of perceived benefits (Sweeney and Soutar, 2001) and risks (Dodds and Monroe, 1985; Zeithaml, 1988).

We also investigate the particular role of past experience with mobile shopping in the benefit/risk–adoption relationship. Due to its novelty, p-m-payment may be perceived as more innovative than in-store m-infosearch, which is already widespread. Consumers have become quite experienced with using their smartphone to perform Internet searches and gather information online (Holton, 2012) but consider m-payment less familiar (Liébana-Cabanillas et al., 2014). Finally, inspired by channel choice literature, we include in our framework potential spillover effects in the p-m-payment adoption process. Spillover in a channel choice context (Gensler et al., 2012; Verhoef et al., 2007) reflects the influence of a choice of a channel in a particular shopping stage (e.g., information search) on the channel choice in a subsequent stage (e.g., purchase). For mobile usages, a spillover effect would imply some influence of mobile adoption in m-infosearch on the adoption of the mobile adoption in p-m-payment. To the best of our knowledge, previous m-shopping service adoption research has not addressed spillover phenomena.

In addressing these gaps, we identify the antecedents of in-store mobile shopping through a value-based approach and determine the role of experience and past usages. We hope to help retailers increase the adoption of mobile services and more specifically p-m-payment. The remainder of this article is organized as follows. We formulate hypotheses about adoption intentions toward m-payment systems, the influence of experience, and spillover effects. After we discuss the methodology, we present our main findings. Finally, we discuss the drivers of p-m-payment adoption and conclude with implications for both marketing theory and business practice.

2. Theoretical background and hypotheses

2.1. Theory of perceived value and its components

Perceived value explains intentions to use mobile offerings, such as the mobile Internet (Kim et al., 2007), service delivery (Kleijnen et al., 2007), apps (Hsu and Lin, 2015), and coupons (Liu et al., 2015). In most research, value is evaluated according to the benefits offered, compared with the sacrifices the consumer makes to acquire and use a product or service (Ulaga, 2003; Zeithaml, 1988). Following Sweeney and Soutar (2001), we consider three sources of value: utilitarian, emotional, and social. In our study context, *utilitarian value* results from the expected performance achieved by using mobile services, such that it includes economic (good value for money; Sheth et al., 1991), information (rapid, easy access to details about stores and their merchandise; Varshney et al., 2000), and convenience (conduct transactions more readily; Gensler et al., 2012) benefits. Convenience appears particularly important for m-payment functions (Teo et al., 2015). *Emotional value* is utility derived from feelings or affective states generated by mobile services. For example, a hedonic motivation is an important determinant of technology acceptance and use (Venkatesh et al., 2012), because consumers pursue fantasies, feeling, and fun through their hedonic consumption (Holbrook and Hirschman, 1982), which could be facilitated by using a smartphone to make a purchase (Agrebi and Jallais, 2015). Finally, *social value* derives from an enhanced social self-concept (Sweeney and Soutar, 2001). Consumers express social identities when shopping; the adoption of mobile services might be influenced by the perceived image thus projected (Laukkanen et al., 2007).

For sacrifices, we note perceived financial and privacy risks. Perceived risk combines uncertainty with the seriousness of the potential outcome (Bauer, 1967), such that privacy and financial risks are linked to the potential monetary and psychological losses due to a loss of control over personal information (Featherman and Pavlou, 2003; Hérault and Belvaux, 2014) and transaction errors or fraudulent uses of banking information (Lee, 2009), respectively. With m-payment, consumers authorize a retailer to use their personal information and gain access to their bank accounts. Shoppers thus may be concerned about the potential risks related to privacy, personal data, and the transaction (Bauer et al., 2005).

In the context of new-product evaluation, a lack of familiarity with the new product leads to resistance to it, which can even induce a fear effect. Indeed, due to novelty and the related uncertainty, the product benefits are not readily apparent and individuals develop a resistance to adoption (Veryzer, 1998). Past research has demonstrated that the relationship between risk and benefit is linked to individual's general affective evaluation, such that if a product is not positively evaluated, people tend to judge its risks as high and its benefits as low (Alhakami and Slovic, 1994). Moreover, other authors have shown that there is a negative relationship between evaluated risks and benefits (Finucane et al., 2000; Fischhoff et al., 1978); that is, when perceived risks are high, perceived benefits tend to be low.

Given the very low penetration rate of p-m-payment services, and given its resulting likely lack of familiarity, we predict that individuals will develop resistance to this new technology and form a rather negative evaluation of it as a new payment mode. Thus, they will rate its inherent risk as being higher than its benefits. Thus, we expect that: