When Does it Become Appropriate for a Business to Develop its Own App

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**Abstract: An in depth discussion of the advantages and disadvantages of an app or mobile optimized website to businesses. These advantages and disadvantages are then weighed up and a recommendation is made for a number of real world businesses on whether an app is the best investment for them.**

# Introduction

In the current climate, a number of businesses are developing apps for simplified access to their services on a mobile or tablet. However, there are a lot of different reasons a business should or shouldn’t develop an app and those reasons are different for almost every business. Building an app can be expensive and can complicate the businesses workflow a lot more so a dedicated app should only be developed if it brings a number of benefits to customers or the business employees.

The alternative for a business that wants to gain customers using mobile devices could be to optimize the website that they most likely already have to be usable on a mobile device. There are a number of advantages to this method that are also discussed but it can also bring a number of disadvantages with it.

# Mobile Application

## Explanation

A mobile app is a piece of software that is designed for a mobile phone and can be accessed directly through a mobile device (OnGuard Online, 2013). Apps are commonly developed natively for a mobile platform which can bring some huge benefits but can add complication and it’s difficult to capture the entire mobile market without some considerable investment.

## Advantages

The advantages of a mobile app can be rather subjective and can vary greatly depending on the nature of the work carried out by the business, the size of the business and more. In a study carried out by Dynatrace, it was found that 85% of consumers prefer mobile apps over mobile websites (Dynatrace, 2013).

A mobile app can bring a number of benefits to the user. It is usually considered that the biggest benefit to the user of the app is the convenience of the app and the access time to the content. In a survey conducted by Dynatrace, 55% of participants agreed that one of the main reasons for their preference was due to convenience (Dynatrace, 2013). Unlike a website, a mobile app is installed on the device and depending on the nature of the app, all the data required by the app can potentially be stored on the device meaning that access to the content is not restricted to an internet connection and regular access to the same data will not affect any data limits that the user may have.

Speed and access times are crucial to a good user experience when accessing a business’s services. Tests conducted by Google relating to access times resulted in a 20% decrease in traffic and ad revenue when access time was increased from 0.4 seconds to 0.9 seconds (Fluid UI, 2016). Tests from Yahoo, Microsoft and Mozilla had similar results with the number of downloads of Mozilla Firefox increasing by 60 million per year when reducing page access time by 2.2 seconds (Fluid UI, 2016). This is where an app can have a huge advantage. The app is not completely restricted by internet access, much of the data can be stored offline on the device where access time is negligible. As a result, this can result in increased traffic and revenue, as proven by the research above conducted by a number of major businesses. This reduced bandwidth means that you can provide the user with a high quality graphical interface that would not be feasible when all of the data is being retrieved over a network.

Depending on the services being provided by the business, another advantage can be advanced features that take advantage of some of the hardware on the device. A native application can take advantage of hardware such as the camera, microphone, GPU acceleration for games and more (Stangarone, 2012) which are generally inaccessible from a website in the browser.

## Disadvantages

The majority of the disadvantages of a mobile application stem from the development and the costs that it can bring. Development of the app can be expensive compared to the more reasonable cost of a mobile optimized website (Boudreaux, 2013). Development is a much longer process for an application and maintenance can be a more difficult and time consuming process (Stangarone, 2012).

The other issue is the portability of the app. The mobile operating systems require apps to be developed specifically for their platform. To target the majority of the UK market share, the app must be developed for at least two platforms, Android and iOS which collectively run on 91.2% of smartphones in the UK (Kantar, 2016). To be accessible for all smart phone users, an app would need to be developed for Windows Phone and possible others. Each platform comes with its own costs and setbacks.

Android is debatably the most beneficial to develop for. Programming for the platform is primarily through the popular language Java. Tools to aid development such as Eclipse and Android Studio are freely available to anyone and developers can access the largest app store on Android, the Play Store, with a single $25 registration fee (Android Developer, 2016). However maintenance on the platform is difficult and bugs can be common with users running a variety of different OS versions on a huge number of different hardware combinations (Android Developer, 2016).

iOS on the other hand offers a much less fragmented platform with almost 80% of users running the latest version of the operating system (Apple Developer, 2016). This benefit does however come with its downfalls. The Apple Developer Program costs $99 per year (Apple Developer Program, 2016) which allows access to the tools required for development on the platform. The programming language most commonly used is Objective-C which is not used anywhere outside of Apple platforms. This means the programming language is not commonly used and few developers have knowledge of the language.

