M-Commerce Usability: An Explorative Study on Turkish Private Shopping Apps and Mobile Sites[*]

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Abstract. There's a growing interest towards mobile commerce in recent years. This pilot study, which is the first step of an extensive long-term research, investigated mobile usability in mobile "private shopping" applications. Focusing on three different private shopping applications / mobile sites in Turkey, a qualitative mobile usability test, based on a multi-method approach, was carried out with a sample of 11 Turkish senior year university students, who were experienced mobile Internet users and potential customers of private shopping platforms. The participants were observed during the task executions and additional data was collected by the "think aloud" procedure, eye-tracking and video recording of the participants. A short debriefing interview was also made to gain a detailed insight into the user experience. The findings revealed significant mobile usability problems and enabled to propose guidelines to improve user experience in mobile private shopping.

Keywords: Usability, Mobile, Private Shopping.

1 Introduction

E-commerce is now a trillion-dollar industry. Global e-commerce sales passed 1 trillion $ in 2012 for the first time ever, fueled by growth in North America and the Asia-Pacific region [1]. The emergence of wireless and mobile networks has made possible the admission of e-commerce as a new application and research subject named mobile commerce (m-commerce). M-commerce can be defined as the exchange or buying and selling of commodities, services, or information on the Internet through the use of mobile devices. In the recent years, m-commerce has come forward to become the hottest new trend in business transactions [2]. In U.S. m-commerce revenues for 2012 is 11,6 billion $ whereas it is estimated to reach 31 billion $ in 2015. 54,9 % of U.S. mobile subscribers owned smartphones as of June 2012 and 41 % of them have made a purchase from their mobile phones [3]. "Private shopping" platforms constitute a major category in m-commerce and Turkey, as the world's 13th largest Internet market, is one of the leading countries in this category. *Markafoni*, the

second most-visited members-only shopping network in the world, is a frontrunner in an industry that grew almost 60 % in Turkey last year and has attracted investment from EBay Inc., Amazon.com Inc., Kleiner Perkins Caufield & Byers, Naspers Ltd. (NPN) and Tiger Global. *Markafoni*'s main competitor *Trendyol*, the third most visited private shopping platform by referring to the unique hits, reached $100 million in revenue less than 18 months after going online [4].

However, despite the growing interest towards m-commerce platforms, poor usability of mobile sites and applications for commerce activities stands out as a major obstacle for the slow adoption of mobile solutions. "*Such difficulty discourages users from accessing mobile Internet sites* (Chan, Fang, Brzezinski, Zhou, Xu, & Lam, 2002) *or choosing m-commerce as a distribution channel*" (Shim et al. in [5]). Siau et al. in [5] states that while it appears possible to use existing usability guide-lines for the development of mobile applications, a comprehensive methodological and comparative framework for designing and evaluating the usability of m- commerce applications is also necessary.

This pilot study, which is the first step of an extensive long-term research, analyzed the critical issues confronting usability for mobile commerce sites and applications. It investigated three different private shopping applications / mobile sites in Turkey. For this purpose, a qualitative mobile usability test, based on a multi-method approach, was carried out with a sample of 11 Turkish senior year university students, who were ex-perienced mobile Internet users and potential customers of private shopping platforms.

2   Theoretical Background

M-commerce combines the advantages of mobile communications with existing e-commerce applications to allow consumers to shop for goods and services from virtually anywhere [6]. M-commerce is defined as a means of conducting commercial transactions via a "mobile" telecommunications network using a Communication, Information, and Payment (CIP) device such as a mobile phone. M-commerce is creating entirely new service opportunities such as payments, banking and ticketing transactions through wireless device. Secure payment and ease of use are key features of m-commerce, along with immediacy, personalization, and location awareness [2].

According to Turban et al. [7], m-commerce could be defined as a monetary transaction for goods and services conducted by a mobile device, an operating system specific to mobile devices and a mobile-dedicated infrastructure. Condos et al. [6] described that m-commerce combined the advantages of mobile communication with existing e-commerce applications to permit customers to shop for goods and services virtually from anywhere.

