



# Touchable Apps: Exploring the Usage of Touch Features and Their Impact on Engagement

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## Abstract

Touch has become an inseparable element of mobile platforms. This study examines the use of different touch features and the impact of these touch gestures on consumer engagement with a mobile shopping app. We focus on three informational touch features that are common among shopping apps: touch to zoom in on a page (zoom-page), to view product details (product-view), and to be directed to outside links (open-webpage). We develop a two-level model that captures (1) consumers' decisions to stay with or leave an app and (2) their use of touch features. Our main results empirically demonstrate the strong explanatory power of informational touch gestures, especially their dwell time, in consumer app browsing decisions, whereas navigational touch gestures do not significantly affect app stay likelihood. A longer dwell time and early use of zoom-page within a session encourage the stay. Moreover, we observe strong synergy and antergy (negative synergy) among these touch gestures. The cumulative dwell time and temporal progression of touch gestures affect subsequent touch feature usage. Managerially, our results suggest that an early intervention that encourages the use of zoom-page increases app stay likelihood, and marketers may apply our model to quantify the impact of such interventions on consumer browsing decisions at the individual level. The results also shed light on how marketers can infer the stage of the shopping process based on touch gestures (segmentation) and guide consumers through the purchase funnel by promoting the use of zoom-page and product-view. Lastly, the findings provide insights into how marketers can promote the use of open-webpage, which has the lowest baseline usage rate yet is crucial for transactions, based on the synergy among touch gestures and through improving the non-native browsing experience. © 2018

*Keywords:* Mobile commerce; Touch features; Touch-stream data; App engagement; Non-native experience

## Introduction

Mobile commerce has gained significant momentum in recent years. Forrester Research (2014) predicted that U.S. mobile commerce would top \$293 billion by 2018 (54% of total U.S. e-commerce sales), up from \$42 billion in 2013. The most apparent difference between mobile devices and other shopping channels is that navigation and information-gathering are *touch gesture-based*: consumers must physically touch their devices to go through pages within an app, examine specific products, or complete transactions. Touch gesture-based inputs enable consumers to use their fingers to “touch” products without

using a mouse, mimicking how consumers intuitively inspect products in an offline environment. A variety of touch features can be performed, including pinch, spread, (double) tap, and rotate (Villamor, Willis, and Wroblewski 2010). These touch features can be broadly categorized into two types: *navigational touch*, such as scroll and swipe, which does not reveal additional information that is not presented by default; the other is *informational touch*, such as zoom in or open an embedded link, which retrieves additional, detailed information that is not presented by default on the current page. In this paper, we focused on the use of informational touch.

Informational touch data produce a detailed observational record of how consumers access *incremental* information on a page, enabling researchers and practitioners to explore consumer browsing decisions at a more granular level. With limited real estate on mobile platforms, the product information presented by

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default in apps is often in an abbreviated form (e.g., a basic image of the product with a brief description) compared to that on PCs. If interested, a consumer must apply informational touch gestures to review detailed information, either to enlarge the presentation (e.g., zoom in on a page) or to be directed to an inner layer of information that is not presented by default (e.g., open an embedded link). While the exact informational touch features might vary by app, their functionality is consistent—consumers must take an active action (touch) to access additional information. For example, consumers can scroll through headlines on the Wall Street Journal app with navigational touch, yet to read an article, they need to use informational touch (to expand the headline); consumers of the popular WhatsApp can browse the chat feed using navigational touch but to dive into a particular post, informational touch is needed. In contrast, it is challenging to disambiguate from traditional clickstream data whether a consumer is reading detailed product information or merely skimming through the abbreviated information (such as an image) on a page, because more detailed product information is presented by default given the abundant webpage real estate on a PC. Informational touch data record a greater level of granularity in the information retrieval process and are therefore of great interest to both marketing researchers and practitioners.

