

# Mobile Application Development-Hottest Segment in Global Market

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## Abstract

The mobile app store market is likely to remain fragmented for the foreseeable future, and it will continue to be a battleground, attracting investment from a wide range of players. This is due to one major factor: Numerous companies are realizing that the market is at the center, or is at least a building block, of a much bigger play beyond the mobile platform. Besides smartphones, consumers are increasingly adopting devices like Netbooks (smaller, lighter, less powerful, and cheaper notebooks), game consoles (like Microsoft's Xbox and Sony's PlayStation), e-readers (like Amazon's Kindle and Barnes & Noble's Nook), and tablets (the latest being Apple's iPad, which sold more than half a million units in the first days after its launch). As such, consumers increasingly expect to interconnect these devices—including televisions—and access their content and applications seamlessly across them.[6] Mobile phones are not just "phones" anymore with only "voice and SMS" functionalities. The continuing spread of mobile technology will have a dramatic impact on the lives of individuals and institutions. Convergences of internet and telecommunication technologies are increasing rapidly. We are at the age of mobility which is providing us the freedom of being independent of time and place.

## Keywords

M-VAS, Apps Store, Smartphone, iPad, iPhone, Netbook, Tablet.

## I. Introduction

The success of Apple's Application Store has not only established the salability of mobile applications, but has also shown that the most excellent applications offer the potential to generate large amount of revenues. Several telecom giants have thus begun providing dedicated application stores for their users, so much so that more than 2 million applications are currently available for communications, games, multimedia, productivity, travel, and utility purposes.

About 6.4 billion (free, paid, and ad-supported) application downloads were made globally in 2009 alone from native (on-deck) and third-party (off-deck) application stores, generating revenues of \$4.5 billion in the same year. Apple, with 2.5 billion downloads, dominated the applications market in 2009. However, new players like Google, Nokia, and RIM are rapidly entering the applications market space, as the increasing uptake and usability of Smartphone devices further boosts the mobile applications market. According to our estimates, the global mobile application market is expected to be worth \$25.0 billion in 2015, growing at a CAGR of 29.6% from 2010 to 2015 [3].

For companies developing their first mobile application and mobile ISVs looking to support additional smartphone platforms, the fastest path to market with a high quality product is often to engage a specialized development partner [7]. Within the traditional software programming scenarios, developers

have several options for development languages, such as C, C++, .NET, Java, Flash, etc. to create a software application. However, in the progress of mobile application development, due to complex structure of mobile ecosystem, there is a fragmentation in terms of different mobile "Operating Systems", "Screen Resolutions", "Device Models and Capabilities," and "User Experience". Fragmentation is the word that defines the biggest barrier. Fragmentation increases the cost and the time to develop mobile applications [10].

Platform wise Smartphone Market Share (Percentage of Shipments):

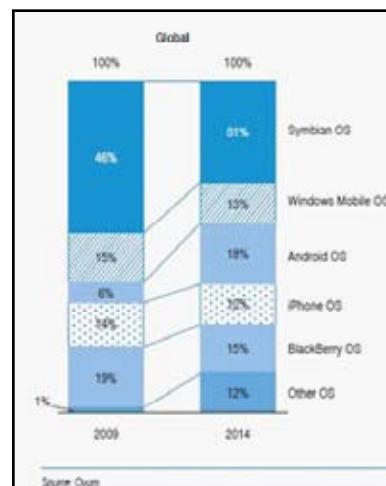


Fig. 1: A Fragmented Smartphone Market

## II. M-VAS Market Study

The study includes native (downloadable) mobile applications (not web-based applications) for mobile devices like smartphones and feature phones (not iPad or tablet PCs). The market segmentation on the basis of store type includes on-deck (operators, mobile device manufacturers, and Operating System (OS) developers managed) and off-deck (independent or third-party managed) stores. This research report categorizes the global market for mobile applications on the basis of Mobile applications categories World Mobile Applications Market research report provides market estimates and forecasts for the global markets of mobile applications in North America, Europe, Asia, and Rest of the World (ROW). In addition to market sizing and forecasts, the report also offers a detailed analysis of the market trends, opportunities, and the factors influencing the growth of each segment of the mobile applications market. The report also draws a competitive landscape, analyzing core competencies of major players and strategies adopted to expand their market presence [3, 6].