Ghinea and Angelides [7] defined m-commerce usability as one of the biggest challenging issues in adopting m- commerce. An investigation into the impact of mobile interfaces on the usability of mobile commerce (m-commerce) applications by Buranatrived and Vickers [8] noted that usability has been identified, second only to security, as a barrier to user acceptance. Venkatesh et al. [7] also identified user experience as an important prerequisite for the success of m-commerce applications. According to this study, the main challenges on using mobile commerce included, time pressure, location, convenience, device limitation, relevancy, structure, customiz-ation, lack of industry standards and industry-specific design rules.

While it appears possible to use existing usability guidelines for the development of mobile applications, mobile applications have some unique characteristics that deserve attention. In her study on mobile Internet usability for mobile learning Uther in [8] argued that some traditional usability guidelines relating to navigation, structure and error prevention could also be applied to mobile applications. On the other hand, she asserted that attributes such as limiting user input, displaying only minimal and relevant information on the screen, and the use of context, should be considered specifically from the perspective of mobile applications [8]. Lee and Benbasat in [8] identified the usability attributes in both e- commerce and m-commerce applications as follows: Context, content, community, customization, communication, connection, and commerce. However, the process of addressing these attributes could be quite different for varying classes of application. For example, *customization* for a web user could involve the ability of a site to self-configure based on predetermined requirements, whereas customization for a mobile user could be based upon geographical location or the physical environment [8]. In this context, there are also some recent studies that proposed guidelines addressing the design of m-commerce platforms [9] [10] [11]. These studies emphasized the importance of usability issues concerning some specific components of the mobile user interface: Home pages, Navigation Structures, Search, Product Pages, Shopping Cart, Forms and Checkout.

3   Methodology

The purpose of this pilot study, which is the first step of an extensive long-term research, is to explore the usability issues in mobile commerce through leading private shopping platforms in Turkey and generate guidelines to improve mobile commerce usability. Below is the research question of the study:

Research Question: What are the usability issues in mobile private shopping platforms?

This qualitative study was based on a multi-method approach, which consisted of a background questionnaire, task observation and a structured debriefing interview. The background questionnaire provided information on demographics, mobile web and mobile shopping experience of the participants. The study also employed observation methods of data collection in order to gain better insight in mobile private shopping. The tests were conducted with an iPhone. The most popular private shopping platforms in Turkey, which are Markafoni, Trendyol and Limango, were chosen for the study and one task with two different purchases were designed for the users to perform with applications or sites. The users were asked to terminate the task in 6 minutes. The task was" Buying two different presents for their father for fathers day". In this context, a sample of 11 Turkish senior university students who were experienced mobile users were involved in the study. The sample included 5 female, 6 male participants. At this point, it should be noted that due to the limited sample chosen for this pilot study, it is mainly aimed to generate insights for further studies to improve mobile commerce usability. In this sense, a descriptive qualitative analysis is adopted for the discussion of the findings.

The tests were conducted in the usability lab of Galatasaray University, which is a full-equipped usability laboratory in İstanbul, Turkey. The navigation was directly observed and recorded on a structured observation sheet by the researchers. Besides the observation, additional data was collected through eye-tracker glasses and video recording of the participants. Final structured debriefing interview provided complementary findings.

The analysis framework was derived from the studies of Usability Sciences [11] and Bustos [9]. These were integrated with the fundamental principles of interaction design [12]. *Trendyol* and *Limango* had mobile applications during the test process but *Markafoni* neither had a mobile application nor a mobile site, therefore participants accessed the full web site of *Markafoni* via the inbuilt browser, Safari. The analysis framework that was derived from these two studies includes the following parameters: Homepage, Navigational Browsing, Results Listing, Product Detail, Forms and Checkout.

4   Results and Discussion

4.1   Homepage

As users can access the platforms only if they are members, homepages are the main gates to the private shopping environments. In this context, *Limango* preferred to present a list brands on the homepage whereas Trendyol offered a categorization for genders as the first step of the information architecture and brands were proposed as subcategories. Although the homepage of *Markafoni* proposed both information structures, it was almost impossible for the participants to navigate through the menus by using the limited screen of iPhone, because the full web site was not optimized for mobile devices. Besides the scale problem of the menus due to small mobile screens, it was also observed that alternative campaign banners of the site were perceived as banner ads: *"Ads cover most of the screen. It wouldn't be a problem on a PC but on a mobile device it is annoying"*. This behavior may be associated with "banner blindness", which has been documented since 1997 and been confirmed in recent eye-tracking studies: *"Users almost never look at anything that looks like an advertisement, whether or not it's actually an ad. Therefore, users have a tendency to never look at a slim rectangular area that's above the page's main headline"* [13].

