Chapter 2

Mobile Consumer Behavior

Myths and Reality

Abstract

Although it is a common assumption that mobile users are distracted and want to perform only simple tasks on the go, this is more myth than reality. Chapter 2 of Library Technology Reports *(vol. 49, no. 6) "The Library Mobile Experience: Practices and User Expectations" discusses how mobile devices are frequently used at home and often for a longer period of time than just a few minutes in a hurry. More and more mobile users expect to do just about everything on mobile, and there is already a significant and growing number of cell-mostly Internet users. Mobile device users also overwhelmingly prefer native apps to web apps in their media consumption.*

If people spend nearly 40 percent of their Internet time on mobile devices, what exactly do they do? According to a recent white paper by comScore (see figure 2.1), the top activities of smartphone users are text messaging (90.5 percent), taking photos (83.4 percent), using e-mail (77.8 percent), checking the weather (67.1 percent), accessing social networking sites (65.3 percent), searching (58.7 percent), playing games (52.9 percent), using maps (51.2 percent), accessing news (49.2 percent), and listening to music (48 percent). The top activities of tablet users, on the other hand, are searching (73.9 percent), using e-mail (73.6 percent), accessing social networking sites (67.5 percent), playing games (66.3 percent), checking the weather (64.6 percent), accessing news (58.8 percent), accessing photo- and video-sharing sites (51.5 percent), reading books (51.2 percent), watching video (50.9 percent), and accessing retail sites (49.8 percent).[1]

In the early times of the smartphone, it was commonly assumed that the device was used mostly to satisfy people's simple information needs on the go. Text messaging, taking a photo, checking e-mails, and looking up the weather forecast all fall under this category. But another common use case of the smartphone is distraction and killing time. Accessing social media, playing games, and listening to music can all be classified under this category as things that people do when they are bored or during their downtime.

The comScore white paper mentioned above reports that smartphone use and tablet use overlap in activities such as searching, using e-mail, accessing social networking sites, playing games, checking the weather, and accessing news.[2] But taking photos and checking maps are not among the top activities of tablet users (see figure 2.2). Even though many tablets come with a camera and offer a map feature, those activities are better performed with smartphones that users carry everywhere they go. On the other hand, tablet users appear to be taking advantage of the bigger screen to consume content and media such as books and videos. Shopping or browsing retail sites is also one of the top activities on the tablet. The comScore white paper observed that tablet users were significantly more likely than smartphone owners to engage in various shopping behaviors, such as researching product features and comparing prices, and also twice as likely to purchase items on their devices than smartphone owners.[3]

At first glance, this result may appear to indicate that the smartphone is used mostly when its owners are on the go for quick information lookup while the tablet is used for more in-depth or leisurely browsing

TOP ACTIVITIES FOR SMARTPHONE AUDIENCE		TOP ACTIVITIES FOR TABLET AUDIENCE	
Sent text message to another phone	90.5%	Accessed search	73.9%
Took photos	83.4%	Used email	73.6%
Used email	77.8%	Accessed social networking	67.5%
Accessed weather	67.1%	Played games	66.3%
Accessed social networking	65.3%	Accessed weather	64.6%
Accessed search	58.7%	Accessed news	58.8%
Played games	52.9%	Accessed photo/video sharing site	51.5%
Accessed maps	51.2%	Read books	51.2%
Accessed news	49.2%	Watched video	50.9%
Listened to music on mobile phone	48.0%	Accessed retail	49.8%

Figure 2.1
What we do when we are on the smartphone and the tablet [Source: *2013 Mobile Future in Focus*, white paper (Reston, VA: comScore, February 2013), 33, www.comscore.com/Insights/Presentations_and_Whitepapers/2013/2013_Mobile_Future_in_Focus]

when tablet users are stationary. This is true only up to a certain point, however. The relative strengths and weaknesses of the smartphone and the tablet will certainly make those who own both pick up the device that is better suited to an activity of their choice. If you have both a smartphone and a tablet and want to do some shopping, you are more likely to pick up your tablet than your smartphone.