## III. Best Practice of Mobile Applications Development Industry

Given the challenges of mobile application creation, designers and developers must take full advantage of the lessons learned and best practices developed by industry pioneers

like bitHeads. The following tips and checklist items can be used to start new projects on the right footing, keep current projects on track and to recognize when the help of external mobile development experts should be engaged. Context is king for mobile applications. A thorough understanding of the user's context and objectives is paramount. A robust product management process and iterative approach to design, development and testing is critical.

1. Do not blindly mimic designs intended to run on desktop devices;
2. Remove all clutter and simplify the application down to the essential data and functionality needed for the user to take immediate action;
3. Present the minimum number of options possible on any single screen; Minimize screen density but don't split content/interaction across so many screens that users get lost;
4. Use a consistent UI design that helps users maintain a mental image of the application;
5. Design the UI to behave similarly to other applications on the device with which users are familiar; if designing for multiple devices, follow established design conventions for each device and avoid the pitfall of trying to make the application behave the same across all platforms;
6. Exploit the unique capabilities of each device (GPS, accelerometer, screen size, input methods) to create the most engaging user experience possible;
7. Conduct ongoing usability testing throughout the design and development process, including testing on real devices, not just emulators;
8. Make sure forms are easy to use and that navigation between fields is predictable;
9. The less text input, the better;
10. Provide clear methods for the user to recover from errors, broken links and other problems, particularly if the device does not have a simple back button;
11. Avoid complex interaction patterns that require close user attention for long periods of time;
12. Use highly structured workflows or wizards for infrequent tasks;
13. Provide clear feedback on progress and the status of task completion;
14. Use high contrast text color and select typefaces for maximum readability;
15. Carefully and consistently use color throughout the design; and
16. Use simple navigation structures that focus on one specific task at a time [7].

#### **IV. Challenges for Mobile Application Development Industry**

Mobile application adoption is driven by the user experience more than for any other type of application. Mobile users typically have urgent needs to access information or complete a specific task. Mobile users are impatient and the slightest problem with performance or usability results in a disproportionately large level of user frustration. When compared to developing software for desktop interaction, the many constraints and challenges peculiar to mobile applications include: The challenge of designing and developing multiple versions of an application to run on a wide variety of platforms (BlackBerry, iPhone, Windows Mobile, and others) and significantly different device models on a given platform (e.g. Blackberry Bold, Storm, Curve, Pearl

Flip) in a manner that exploits the unique capabilities of each device while maximizing software reuse and development efficiency;

1. Small screen size means that less of a page or form can be displayed, making it more difficult to maintain the user's sense of location within the application and navigation scheme;
2. A variety of different screen sizes, resolutions and orientations (portrait, landscape, switchable) to design for;
3. Limited input devices and a variety of possible interaction methods (keypad, stylus, touch screen);
4. Text input is particularly cumbersome;
5. Limited battery life requires that power-consuming activities must be carefully managed;
6. Limited processing power [7].

#### **V. Impact of Mobility on End-Users & Developers**

There is another major change that can be easily overlooked, even dismissed: Mobility has revolutionized both monetization and software distribution strategies from a simple "ring tone" business model. We encourage you to pause for a moment and really focus on the impact on having the ability to reach hundreds of millions of customers, at any time, simply by uploading your app to a few App Stores. For us, this means that a developer has many more opportunities to create apps dedicated to specific market segments and on top of that seasonal features: a successful solution (think Angry Birds) need not only to be released for many types of devices, across several major platforms, but for each of these, we could offer several apps targeted at different market segments, each requiring continuous releases of new features during the course of a year. The bottom line is that, if you plan to be really successful at building a mobile solution you have to be ready to deliver a family of apps, not just "one app" like in the Web or Desktop era. The seasonal aspect and the relative high degree of competition between apps puts even more pressure on the development cycles, and requires that developers release new features often, especially when you factor in Ads and "in-app" payments business models.