With these costs involved, developing an app can be a very expensive process and also expensive to maintain app experience and maintain access to the respective OS app stores. For this reason, it may not make sense for a small business to develop an app. It may require a team of developers to initially develop the app for multiple platforms and then programmers still required for maintenance as well as membership fees and costs of development tools.

# Mobile Website

## Advantages

The place where the mobile web shines the most is where mobile applications are at their weakest. Websites are accessible from any connected device and is not affected by compatibility in most cases. Even if a website was not well designed, it would still be viewable from a mobile phone but the experience for the user would not be as enjoyable and content may not fit comfortably on the small screen.

Development of a website can be cheap, simple and with the right tools can be done by someone with no previous programming skills thanks to tools like WordPress which make responsive web design simple and flexible (WordPress, 2016) and WordPress websites scale well from mobile devices to large monitors. In fig. 1 you can see an example of a website built using WordPress which provides a pleasant user experience at any resolution on any device.

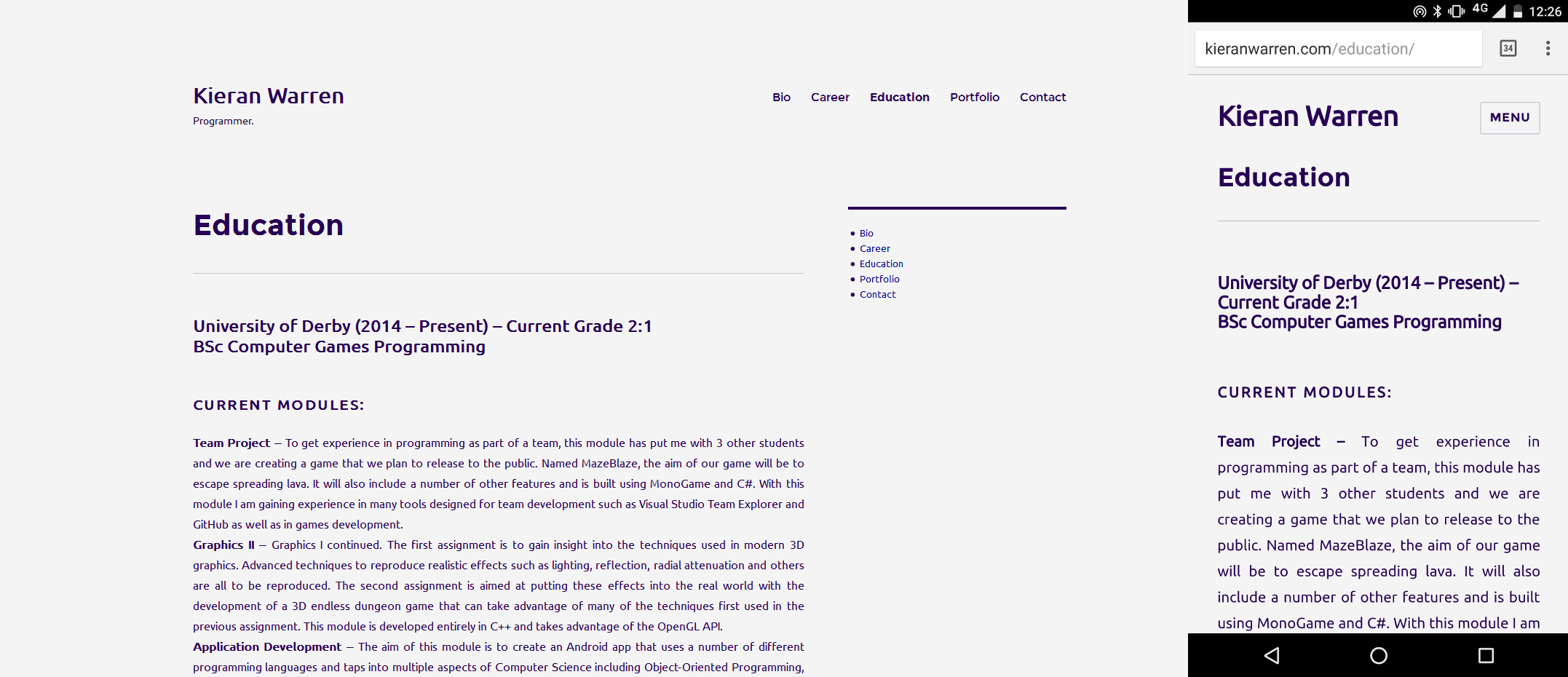


Figure 1Left: Desktop Version of WordPress website. Right: Mobile Version (Kieran Warren, 2016).

With a website it can be accessed from any smartphone device with a browser and an internet connection and there is no big issue of compatibility or any of the problems that often arise with a dedicated app stated previously such as crashes and poor performance.

