



# Mobile Shopping Through Applications: Understanding Application Possession and Mobile Purchase

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## Abstract

Smartphones have penetrated rapidly and mobile shopping provides promising market opportunities for retailers. However, little is known about mobile shopping patterns and inferring these patterns from online shopping may provide misleading insights. We combine mobile log data and a mobile panel survey, and examine two stages in mobile shopping: the possession of shopping applications (hereafter, apps) and the purchase via shopping apps. Our exploratory investigation of mobile data and its empirical analyses provide three substantive findings. First, online experience and mobile experience both positively relate to the possession of shopping apps. Second, browsing behavior for non-shopping apps helps understand the possession of shopping apps as it reflects user preferences for acquiring more apps. Third, purchasing decisions are explained by digital experience (i.e., online experience and mobile experience) and browsing information from shopping apps, with other factors being of little predictive value. The implications for mobile retailing research and practice are discussed.

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## Introduction

Smartphones have penetrated rapidly since their advent, and presently, more than 50% of mobile owners use smartphones in many countries (comScore 2015; eMarketer 2014a, b, c).<sup>1</sup> With the prevalence of smartphones, the mobile channel has become the third marketplace, following the offline and online channels; however, little is known about this mobile channel (Bang et al. 2013; Kleijnen, De Ruyter, and Wetzels 2007). Furthermore, despite the remarkable growth in users and the

consequent market potential, revenue from mobile shopping still accounts for a small percentage of the overall retailing sector (eMarketer 2014a, b, c).<sup>2</sup> Therefore, there is a growing need to understand mobile shopping and its drivers.

Mobile shopping requires smartphones and this shopping behavior cannot be directly inferred from computer-based online shopping behavior. For instance, smartphones provide ubiquitous shopping opportunities; however, inconvenient interfaces increase search costs and inhibit mobile purchasing (Bang et al. 2013; Chong 2013; Ghose, Goldfarb, and Han 2013; Goh, Chu, and Wu 2015). Thus, this study aims to contribute to the understanding of mobile shopping. We obtain mobile log data, the mobile version of clickstream data, across mobile retailers, and compare and contrast two stages in mobile shopping: the possession of shopping applications (hereafter, apps) and purchasing through shopping apps.

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<sup>1</sup> Country-specific smartphone penetration was released by different organizations. comScore (2015) announced that smartphones were in use by more than 50% of US consumers in 2014. eMarketer (2014a, b, c) reported the same penetration rate in 2014 in European countries (e.g., UK, Denmark, and Sweden) and Asian countries (e.g., Korea, China, and Japan).

<sup>2</sup> eMarketer (2014a, b, c) said the m-commerce market is expected to reach \$98 billion in the US by 2016, and this would account for about 1% of the total retail sector.

We offer three substantive findings. First, online experience (i.e., experience accumulated through online shopping) and mobile experience (i.e., experience through smartphone usage) both positively relate to the possession of shopping apps. Second, browsing behavior for non-shopping apps helps understand the possession of shopping apps. However, in contrast to online sales channels where visits to any site impact online shopping, preloaded apps fail to explain mobile shopping. Lastly, mobile purchases through shopping apps are explained unsurprisingly by the browsing behaviors for these shopping apps. In fact, mobile purchases are determined solely by digital experience (i.e., online experience and mobile experience) and the browsing patterns of the shopping apps along with all other factors, are of little-to-no predictive value.

The remainder of this study proceeds as follows. The next section reviews the related literature and describes our hypotheses. The subsequent section describes the data and measures. We then introduce the exploratory findings, which prompt the empirical analyses. After we discuss empirical models, we report empirical findings. The concluding section discusses implications for academics and practitioners and avenues for future research.

## Related literature

We first review prior research in the areas of online and mobile shopping. Using evidence from these areas, we identify research directions and set up our hypotheses for mobile shopping behavior.