But many people own only a smartphone and not a tablet. If the smartphone is the only mobile device they have and a need arises for a product search or media consumption, then even if the smartphone is not the device best suited for such activities, people will at least make an attempt to use their smartphones for these purposes. We all have the experience of struggling with an unwieldy website on our smartphone to get something done, knowing that it is not the best device to use for the task. As cellular network speed gets faster and the processing power of the smartphone gets greater, this behavior will become only more prevalent.

Are Mobile Users in a Rush?

We tend to think that the smartphone is mostly used in a hurry while people are on the move. But this may not be as accurate as we believe. In 2010, Compete.com conducted a survey about where people use their mobile devices and how much time people spend on them (see figure 2.3). According to the survey, 84 percent of people used their smartphones at home, 80 percent during their downtime, 74 percent while waiting in line or for appointments, 64 percent at work, 62 percent while watching TV, and 47 percent during their commute.[4]

Figure 2.2
People's activities on the tablet [Source: "comScore TabLens: Today's U.S. Tablet Owner Revealed," comScore, accessed March 21, 2013, www.comscore.com/Insights/Press_Releases/2012/8/comScore_TabLens-Today_s_US_Tablet_Owner_Revealed]

Even more interesting is that while the majority of users used their smartphones for less than an hour at these locations, as many as 26 percent of those who used their smartphones at home spent from one to three hours poring over the small screen, and 2 percent of people more than three hours.[5] Smartphone use for one to three hours a day was actually not uncommon among smartphone owners, 24 percent of whom used their smartphones during downtime, 16 percent while at work or watching TV, 13 percent while shopping, 12 percent while waiting in line or for appointments, and 9 percent during their commute to work, all spending from one to three hours a day on the smartphone. A small percentage of smartphone owners even used their smartphones over three or even five hours a day.[6] What the results of this survey signify is that people are turning to their smartphones more to utilize their downtime than to meet some urgent need and that users are not always in a huge rush when they are using their smartphones.

Interviews and a survey conducted by Yahoo! and the Nielsen Company in June 2010 also showed a similar phenomenon. According to the interview and survey results, 93 percent of mobile users accessed the

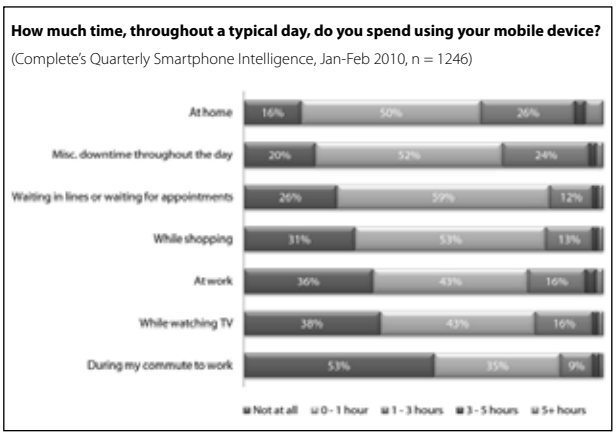

Figure 2.3
Results of a survey by Compete.com about how much time, throughout a typical day, people spend using their mobile devices [Source: Danielle Bulger, "Smartphone Owners: A Ready and Willing Audience," *Compete Pulse* blog, March 12, 2010, http://blog.compete.com/2010/03/12/smartphone-owners-a-ready-and-willing-audience]

Internet on their mobile devices away from home but as many as 89 percent also used their mobile devices to access the Internet inside their home.[7]

In his book *Tapworthy*, mobile designer and developer Josh Clark argued that the motivations of mobile device users fall roughly into three categories: micro-tasking, entertaining themselves when bored, and locating information about the local environment where they find themselves.[8] Similarly, another mobile designer and developer, Luke Wroblewski, classified mobile usage into the following four interaction types in his book, *Mobile First*:

