Pharmacy Automation and Technology

Quick Survey of Smartphone Features and Functions

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What do you do when you leave the house without your smartphone? Do you sleep with it beside your bed? For us, these devices are as much a part of our lives as the belts around our waists. But, how long has it been since you surveyed the market? We provide a topical update on the current features and functions of these immensely important devices.

Over the course of 2013 and the first half of 2014, we have written several times on topics related to mobile devices, including multidisciplinary care team apps, mHealth, preventable readmissions, prescribable apps, and others. An underlying theme of these articles is the unique opportunities that mobile devices provide because of their portability and connectivity. Tablets and smartphones share many similarities and apps, but we generally focus on smartphones, because they are more portable and have been more widely adopted than tablets. We realize that it's been several years since we have written about smartphone advancements. The rate of innovation in this market space continues to increase, so we felt it was important to check in on this topic for the latest news.

There are several ways to approach this topic. We could walk you through the process we use for making the purchase decision on a new smartphone, beginning with the choice of operating system (OS). Or, we could take the current version of the reigning smartphone champion – the iPhone – and describe its most advanced features. Another approach would be to take the most recent phone to market from a major player in this space and describe its features. This would be the HTC One (M8). Ultimately, we decided to look at the smartphone space as a whole and talk about features and developments we believe are important, regardless of the manufacturer or software developer.

We will begin with a discussion of hardware and OS. Apple continues to be the top smartphone manufacturer in terms of US sales, with Samsung coming in second. Samsung smartphones run the Android

OS. Android leads Apple in US and global sales in terms of OS platform, because many manufacturers use the Android OS but only the iPhone uses Apple's iOS. Apple continues to be the single largest manufacturer of smartphones purchased in the United States, while Samsung and other manufacturers who run the Android OS are gaining ground (and have passed Apple internationally). The Windows phone OS is currently a minor player in the space, but it is truly engaging.

Beyond the OS, smartphone manufacturers are in a race in terms of who can pack the most features into a phone. The screen is a key piece of manufacturers' strategy to distinguish their products from others. A fundamental decision about the optimal screen size dictates the ultimate decision of the screen resolution. The sweet spot for screen size is generally between 4 in. (for the iPhone) and 5 in. for many of the Android-based devices. Devices that approach the 6-in. screen size are commonly known as "phablets," because their size fits somewhere between smartphones and tablets. Some of these devices include a stylus. You might imagine that a 6-in. phablet doesn't fit well in a shirt pocket and takes up quite a bit of space in smaller purses, but many users find it to be the perfect blend of phone and media device. The larger phones generally have higher resolution screens (up to 1080p like an HD television), providing a sharper image. This difference is noticeable and impacts the viewing experience, especially with videos or other high-quality visuals that you may share with patients or use for your own education.

Other core features and functions are often dictated by the size of the phone, with larger phones usu-

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ally having more capability. A large, beautiful screen needs a processor that can support its capabilities. The norm these days are phones with dual and quad core processors. It's difficult to compare processors across phones and especially across OS platforms, but, in general, newer processors will provide faster multitasking and enhanced video capabilities, regardless of platform. The importance and function of RAM hasn't changed: more is better, especially when it comes to loading and using applications. Higher end devices run 2 to 3GB. Similarly, the rule for storage memory is also more is better. Whereas 16GB is usually the entry point and 32GB is a nice upgrade, 64GB is becoming more common. We like the option of expanding memory using a microSD card, which can be found on Android and Windows phones. If you take pictures and record videos with your smartphone (certainly not while in the hospital), higher end phones provide depth sensors and dual flash capability to make your pictures and videos look less like they were taken with a phone. Front and rear-facing cameras are also becoming the norm; they can support video and face-to-face calls.

The professional life of a hospital pharmacist is often characterized by long days, so battery life is critical. Battery capacity is measured in milliamp hours (mAh); a larger number is better. Because many things impact battery life, we prefer to use CNet.com and other review services to compare battery life. They subject phones to standardized testing scenarios for equal comparisons. Some users carry a supplemental battery source to help their device make it through very active days.

Biometrics has also made its way into smartphones. Several devices allow you to unlock your phone and authorize app purchases using your fingerprint. Different devices implement this function in different manners (ie, resting your finger vs sliding it). Other distinguishing features include front-facing speakers. We have long wondered why speakers were in the back of phones. Now, manufacturers are starting to put them in the front, where they belong. This can be especially useful when you are sharing a video with a patient or colleague. You have probably seen the commercial where a phone screen is scrolled by the user's eyes. We haven't used this feature before, but we like that it can free up your hands. Similarly, several manufacturers have created shortcuts to control your phone's functions using predetermined interactions with the screen. For example, you can launch certain apps by swiping your finger in specific directions. We had these features on our old Palm Pre Plus, so we are glad to see them making their way back. We like any help with efficiency that we can get.

We have barely touched the surface of what the current smartphone market has to offer. The dynamic nature of this space leads to constant innovation and one "gee whiz" feature after the next. We encourage you to Google the Consumer Electronics Show 2014 to find out more about the latest smartphone innovations. We also strongly encourage you to visit your local wireless provider to hold the phones in your hand. Nothing compares to holding the device to get an idea of how much bigger a phablet is, for example. We also welcome your comments: Brent at foxbren@auburn.edu and Bill at felkebg@auburn.edu. ■

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