### *The Internet and Online Shopping*

Early research on the Internet focused on online experience and online activities. [Emmanouilides and Hammond \(2000\)](#), for example, conducted a survey measuring online experience by how long an individual has been using the Internet, and found that online experience is a predictor of online activities such as frequent browsing of online sites. [Kraut et al. \(1999\)](#) also revealed that Internet users showed preferences for activities they had experienced for a longer time because the benefits of such activities could be easily understood. As the Internet has emerged as a shopping channel, research has moved toward identifying key factors affecting online shopping. Seminal research has used survey data to identify these. [Forsythe and Shi \(2003\)](#) proved that heavy online shoppers are likely to be more experienced ones (i.e., they have used the Internet for four or more years) than light and window shoppers because perceived risks of online purchasing decrease as years of online experience increase. [Breneman et al. \(2005\)](#) found that heavy online browsers of non-shopping sites (e.g., sites for information and entertainment) are likely to be frequent online shoppers. [Venkatesh and Agarwal \(2006\)](#) asked panelists to visit multiple sites and then, after six months, to recall their browsing pattern (i.e., frequency, duration, and intensity) and purchase experience (i.e., frequency and average amount) at each website via telephone interviews. They found that online browsing had a positive impact on online purchases. Furthermore, [Konus,](#)

[Verhoef, and Neslin \(2008\)](#) confirmed that product characteristics influence consumer multichannel shopping behavior using the Internet, catalogs, and stores. For example, consumers favor multichannel shopping when purchasing electronics but not when purchasing clothes.

Internet clickstream data, the electronic record of online activity, enriches research on online shopping, particularly by providing browsing data across sites and competitive retailers. Using such data, [Moe and Fader \(2004\)](#) discovered the positive effect of browsing on online shopping. Specifically, the more visits a consumer makes, the more likely he/she is to purchase products. [Sismeiro and Bucklin \(2004\)](#) investigated the purchase process using three steps: interest (i.e., the completion of product configuration), desire (i.e., the input of personal information), and finally purchase (i.e., the order confirmation after providing credit card information). They found that online exposure variables, such as number of links, are significant in the first two stages but insignificant at the purchase stage. [Huang, Lurie, and Mitra \(2009\)](#) found that consumers engage in extensive online searching on shopping sites prior to purchasing: For a single online purchase, consumers visit 3.4 sites, create 124 sessions, and spend 78 minutes (on average).<sup>3</sup>

### *Smartphones and Mobile Shopping*

The advent of smartphones allows scholars to expand the scope of mobile research beyond basic functions, such as calling and texting, and to compare and contrast online and mobile behaviors. Smartphone apps in many cases are the mobile versions of online sites and companies usually design and launch apps similar to their online sites when expanding their business to the mobile platform ([Bang et al. 2013](#)). Still, stark differences remain between smartphones and computers. [Goh, Chu, and Wu \(2015\)](#) found that information search behaviors using mobile phones are different from desktop computer search behaviors. Mobile users intermittently read content because mobile content is shown on smaller screens. [Ghose, Goldfarb, and Han \(2013\)](#) found a similar result that the smaller screens of mobile devices increase search costs, which in turn makes the relative attractiveness of the first search result over the second greater on mobile devices than on computers. [Chong \(2013\)](#) showed that mobile users who value ubiquitous access prefer mobile phones to computers for watching videos and listening to music. These findings underline the distinctions between the online and mobile channels. Therefore, inferring mobile behavior from research on online behavior could result in misleading information.

The prevalence of smartphones offers a third channel of shopping, following offline and online channels. [Kleijnen, De Ruyter, and Wetzels \(2007\)](#) developed a conceptual model that incorporates the benefits (i.e., time convenience and user control) and costs (i.e., risks and cognitive efforts) of mobile shopping. In their model, time-related gains in efficiency

<sup>3</sup> It is possible that a consumer visits a site and then leaves sessions unattended. To avoid the inflating effect of such sessions, the authors discarded the sessions when the idle time exceeded 5 minutes.

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