- Lookup/Find (urgent info, local): I need an answer to something now—frequently related to my current location in the world.
- Explore/Play (bored, local): I have some time to kill and just want a few idle time distractions.
- Check In/Status (repeat/micro-tasking): Something important to me keeps changing or updating and I want to stay on top of it.
- Edit/Create (urgent change/micro-tasking): I need to get something done now that can't wait.[9]

The smartphone, due to its small screen size, is a rather cumbersome tool for navigating a non–mobile-optimized website. Smartphone users also tend to pay only partial attention on the smartphone. Nevertheless, the tasks that they want to get done with their smartphone are not necessarily simple. Depending on the type of information sought, looking up or finding the right information can be complicated. The Edit/Create type of micro-tasking can require a considerable amount of time and concentrated effort. The tasks that people try to perform on their mobile devices are not necessarily "micro" in the sense of being easy or simple to complete. They are "micro" in the sense that they are the elements of a larger project or a bigger workflow.

Josh Clark aptly pointed out how the assumption that mobile users are in a rush is a myth. In .Net Magazine, he wrote:

> There's a persistent myth that mobile users are always distracted, on the go, "info snacking" in sessions of 10 seconds. That's certainly part of the mobile experience, but not the whole story.
>
> Mobile isn't just "mobile". It's also the couch, the kitchen, the three-hour layover, all places where we have time and attention to spare. 42 percent of mobile users say they use it for entertainment when they're bored. Those aren't 10-second sessions. That means we shouldn't design only for stunted sessions or limited use cases.[10]

People are willing to and actually do turn to their mobile devices for a longer time than just a few minutes and for tasks that can be complicated. They do not use their mobile devices only when they are on the move. Mobile devices are used frequently at home. That mobile users are in a rush is a myth.

Don't Dumb Things Down on Mobile

In the early days of the mobile device, the mantra for the mobile Web was "keep it simple." This applied not only to the visual design of a mobile website but also to its content. It was strongly emphasized that a mobile website should focus on providing the most basic and mobile-appropriate content. This claim was based upon the assumption that mobile device users will be distracted and in a rush and will turn to their mobile devices for simple tasks only. Under this assumption, a mobile website is a companion to a full desktop site with basic information such as address, directions, contact information, hours of operation, and so on. For anything beyond such minimal and mobile-appropriate information, smartphone users were expected to visit the full website on a desktop computer.

However, the mobile device is becoming more and more capable, and the cellular network is also becoming faster. The soon-to-be released Samsung Galaxy 4 smartphone comes with 2 GB RAM and up to 64 GB storage. My current computer at work has about the same amount of RAM and hard drive space. The recently introduced 4G network also offers faster speed for the mobile data network. According to the test run by Gizmodo in September 2012, the iPhone 5 on the Verizon 4G LTE network recorded 16 Mbps

for download and 18.08 Mbps for upload.[11] For comparison, I tested the speed on my home computer connected to the Internet by a wire through a cable company. It was 25.12 Mbps for download and 3.56 Mbps for upload. Browser improvements are also boosting mobile Web performance. According to Google's head performance engineer, Steve Souders, web pages measured by Google Analytics load 30 percent faster for mobile browsers in 2013 than they did a year ago, while the pages load only 3.5 percent faster on the desktop browsers.[12] This means that the gap between the mobile Web and the desktop Web is getting smaller and smaller. People are starting to expect to access the same amount of information and to be able to perform pretty much the same types of tasks on their mobile devices as on their desktop computers and laptops.

