



A Comparative Study of Hybrid Applications in E-Commerce: Better than Web /Native Applications

KEYWORDS

Mobile application, mobile computing, apps, Smartphone's.

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ABSTRACT Mobile apps are designed to provide all the facilities in hand. These facilities may vary from platform to platform, due to its performance issues. So, it becomes tedious tasks for the mobile app developers to develop different apps for different platforms. Today the need of market is to have platform independent apps for Smartphone's. Basically, these apps are of web apps type or native apps type. Native apps are platform dependent thus use features of phone. While web apps are browser dependent. Therefore, the new trend shifts to, and provides the cross platform apps, after building the single code. Also called hybrid apps, which can easily be develop by HTML5 based frameworks. This is the approach adopted to develop both web and native apps using single code for different platforms. In this paper, both apps are compared with hybrid apps to solve the debate on developed of mobile applications for future need of marketing this product.

I. Introduction

Mobile apps are the software which runs on mobile devices like, tablets, smartphones etc. There are number of devices available in market, having different platforms like, android, iphone, blackberry, windows etc. They all use the apps for their device. Some are freely available whereas some are paid. These apps are provided through application distribution platform. For instance, Google play, Apple app store, BlackBerry World etc.

Each platform needs different approach to develop their apps with different SDK or tools. Applications also varies in the mode or type it develops. The native apps vary from operating system to operating system. It requires learning different languages objective like C for iOS, Java for Android, C++ or C# for windows. Web apps are browser dependent and not as quick as native. It is just mobile responsive websites which are not secure.

As per the concept of write once, run anywhere, can't be applied when building native applications, the best alternative option for companies is the cross-platform mobile development. Cross-platform development simplifies the maintenance and deployment processes, and saves development time and effort [1].

II. Literature review

A. CONCEPTUAL REVIEW

There are two problems with this line of thinking. First, building a different app for different platform is very expensive, if written in each native language [2].

Application developers quickly developed apps for the iPhone platform following Apple's creation of the AppStore. As mentioned above, other providers of mobile platforms and devices have done the same (or are in the process of doing so). An important issue for the application developer is to decide which platform(s) to support in the highly fragmented world of mobile development. Today, there are at least five important platforms (iPhone, Android, BlackBerry, Windows Phone, Symbian).

From the perspective of the application developer, it's quite expensive to support multiple platforms, especially when there are multiple versions and variants for each of

them [3].

Native apps are built with a specific family of devices in mind. Presently, we build a native app for iOS devices (iPhone, iPad and iPod Touch), for Android devices (a plethora of smartphone and tablet devices made by various manufacturers, which run on an operating system developed and maintained by Google), for Windows-compatible devices (Microsoft's latest Windows operating system is compatible with some third-party smartphones and tablets, as well as Microsoft's own newly released Surface tablets), for Blackberry, or for one of a few smaller players[4].

B. SYSTEMATIC REVIEW

Mobile applications are developed using frameworks, tools. Most of the developer come with new ideas and use these tools to develop rapid application. The competition is huge across the market, to get more profit along with customer satisfaction. Same as those mobile users are trying new platforms and demand same apps for all the platforms.

Many researchers did comparative studies in their papers. Following are their objectives and outcome with respect to some criteria:

Comparing cross-platform development approaches for mobile applications

Objective	It compared the development approaches used to develop cross- platform mobile apps.
Method	This paper compared the development frameworks with its features. It has shown the way to develop cross-platform apps using web apps for different platforms.
Comparison criteria	Evaluation table made for the feature comparison of main frameworks used currently like Phonegap, Titanium etc.
Result	As per the requirement and tight budget with small developing teams, cross platform apps are suggested.
Suggestive app type/ Tool	They preferred Phonegap, as it easily made the native app from web app.

Software Engineering Issues for Mobile Application Development

Objective	focuses on the issues ,that come in the development of Mobile apps. The tools, techniques, design used in development process .
Method	Compared the basic designs used in different platforms according to requirements and suggests the best practices for mobile app development.
Comparison Criteria	On the basis of functional and non functional requirements. Tools, procedure, architecture used in development.
Result	It raised some more issues related to mobile application development to be answered.
Suggestive app type/ Tool	Some standpoints in this paper help developers.

