M-Commerce Usability
Exploring the mobile shopping experience

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Introduction

Everybody is talking about mobile commerce. Some are venturing into it. The potential for m-commerce is enormous: ComScore reported the number of mobile users online will surpass desktop users online in 2014, while eMarkter reported an industry wide 81% growth rate in mobile sales from 2011 to 2012 ($25 billion) and forecasts it to account for 24% of all online commerce by 2016. However after completing this m-commerce study, it is easy to understand why some cry-out for caution. SeeWhy reported a staggering 97% mobile cart abandonment rate, and IBM documents m-commerce conversion rates to be around half of what the full-site e-commerce equivalents are seeing. Despite testing, the mobile e-commerce sites of multi-million dollar (in some cases even billion dollar) businesses like Walmart, Amazon, Avis, United, BestBuy, FTD, Fandango, etc. numerous test subjects were unable to complete a purchase at the majority of sites they tested. Note the word is unable, not unwilling. The usability issues where that severe.

Now these issues are not because the e-commerce enterprises have been altogether sloppy with their mobile implementations. A lot of it is simply due to smartphones being an all-new platform, with an all-new interaction method and context (touch input on a 4” screen). Compared to the decades of experience with mouse, keyboard and 13”+ screens, and almost two decades of evolvement of desktop e-commerce sites, very few best practices exist for designing mobile-optimized e-commerce sites (hereby referred to as "m-commerce").

This is why we decided to invest the better part of a year at Baymard Institute to conduct this large scale usability study focusing specifically on m-commerce usability. We set out to explore the entire mobile shopping experience, from the user’s conceptual understanding of m-commerce sites, to how users interact with form fields. More specifically, we tested homepage and category navigation, product search, filtering and sorting of results list, the layout of product list, product page design, cart functionality, the checkout process (including typing), privacy concerns, mobile payments, account checkout, shipping selection, booking processes (rentals, aviation and tickets), as well as help pages, error messages, basic mobile form field usability, and the performance of mobile sites.
WHAT RESEARCH IS THIS REPORT BASED ON?

This report is based on our own original usability research study. A group of users in the age range of 23-55 were recruited to test the mobile online shopping experience on 18 of the largest mobile e-commerce websites following the "Think Aloud"-protocol: 1-800-Flowers, Amazon, Avis, Best Buy, Buy.com, Coastal.com, Enterprise.com, Fandango, Foot Locker, FTD, GAP, H&M, Macy’s, REI, Southwest Airlines, Toy’R’Us, United Airlines, Walmart.

While these sites are by no means small, the test subjects encountered 1,000+ usability-related issues during the test sessions. Ranging from small interruptions with an interface to severe misconceptions about the basic premises of the m-commerce site, resulting in abandonments. These 1,000+ usability issues have been analyzed and distilled into 147 m-commerce usability design guidelines.

The goal of this report is not to derive at statistical conclusions on whether 41% or 42.3% of all your customers will encounter a specific issue. The goal is to determine severe user experience problems likely to occur on your m-commerce site and propose solutions to avoid them, in the form of mobile design guidelines. These guidelines document how to best design and structure a mobile commerce site from an end-user’s perspective that – when adhered to – will improve your m-commerce site and consequently your mobile business.

With a total of 20 test subjects, 99% of all usability problems with an occurrence of 21% or more will be discovered on average, based on the binomial probability formula. For a more detailed description of the test methodology, setup and subject demographics, see the Methodology Appendix.

HOW DO I USE THESE GUIDELINES?

While all 147 of the proposed guidelines will likely improve your m-commerce site, some are more important than others. For this reason, we have formulated two measurements for each guideline, based on how the test subjects reacted to the corresponding issue:

- **Severity:** How damaging is it to violate this guideline? There are three degrees: Will your customers only be interrupted shortly (Interruption)?, Will they come to a full stop in what they are doing and actively have to solve the issue (Disruptive)?, Or will they be unable to complete their task at all, often abandoning their purchase as a consequence (Harmful)?
• **Frequency**: If not adhering to the guideline how many of your users will likely experience this issue? This is based on how many of the test subjects that ran into this issue. There are five groups: A Few, Several, Most (+50%), Nearly All, and All.

You might ask if a guideline that only poses an "Interruption" to your customers is worth changing your mobile site for. Why spend money fixing something that is unlikely to lose you any sales? The answer lies in the overall user experience. While violating the guidelines rated "Interruption" will not hurt sales much individually, they certainly will collectively. It all adds up.

When asked directly, your customers might not be able to pinpoint the exact problem they’re experiencing, but the more of these minor guidelines you violate, the more likely it is that your customers will consider your mobile site "tedious", "idiotic", or "slow" (just a few of the words used by the test subjects during testing). While the minor things are important because they are numerous and add up, you should not, however, start fixing these until the major guidelines have been adhered to.

Given the advancements in mobile browser capabilities (HTML5, CSS3, etc.) a native app and a mobile-optimized website can be virtually indistinguishable (within m-commerce that is, the story is of course different for things like games, etc). So while the study tested m-commerce websites, most of the usability issues documented and the guidelines presented will also be applicable if you are designing a native m-commerce app, as the mobile device and interaction methods are the same. Only the last chapter, "Implementation" will be inapplicable.

**READING THIS REPORT**

The report is divided into 6 chapters, *Understanding Mobile, Product Finding, Product Information, Checkout Process, Data Input, Implementation*, each with 2-6 design concerns. These 28 design concerns can be used as individual reference works as you and your team are developing or re-designing specific parts of your m-commerce site.