Model Driven Software Development offers an interesting alternative to the chaotic world of platform vendors. Unlike your old MDA or CASE tool, DSLs are now capable of delivering a world class Developer Experience (DX). This new generation of MDSD is a great fit to effectively support mobile projects which are architecturally complex, surprisingly very complex, but functionally simple and with a large number of variants and short development cycles. Modern MDSD does not introduce any additional lock-in when compared to a hand coded native solution. We argue that only a Mobile DSL-approach provides an effective architecture that will help you transition mobile app development from craft to engineering [12].

In 2010, there were approximately 10 billion app downloads made on all mobile platforms. Consumers are getting used to expanding the functionality of their devices through apps and Berg Insight anticipates the number of app downloads to almost threefold year-on-year in 2011. Even if feature phones are able to run apps, the increased sales of smartphones and the rising popularity of apps are closely tied together. In 2015, over 70 percent of all handset shipments will be smartphones, building a large user base that will spur the number of app downloads to reach almost 100 billion during 2015. The number of app downloads per platform will gradually mimic the market share for each mobile platform.

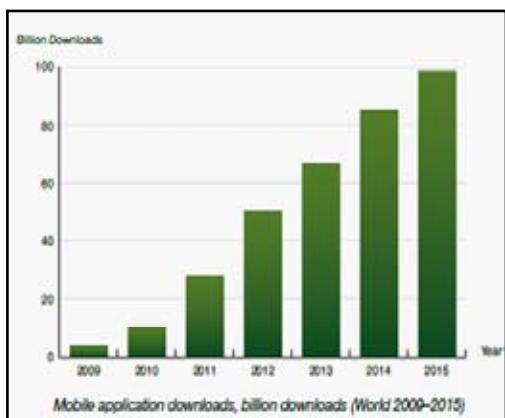


Fig. 2: Download Report Projection

## VI. Gateways to App World

Today, it is difficult to say whether the popularity of smartphones is driving the mobile app market, or vice versa. It is exceedingly clear, however, that mobile application stores are proliferating. There are already more than 30 such stores in operation. By 2014, the market is expected to see more than 30 billion application downloads and drive US\$40 billion in annual revenue (including downloads, value-added services, and advertising).

The potential of these app stores is important to nearly every link in the consumer technology chain—device makers, carriers, and retailers and e-tailers. Not only is the market sizeable in and of itself, but it has the potential to deepen customer relationships, differentiate services, and drive brand loyalty. Because of this, the market will get more crowded. It will get more fragmented. And it will remain a shifting landscape, with complex relationships to manage.

There will be clear winners and losers in the mobile app market, however. Players like Apple and Android have significant head starts. And e-tailers and retailers such as Amazon and Best Buy will be well positioned going forward. But every member of the mobile app ecosystem must begin positioning itself now for the evolution of the market into a system of stores offering downloadable apps that transcend the mobile markets and can be accessed on multiple devices, from televisions to Netbooks to gaming systems.

The iTunes Store is a software-based online digital media store operated by Apple. With the launch of iPhone 3G and the 2.0 iOS firmware for iPod Touch and iPhone owners, the App Store allows people to download applications through the iTunes desktop software or the App Store on their iPhones. As of October 20, 2010, there are over 300,000 third-party applications available.[14] The applications can only be run on iPhones, iPod Touch or iPads. Each application is also protected with iTunes FairPlay DRM. Developers of these applications receive 70 percent of the income and free applications are distributed without charge to the developer [15].