Using brand names as navigation features brought both advantages and disadvantages. If the user was familiar with the brands presented, it could lessen the search efforts and eventually shorten the search time, but in almost all cases it was the opposite: *"Ohh, No! This was only for women", "Do I need to know every brand's products?"*. This navigation structure led the users either to try for only the brands they are familiar with or to implement a search strategy based on trial-and-error method, which resulted in most cases with frustration.

Another problem observed during the task execution sessions was the accidental triggering of actions due to button sizes and gestural inputs. While trying to swipe through the categories or sub-categories presented on the homepages, participants accidentally clicked on buttons, which were usually represented by a small thumbnail image.

4.2   Navigational Browsing

The only navigation method offered by all three platforms was browsing through a navigation based on brands. However, this limited functionality on the m-commerce apps/site seemed to be contradictory to the prior desktop e-commerce behaviors of the users. As the participants were mostly used to search for information through a search box or define subcategories, which are item based, they constantly looked for a familiar tool or menu: *"How should I know which brand sold ties?", "I'm looking for a product not a brand!"*

By adopting a trial-and-error strategy, most browsing attempts ended with loss of orientation and as there was no alternative navigation bar or menu offered, users were obliged to click on the back button several times. Two of the participants found it exhausting at some point, therefore preferred to use the built-in home button of the phone and re-launch the application. The categorization due to items was only available within the brands page and most participants were not able to access this hidden content.

4.3   Results Listing

While the major navigation concept of these platforms was built on brands, there were also differences concerning the listing of the results. It could be understandable if the product range varied for each different brand, but even for cases where two different brands proposed same types of goods, the resulting result page proposed completely different results. These varying listings caused inconsistencies, which weakened the integrity of the user experience within the whole platform.

The options to filter the results also differed from one brand to another. These variations extended the learning curve of the users and ended up with an exhausting experience preventing discoverability: *"I could select sports shoes on previous brands but on this one I can't"*.

The option to filter the search results extensively before heading to the product detail pages was also an important asset expected by the users. It was obvious that filtering the search results enabled the users to compare the products. Users expected to sort the results not just due to the type of the products of brands, but also due to the price, color, size, availability, style, etc.: *"Isn't there a comparison filter?"*.

4.4   Product Detail

It was observed that product detail pages of the applications were sufficient for users as they provided a brief explanation of each item with adequate amount of pictures that could be zoomed in. Besides, options to select size, color and quantity were also offered in product pages. However, there were no reviews about the products on these pages and this was identified as a problem for usability. The ability to compare two different items before the purchase seemed to be a major need for the participants as most of them stated so: *"I'm not sure which one to buy, I have to check the other one again"*.

On the other hand web page of *Markafoni* had different problems. First of all users had to double click the item from the list to access the product page. However, this was a conventional action referring to classic desktop environments rather than contemporary gestural interfaces on mobile devices: *"I thought I clicked it and didn't know that I should click twice, I was waiting for the page to load"*. Once the product page was loaded and the customer decided to add the item to the shopping cart, they were unable to execute the relevant action, because there was no action button on the product detail page; it was located on the results page next to the product name, which required further efforts to go back to the relevant page. In this context, it was evident that the web site did not provide quick and easy access to information in the purchase procedure.