A Mobile Application Development: Web vs. Native

Objective	It is to show the importance of web and native app with comparison. It also introduces the phonegap for developers.
Method	This paper discusses about the major points like, technologies, platforms, browser, hardware etc. It introduced some new technologies and their use in mobile application development. There are frameworks present in current trends to do something big.
Comparison Criteria	Languages, platform issues, context used in applications according to size and the performance of apps with latest technologies.
Result	Provide suggestion according to user experience and need balance , between web or native mobile apps.
Suggestive app type/ Tool	Phonegap(open source).

III. METHOD

Web or Native Vs. Hybrid apps

Mobile development faces the challenges of newer platforms and performance issues. Thus, the approaches are prominent to get better results. The native approach/web-based approach are becoming less popular due to emergence of cross-platform apps.

A hybrid app is one that is written with the same technology used for websites and mobile web implementations, and that is hosted or runs inside a native container on a mobile device. As said hybrid apps are the combination of native and web apps, companies build hybrid apps as covering of an existing web page, in this way the company uses their web page and make a hybrid app with little efforts, without giving that much effort which is given in native apps and hence the app get a preference in the app store, without spending significant effort for developing a different app. Hybrid apps are also popular because of their cross-platform compatibility that is, the same HTML code components can be reused on different mobile operating systems, reducing significantly the development costs and developer efforts.

Comparison criteria to develop and deploy mobile apps in market:

(i) **Cost:** Native apps are costlier to develop and distribute because of the non cross-compatibility, which requires skilled developer, if you need to develop for more than one platform whereas a Hybrid app is cross-compatible and hence requires less cost to develop.

(ii) **Testability:** Native app testing is difficult if you maintain multiple codebases and support a large number of devices. While in hybrid apps the testability is simpler as requires to test a single code, for the multiple numbers of devices.

(iii) **Code Re-usability/Portability:** the biggest weakness of native app is their lack of portability to other platforms while in hybrid apps one can reuse a large amount of code for different platform.

(iv) **Monetization:** web apps can make money through advertisements, subscriptions, or an app store for web apps, Hybrid apps have more option for monetization as the majority of app downloads still happen from the app stores including app-purchase, in-app purchase and advertisements.

(v) **Device Access:** web apps can only access some basic mobile device APIs, like the GPS etc, that too very limited hardware access. While hybrid apps will provide comparability, more access to device APIs like system storage etc.

(vi) **Time to market and Distribution method:** Hybrid app have the advantage in distribution methods as they can be distributed like a mobile web app via web browsing or via app store and Hybrid apps have a time to market advantage over native using an HTML5 UI framework like Sencha Touch which helps in rapid prototyping and development of hybrid apps and not developing separate apps for each platform.

The final decision of individual will depend highly on the particular circumstances, which will decide which app is better but, there seems to be a benefit with hybrid app as speed to market will be faster, development and maintenance cost is lower and most important is that app will reach a wider users .

Comparative criterion	Native apps	web apps	Hybrid apps
App Interface	Different as per Operating system	Vary as per the size, browser.	Flexible according to Operating system or browser
Quality of apps	High	Medium	Medium to low
App users	Limited to a particular mobile platform	Maximum including smart phones, tablets and other devices	Large - as it reaches to users of different platforms
App development cost	High	Low	Medium to low
App Security issues	Excellent	Depends on browser security	Good
Development platforms	Different	Depends on the need	Different
Write code	Different	May be different	Single code
Supportability	Very Complex	Simple	Medium to complex
Updation	Complex	Simple	Medium to complex
Time to bring in market	Maximum	Medium	Minimum

Table.1 Comparative study of Web or Native Vs. Hybrid apps

IV. Conclusion

In this paper, the comparison of mobile apps development approaches are critically discussed with respect to e-commerce and market. The web or native apps are ultimately less in demand in the market due to high cost and maximum required time in development. Thus the smart choice for developers is to make a cross platform apps, i.e., Hybrid apps. It is in the flow of current markets trends with number of open source and free frameworks available for development. Due to the apps popularity all e-commerce websites are now converting into mobile app. However, the biggest companies, business / profit making sites are using hybrid apps to provide quick and easy to use apps. As per the study conducted hybrid apps are more prominent. So, the future aspects of these applications and related market issues and their consequences, which plays indispensable role in mobile application development needs more work to be done for emerging scenario of e-commerce.

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