More than 15 billion apps have been downloaded from the revolutionary App Store and more than 425,000 apps are available, including more than 100,000 native iPad apps, to consumers in 90 countries. Users of the more than 200 million iOS devices around the world can choose from an incredible range of apps in 20 categories, including games, business, news, education, sports, health, reference and travel. Apple has paid developers over \$2.5 billion to date.

Android Market is an online software store developed by Google for Android OS devices. Its gateway is an application program

("app") called "Market", preinstalled on most Android devices, allows users to browse and download mobile apps published by third-party developers. Users can also search for and read detailed information about apps on the Android Market website. [16] Android Market features 67% of free apps—the highest percentage of any major app store—compared to 37% Apple App Store for [17].

Table 1: Free Apps Penetration

App Store	Percent Free Applications
Android Market	67%
Windows Phone Marketplace	52% [19]
Samsung Apps	39% [20]
Apple App Store	37%
BlackBerry App World	26%
Nokia Ovi Store	26%

On 10 May 2011, during the Google I/O, Google announced that Android Market listed 200,000 apps, and had clocked 4.5 billion apps installed [18]. Below is the distribution of downloads in the Android Market [21].

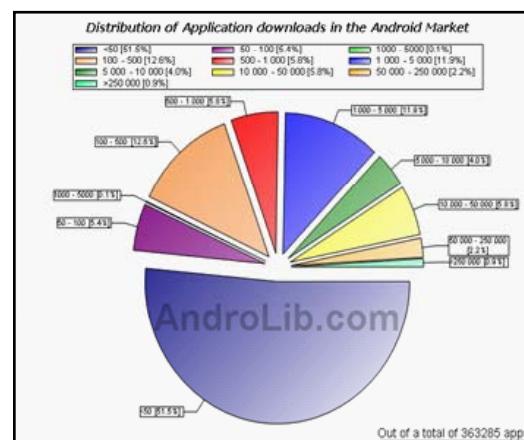


Fig. 3: Android Market Apps Distribution

## VII. Leaders of Mobile Application Development

All leading manufacturer brands have their own App stores.

- Apple - iTunes App Store
- Android - Android Market
- Blackberry - Blackberry App world
- Windows - App Hub
- Samsung - Bada App Store
- Nokia - OVI App Store

Apart from all the manufacturers, all leading Operators are also providing Mobile Apps to their users.

- Airtel - Airtel App Central
- Vodafone - Vodafone Live
- Aircel - Pocket Apps
- Idea - Idea Fresh
- BSNL - BSNL Live

There are hundreds of channels providing Mobile Apps & Games to end users beyond the Operators & Aggregators worldwide. Few of these are Getjar, Mobile9, Mobango,

Mobilized, Handmark, Handster, Palm, Pocketgear, Cell11, CNET, Brothersoft, Smart Sam, ZED, Smokin Apps, Mobi club, Umnet, eMobilez, Ntt Docomo Inc and many more. Best MOBILE APPS DEVELOPERS are Halfbrick Studios, Gameloft, Rovio Mobile Ltd., Aims MIGITAL Technovations Pvt. Ltd., Cooper Media Corp., ZeptoLab, Machineworks Northwest LLC, Lupis Labs Software, DistinctDev, Inc., YoYo Games Ltd, Bithack.

### **VIII. Indian M-VAS Market & Future Vision**

With the launch of high speed data services through 3G and broadband wireless access technologies, the mobile value-added service (MVAS) market is expected to generate revenues of over Rs 550 billion in the next four years. In light of this, VAS companies in India are aggressively scaling up operations, and consolidating and building their technology platforms.

"It is time for India to evolve from the well-established mobile messaging and commoditised voice play to focus on customer segmentation-based data play," states the recently released PricewaterhouseCooper (PwC) report, Value Added Service: The Next Wave. According to Sivarama Krishnan, executive director, consulting, PwC India, the country has various consumer segments based on socio-economic, cultural and linguistic diversity. This diversity, coupled with a young and affluent population and the fact that India is yet to reach its potential in terms of broadband penetration, are indicative of the huge opportunity that mobile VAS offers in the country.