4.5   Forms and Checkout

The most important asset of m-commerce platforms was considered to be the checkout process as most of the potential purchases were discarded due to the exhausting forms or poorly designed pages offered in this process. The fundamental task in this study was "to purchase two different gifts". Unfortunately no one could execute this task, since none of the platforms allowed to purchase different items from separate brands within a single checkout process. As all three platforms were built on brand or campaign-based navigation, each brand "acted" like a real physical store in a shopping mall and users could only purchase items from the same store for each purchase attempt. During an ongoing checkout procedure, the users could attempt to buy another item from a different brand or campaign unless they deleted the current item in their shopping cart or finalized the check-out process and emptied the cart for the next order. A pop-up warning message appeared on the page that asked the users to finish the purchase first in order to start a new order from a different brand. (Fig. 1) Participants found this procedure really annoying and time-consuming, because each new checkout attempt also required to re-fill in a detailed form: *"Nonsense!"*, *"I don't understand why?"*, *"I won't try to buy a second one if I finish the transaction"*. When they were asked during the debriefing interviews about the possible reasons for this procedure, most of them responded that it could be because of storage and shipment policies of the private
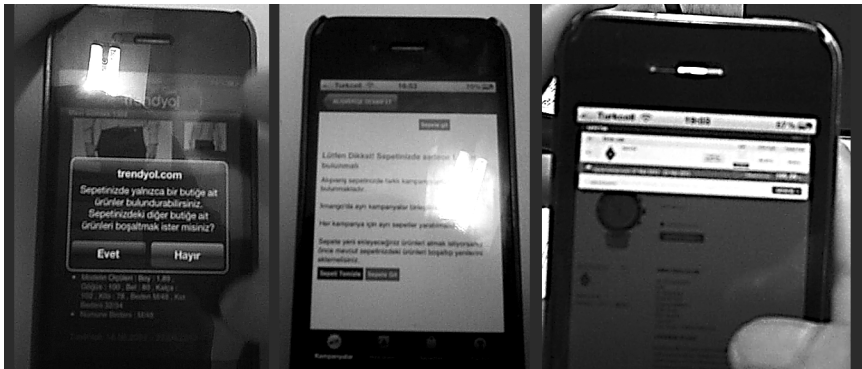

Fig. 1. Warning messages about additional purchases; Trendyol, Limango, Markafoni

shopping companies. Even so, most of the participants were not convinced about this compelling process: "*But this is not my problem, I'm the one who pays*".

Although these platforms require membership, they don't retain the member information in terms of gender, size, billing information, etc. As a result, each checkout procedure forced the users to provide regular demographic information repeatedly. Lack of online or call center help was also identified as an important problem concerning usability

5   Conclusion

M-commerce is a relatively new concept but is rapidly gaining ground especially when you consider the rise in mobile technologies as a whole. However, despite the growing interest towards m-commerce platforms, poor usability of mobile sites and applications for commerce activities stands out as a major obstacle for the slow adoption of mobile solutions.

This pilot study explored the usability issues in three major private shopping mobile applications / web sites of Turkey. Findings were inline with the previous studies.

Considering the usability issues identified by referring to the analysis framework, the study provided the following implications for the improvement of usability in bank sites:

- Prioritize the most important set of features in your homepage and provide quick access to relevant information [12].
- Enable category browsing. Provide users with the ability to browse by category directly from the homepage [11].
- Support navigational browsing as well. Provide users with the ability to view products as they browse by category. Additionally, provide broader and more general sub-categories [11].
- Do not underestimate the impact of banner blindness and provoke recognizability of critical promotion areas with clear graphics [13].
- Provide a prominent and persistent search feature at the top of the page [12].
- Provide sorting and filtering options. Enable users to narrow their search results [9].
- Offer a simple and clear product detail page including product description; option to select size, color, quantity, etc.; reviews; 'Add to Cart' button [9].
- Shorten the check-out process [10].
- Provide a flexible check-out process that enables the purchase of multiple items from different brands, campaigns or categories.
- Keep the number of clicks required to a minimum during the navigation [10].
- Do not make registration compulsory for each check-out process. Keep the previous purchase records of the members to fasten the check-out process. Allow customer to copy billing and shipping addresses in new purchases.
- Do not ask for more information than necessary in form fields [9]. Minimize the number of input fields in the forms. Prioritize the required fields and do not overload the form with optional input fields
- Value clear feedback for every action, especially for form inputs. Provide support for error handling in forms to easily identify and fix mistakes..

Considering the lack of user-centered studies on mobile private shopping platforms specifically in Turkey, this pilot study contributed to the relevant literature by providing findings to improve usability in mobile commerce. However, it should be noted that –due to the small sample- the findings are limited with descriptive qualitative insights. In order to delve into various aspects of the usability issues in mobile private shopping platforms, further empirical studies with divers users in larger groups are needed to be conducted.

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