The images used in this report are from the actual test sessions. When printed, most of the screenshots in the report will be in a 1:1 scale to the actual mobile device in order to portray the sites as close to how the test subjects experienced them as possible.

Throughout the report, the term "m-commerce" is used to cover "mobile-optimized e-commerce website", and "full-site" is used to describe browsing a regular website on a non-mobile device (typically on a desktop or laptop computer).
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Be very cautious when using animating carousels

SEVERITY: HARMFUL  FREQUENCY: NEARLY ALL  REFERENCE: #30

ISSUE: Users fail to discover vital features when they are only placed in a carousel and have a hard time interacting with the carousel itself.

Animating carousels caused interaction issues for half the test subjects; the carousel simply changed too quickly for some subjects to both read and select an option.

In multiple instances a subject found a carousel slide interesting and attempted to tap it. However, the carousel changed to the next slide at the very same moment causing the wrong slide to be loaded. Sometimes the subjects noted this, and sometimes they did not, leaving the landing page immediately as they did not find it relevant to what they were looking for. Interestingly, the "Prev" and "Next" buttons seen on the Toys‘R’Us carousel were not used by a single test subject during testing despite these issues.
Both these interaction issues also existed (and still exists) in the early versions of carousels on full websites, but as carousels have become increasingly popular on e-commerce homepages over the last several of years, they have evolved so most now stop animating when an option is hovered by the user’s mouse. And most also have a slide indicator which allows the user to see how many slides exist, and just as importantly, allow the user to jump to a specific slide (e.g., back to the one that piqued their interest but changed too quickly). These interaction issues cannot be (easily) solved on mobile because there is no hover state and much less screen real estate.

At Toys"R"Us homepage the subjects poured over the menus to find a "Gift Guide" wizard but could not find one (left image). It turns out they do have a wizard but it was only accessible via a specific slide in the rotating carousel at the top of the page.
Perhaps an even more critical usability issue was that most test subjects simply ignored the carousel after quickly glancing at the first slide. Some waited and looked at 2-3 slides before focusing elsewhere. This proved critical at some sites such as Toys’R’Us as the majority of the test subjects were desperately looking for features (e.g., a "Gift Finder") in the traditional navigation, which were only accessible via a specific carousel slide. Some subjects talked at length about how the site really should have some sort of "gift guide", ultimately abandoning the site because they could not find one - never realizing it was accessible only via the carousel.

There can be multiple reasons for why users ignore animating carousels. First, the carousel content might look like ads depending on how it is styled, greatly increasing the chance of banner blindness (a sub-group of subjects tended to focus much more closely on text based navigation than graphically based navigation). Second, when using a "large" laptop or desktop monitor to browse a full-site, the user is able to check out other options at the homepage while still glancing at the carousel slides as they change. On mobile devices however, the screen is so small that a carousel will take up a significant portion of the viewport, making it practically impossible to scan any navigation or category options while simultaneously monitoring the changing carousel slides (one of them will always be partly or completely out of sight). Therefore if users are to see all options in a carousel on a mobile device they will have to wait and look directly at it for its entire duration (like a video clip).

Regardless of the cause(s), what is really important to know is that the far majority of subjects ignored the animating carousels completely and, on the homepage, focused instead on the category navigation along with the search features, which is why you should never make carousels the only path to a specific feature.

**GUIDELINE:** Be cautious of how you implement animating carousels, and never use them as the only path to a feature or page.

> See guideline video clips from the test sessions
Venturing Into M-Commerce

Thank you for reading the report. We hope that, aside from the practical application of these 147 guidelines, you have also been offered a glimpse of just how complex designing an m-commerce site really can be. It is not a matter of simply scaling the design and adding a few media queries, it is an entirely new platform which is a balancing act particularly difficult to get right in a commerce context due to complex tasks such as product finding, product comparison, and multi-step processes such as the checkout. In many ways designing and optimizing an m-commerce site is much more difficult and often requires more "intelligent" site features than traditional desktop e-commerce sites.

In terms of implementation there are two primary approaches: a standalone m-commerce site or a single responsive e-commerce site for both mobile and desktop. If you can incorporate most of the advice presented in this report with a responsive design then that can be truly great, not just maintenance-wise, but also UX-wise. What must be made clear, however, is that merely scaling down your existing full website to different devices will not be enough to offer a great mobile shopping experience. And if messing with the full e-commerce site’s existing structure and content is not an option, then you might be forced to create a standalone mobile website in order to provide a decent mobile experience following these 147 guidelines – although maintaining content and code on the two different platforms in parallel may prove expensive. In general, our take is that the more complex the m-commerce site’s features are, the more likely the mobile experience should be significantly different from the full-site experience. Thus, the recommendation is often to create a standalone m-commerce site; the exact opposite of our general advice when building a mobile blog, company website, etc.

Regardless of technological approach, putting in the extra effort to make your m-commerce site great may require significant investment but the opportunities are equally high. At this point in time, m-commerce is a window of opportunity for setting off from competitors in high gear, and a chance to position yourself well in into the future of this rapidly growing $86 billion market (2016 expected m-commerce revenue, eMarketer).

To help ease the implementation and provide a complete guideline overview we have gathered all of them in a checklist on the following pages, along with five additional industry specific checklists.

Lastly, we are as keen on improving as you are, so any feedback and questions is much appreciated: feedback@baymard.com