## Disadvantages

While offering an experience that is more than useable on most devices with just a little bit of extra work, the experience is very rarely anywhere near the experience which can be had on even the simplest of mobile apps. The website is designed primarily for compatibility over quality so the user experience is nowhere near as good.

The lack of visibility can also result in a loss in sales or views by users. With an app, the icon is always visible somewhere on the device when it is installed. A website on the other hand does not necessarily have this repeated visibility that can constantly remind users of a product or service.

# Something In between?

There are two other options that could be considered for a business, one of which would be a good solution for smaller businesses and the other would be appropriate for businesses with a very large presence on the internet.

One option would be to go for both. Have an app available for all the major platforms and provide a good mobile website for users that are not on a major platform or prefer using the website version. This provides the most flexibility and having both can cancel out many of the disadvantages of each individual route. It does introduce one major disadvantage and that is the cost. The cost of developing both can be expensive and so this route should generally only be considered by larger companies that require a strong presence on the internet. For small businesses, the potential returns are unlikely to warrant the costs of this route.

The other possible option which may in fact be the best value for money is a hybrid app. Hybrid apps are built in a similar manner to websites using similar technologies such as HTML, CSS and JavaScript (Bristowe, 2015). A hybrid app is essentially a wrapper for a website (Appel, 2014) that can add some extra functionality and better user experience. While not the perfect solution, it enhances a business’s presence on mobile with relatively low cost. It would be cheap to produce a hybrid app with a pre-existing website although would still include some fees for development tools and the ability to publish the hybrid app through the same methods as described with a native application.

# Case Studies

To put the findings found above into action, a few example businesses have been included with explanation of the way the businesses work, how large they are and a recommendation on which option would be the best for that business.

## Steam Store

The Steam store provides both a mobile application and a mobile optimized website. This is the best possible move for Steam with such a large customer base.

Both versions offer similar functionality with the web version having some setbacks. The web version, while providing almost identical features, does some things in a different manner that are not as user friendly. The app offers features like gestures to access the side menu which aren’t really possible with current web tools and web based programming languages.

Figure 2 Left: Steam Store App. Right: Steam Store Mobile Website (Steam, 2016)

## South Essex Sand & Gravel

This is a local business that serves only a small area. The business currently has a website that performs reasonably well within a mobile web browser and there is no app available. The company does not offer any products that are internet driven, like Steam offers with digital downloads. Therefore, it is reasonable for this business to consider an app a poor investment as the additional returns are likely to be very small and unlikely to cover the costs of development and publication fees. The current solution is ideal for a small business such as this one and even a hybrid application would be of little benefit to the business due to the way it operates and its services.

## Evernote

Despite being a large internet based service, Evernote does not use a native app, it instead uses a hybrid app as discussed above and is of very high quality. The app is so well produced that it is almost impossible to notice that it is one. It can be easily mistaken for a native app (VenturePact, 2015) and the use of a hybrid app means that data can be synchronised across multiple devices (VenturePact, 2015) using different operating systems including desktop.

The current solution seems to work perfectly well, despite the data provided suggesting that a native app or a combination of both website and app would have worked best. This proves that there is no one size fits all solution and it varies for all businesses.

# Conclusion

There is no doubt that mobile presence in some form is crucial to almost any business in the UK. It is no longer enough for a business to have just a desktop optimized website. Fortunately there are a number of tools available that make it possible at almost no cost. At the bare minimum, businesses should be using responsive web design for their website to provide a reasonable experience at all levels.

The next step up from that would be a hybrid app, which can run the website within a wrapper and provide a few additional features. This can be a big help if the business wants to expand and gain visibility through the various app stores and can be a relatively cheap investment.

The final move would be to hire a development team to produce native apps for the major platforms and possibly the minor platforms as well. This would generally only be common for larger businesses but sometimes this move is unnecessary even for large businesses as was the case for Evernote.

It’s difficult to make a suggestion solely based on the size of the business or even the kind of products or services they offer. If the business is offering predominantly web based services and products then it would be strongly encouraged to produce an app regardless of size. However, for any other sector it would need to be judged on a case by case basis and a number of factors can affect which route would be best for the business.

Taking note of the Evernote hybrid app and others including very popular apps such as Twitter and Uber (VenturePact, 2015) it is not unreasonable to suggest that the hybrid app solution may be the best solution for more businesses in the near future. Mobile device performance is increasing greatly every year and high end smartphones have reached the stage where performance is no longer a big issue and mobile phones are more than capable of running slightly less optimized frameworks such as HTML and JavaScript without having a decrease in performance that is noticeable to the user.

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