The investigation of touch features on mobile devices is a nascent field. The extant research has focused on the adoption of mobile devices, the formulation of mobile marketing strategies, and the investigation of consumer attitudes in the mobile context (e.g., Koenigstorfer and Groeppel-Klein 2012; Leppäniemi and Karjaluoto 2008; Shankar and Balasubramanian 2008; Shankar et al. 2010; Tokárová and Weideman 2013). However, not much attention has been given to touch gestures and their use on mobile platforms.

Our research fills this gap by exploring the use of different informational touch features and the impact of various touch gestures on consumer engagement in a mobile shopping app. We focus on three informational touch features that are popular among many shopping apps, namely, touch to zoom in on a page, to view product details, and to be directed to outside links. We develop a two-level model to capture (1) consumers' decisions to stay with or leave an app and (2) their use of informational touch features. Our unique observational dataset recorded the consumer use of touch features and their browsing behavior in a natural mobile shopping environment, which alleviates typical concerns regarding self-reported measures or left truncation bias and allows us to examine consumer usage behaviors with minimum intrusion.

This research extends the effect of touch from the offline environment to mobile platforms and deepens our understanding of the ways in which consumer shopping behavior is influenced by interactive technology. Managerially, touch-stream data allow marketers to obtain a more refined view of browsing decisions by revealing consumer intent to retrieve additional information that is not presented by default. First, our main results empirically demonstrate the strong explanatory power of informational touch gestures, especially their dwell time, in consumer app browsing decisions, whereas navigational touch gestures do not significantly affect app stay

likelihood. Thus, it is crucial for marketers to closely monitor informational touch gestures when assessing consumer browsing decisions. Second, our results show that an early intervention that encourages the use of zoom-page features improves app stay likelihood; thus, marketers can apply our framework to quantify the impact of such interventions and the timing thereof on consumer browsing decisions at the individual level. Third, we observe strong synergy and antergy (negative synergy) among these touch gestures, as the cumulative dwell time of touch gestures and their temporal progression affect subsequent touch use. These results shed light on how marketers can infer the stage of the shopping process based on touch gestures (segmentation) and guide consumers through the purchase funnel by promoting the use of certain features (such as zoom-page and product-view). Lastly, we discuss how marketers can promote the open-webpage, which has the lowest baseline usage rate yet is vital for transactions, based on the synergy among touch gestures and through improving the non-native browsing experience.

The paper proceeds as follows. First, we provide background on the informational touch features of mobile apps and summarize the relevant literature. Second, we describe the touch-stream data and present some preliminary evidence. We then describe our model and present the results. Lastly, we discuss the managerial implications and future research directions.

## Background and Relevant Literature

### *The Use Patterns of Informational Touch Features*

This paper focuses on three informational touch features that are ubiquitous in mobile apps, namely, zoom-page, product-view, and open-webpage (illustrated in Appendix 1).

The use of these touch features can be driven by the different search goals and the purchase intent they reflect. *Zoom-page* is recorded when consumers expand their fingers to zoom in on a page, indicating a transition from an overview of product offerings to certain item(s) on the page. Since not much information can be presented on a catalog page given the size limit on mobile devices; this touch feature is used to present an image in greater detail (such as the texture of a cloth) or to enlarge the font for price and brand information. Consumers who use this touch feature are more likely to be in the “initial interest” stage, where they are exploring products on a page but not ready to expend the extra effort to retrieve additional details beyond the current page. Thus, the adoption of zoom-page is likely to happen earlier in a session.

The product-view and open-webpage features, however, reflect a more focused search for the inner-layer information, and are likely to happen later in a session. With *product-view*, consumers touch a product to view the additional product information, such as reviews, size, and material, that is not presented by default, through for example, a pop-up window. With *open-webpage*, consumers click on an embedded link (in our case, “Buy on Retailer's Website”) and are redirected to the retailer's product webpage (typically, the full [non-mobile] site), either within the app or in a new window outside the app, for

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