Also, a significant number of people are mobile-only Internet users. A mobile research company, On Device Research, conducted a survey of over 15,000 people in twelve countries in 2010. The results showed that "in the UK and US, a surprising 20% of Internet users are already Mobile Only" and "in African and Asian markets, the number is greater than 50%."[13] An American market research firm, the International Data Corporation, also predicted that in the United States, the number of consumers accessing the Internet through mobile devices is expected to surpass the number doing so on PCs for the first time in 2015.[14] The number of US consumers using PCs to go online is expected to shrink from 240 million in 2012 to 225 million in 2016; in the same period, the number of mobile users is expected to increase from 174 million to 265 million.[15]

With the introduction of the tablet, people's expectations for the mobile Web will only get higher. The boundary between mobile devices and computers is already beginning to blur in people's minds. Reflecting this change, the new mantra for the mobile Web is "Don't dumb things down." In his book *Mobile First*, Wroblewski writes:

> There are, of course, differences based on mobile and desktop usage patterns; but the core value of a web service remains the same across both formats and beyond. In fact, you'll quickly find your customers will expect to do just about everything (within reason) on mobile. Especially those who primarily (or only) use their mobiles to get online. So don't dumb things down on mobile—focus on what really matters most anywhere people can access your website.[16]

The mobile Web is no longer an inferior or a complementary means of accessing the Web. It is a competitor to the desktop Web and will soon be accessed by more people than the desktop Web. Considering this situation, offering only a basic set of information and features on the mobile Web is no longer a viable strategy.

One Web or Walled Gardens: Web App versus Native App

Since day one of the touchscreen smartphone, whether a website should have a mobile-optimized version (aka a web app or an in-browser app) or a native app specific to a device platform has been a hot issue. There are advantages and disadvantages to developing either a mobile-optimized website or a native app for different platforms.

A mobile-optimized website is faster and easier to develop because it requires the same set of development skills as does creating a desktop website. For this reason, it is also less costly. Since a web app is just another website on the World Wide Web, it is also easily discovered and indexed by a search engine, and its content is fully exposed to the open Web. Web apps also work in all devices regardless of their platform as long as they have a capable web browser, and there is no need to install them or to run updates. All you need to do is to simply bookmark the link to it. But mobile websites have shortcomings as well. Their visual layout can be optimized for the small screen of a mobile device, but they have difficulty in accessing the device's hardware, such as the camera, the microphone, the GPS, or the device's file system. For this reason, mobile websites can offer only limited features compared to native apps, which can easily access the device hardware and its file system. Web apps also take a longer time to perform the same task than native apps because native apps are locally installed on the device, whereas web apps need to download all the elements needed for the task through the Internet connection.

Access to the device hardware and file system is the greatest advantage of native apps. Native apps are also preferred by businesses because there is an established system for collecting payments from the app users. On the other hand, native apps have much higher development costs as they have to be developed specifically for each different device and platform, such as iOS or Windows 7. Native apps also require specific devices for a trial, and users have to go through separate installation and continual updates. Most importantly, native apps are "walled gardens" because users can only find and install them through a proprietary app store. A search engine does not index the content inside a native app unless the app includes mobile-optimized web pages.

The World Wide Web Consortium (W3C) recommended the One Web strategy for mobile. In its document "Mobile Web Best Practices," W3C defines the One Web strategy as making, as far as is reasonable, the same information and services available to users

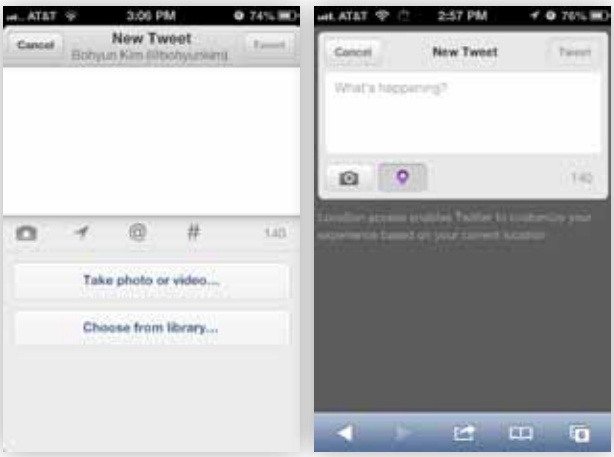

Figure 2.4
Twitter native app (left) and Twitter website on a mobile device (right)

Figure 2.5
Facebook mobile website supporting the photo upload (left) and the locating tagging feature (right)

irrespective of the device they are using. The recommendation says:

> It is likely that application designers and service providers will wish to provide the best possible experience in the context in which their service has the most appeal. However, while services may be most appropriately experienced in one context or another, it is considered best practice to provide as reasonable experience as is possible given device limitations and not to exclude access from any particular class of device, except where this is necessary because of device limitations.[17]

Furthermore, in terms of accessing device hardware and file systems, mobile web browsers are making progress in a way that will eventually make web apps comparable to native apps. Device/media APIs, file system APIs, and audio APIs are being either drafted or planned.[18] Some of the features are already available in mobile web browsers. For example, Twitter (see figure 2.4) and Facebook (see figure 2.5) now allow users to upload photos and tag their locations inside a mobile web browser if their mobile device runs either Apple's iOS 6 or the Android 4.x operating system.[19] Once mobile web browsers become more capable and mobile network speed and mobile device battery life improve, web apps will be able to compete almost equally with native apps.

Consumer Preference for Native Apps

But for now, consumers appear to overwhelmingly prefer native apps to web apps. According to the comScore white paper mentioned earlier, the majority of media consumption on a mobile device is driven by native apps rather than by in-browser apps, and "4 out of 5 mobile media minutes occur via [native] apps, while mobile web usage drives the remainder."[20] One of the main reasons that consumers prefer a native app to an in-browser app may be that native apps offer better usability. The polished look of a native app is also a strong draw to consumers.

In their book *Mobile Usability*, Jakob Nielson and Raluca Budiu state that their usability testing results clearly show that mobile device users perform better with native apps than with mobile-optimized sites. In their tests, the users' success rate with native apps was 74 percent, while the success rate with mobile-optimized websites was 64 percent.[21] Nielson and Budiu attribute the success of native apps to two factors: (a) native apps can target the specific limitations and abilities of each device much better than mobile-optimized sites, and (b) native apps tend to be simpler than mobile-optimized sites and often can be boiled down to one to two easily accessible functionalities.[22] This means that at least in the present, native apps are doing a better job at providing a user-friendly interface that is simple enough for users to quickly grasp while still taking advantage of the device's specific hardware functions.

Librarians directly experience this phenomenon of library patrons' preference of native apps to mobile websites. Many patrons do not understand what *web app* means. If a librarian explains that the library has a web app, most patrons try to look it up in the app store for their devices because they tend to equate apps with what is found in and can be installed from the app store.

I have been introducing my library's web app since it was created in 2010. Library patrons always think that it is a native app and search for it in the app store. When it does not show up there, they usually do not

consider the library web app to be an app. But once they are given the instruction to open up a web browser on their mobile device, navigate to the library's mobile website, and then select "Save to Home Screen" to save an icon, they realize that it pretty much works the same way as a native app. Unfortunately, few library patrons follow this process and set up the library web app icon on their mobile device's home screen.

According to the recent survey and interview results from the Pew Internet and American Life Project, 63 percent of Americans ages 16 and older would use apps-based access to library materials and programs (35 percent "very likely" and 28 percent "somewhat likely"), and 62 percent would use GPS-navigation apps that help them locate material inside library buildings (34 percent "very likely" and 28 percent "somewhat likely").[23] Assuming that those who were surveyed and interviewed understood *app* to mean a native app, the interest they showed in native apps for libraries is quite strong.

The bottom line is that library patrons do not care about whether the library offers a mobile website or a native app as long as it works like a native app and provides the features they find convenient and useful. At least at the present, people's strong preference for the native app over the web app is a factor to which libraries need to give serious consideration when they design or update their mobile websites. In the next chapter, we will discuss how well libraries have been responding to the recent developments in the mobile Web and what kind of mobile experience library patrons want.

Notes

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