In India, which is the world's fastest growing telecom sector, the VAS market size is valued at Rs 97.6 billion. According to research firm IMRB International, this market is expected to witness an annual growth of 70 per cent till 2014-15. The major VAS players in this market include OnMobile, IMImobile, Spice Digital, Comviva, One97 Communications, Mobile2win, Mauj Telecom, mChek and Roamware. tele.net takes a look at the current status as well as future plans of some of these companies [1]. Predictions for 2013 are 21.6 billion apps sold for a total of \$29.5 billion revenue. 25 percent of the revenue generated by mobile applications will be from free versions, supported by advertising [10]. Intel and Google have announced a new partnership that will see low-powered Atom CPUs and their successors running with Google's Android platform as the chipmaker attempts to launch itself into the smartphone market. Intel executives stated at their annual developer conference on Tuesday that Android phones featuring Intel CPUs should be available in the first half of 2012. [22] "The smartphone business is not established in terms of the ultimate shakeout of who's going to win and who is going to lose... You saw what happened in terms of how fast Android took share from Apple. So good products on good platforms can really still make a big difference in this industry," said Intel CEO Paul Otellini during his speech at the conference.

### **IX. Conclusion**

Software especially developed for mobile phones has been around for well over a decade and before the term application (app) store was popularized, distribution of mobile content and applications was often realized through portals which were managed by network operators. Operator portals had some success in selling mobile content but the ecosystem was at first unclear and did not attract enough developers and users to really take off. The ecosystem around devices consisting of services and applications has today become an

important influencing factor for users when choosing handsets. Therefore, it is important for mobile platform vendors to achieve a prosperous mobile app ecosystem that creates revenues for publishers and value for end users in order to increase customer loyalty and sell more devices. Even though the directly generated revenues in mobile app stores still are comparably small, the importance of mobile apps is self evident when observing the consumer interest in apps as well as the fact that apps attract and generate revenues for a growing mobile community of software developers, publishers, media owners and mobile ad companies. Given the importance of app stores to the overall consumer technology market, it is not surprising that every OEM and carrier wants to have its own store. As a result, there will be a great deal of market positioning and more than a few delicate dances between carriers and OEMs over the coming years. As always, carriers will try to impose their will on OEMs, and OEMs will look for a more direct route to the customer. In the end, however, the OEM app stores will fail. Carrier stores will fair only slightly better, leveraging their powerful customer relationships. And Apple and Android will continue to lead. The surprise beneficiaries, however, will be the retailers and e-tailers. As the ecosystem continues to become more complex, with multiple devices, platforms, and applications to choose from, retailers and e-tailers will serve as trusted advisors. They will help consumers sift through their choices and assemble the best combinations of devices, platforms, and apps. Their neutrality, and their breadth of offerings, will drive consumers to them and build a trusted relationship. The key for all other players throughout the consumer technology ecosystem will be to understand what their role will be when mobile apps begin expanding onto other platforms and devices—and begin positioning themselves for that inevitability now. Mobile application development, simply stated, is the technology for creating application software for low-powered palmheld or handheld devices—predominantly mobile phones. Quite often application software is incorporated at the manufacturing stage or available for subsequent downloading by the clients. The advent of Mobile Application Development is a huge step for every day users; performing multiple tasks which one used to rely solely on a computer are now possible on the mobile phone. Mobile Application Development is considered a boon by several sectors including businesses, entertainment, social networking, video games, tourism, news updates, and meteorology amongst others. As mobile technology enables the users to stay connected at all times, mobile application development companies are vying with one another to bring in exciting advancements and to capture the emerging markets. All the mobile apps developments have become possible due to the Smartphone operating system platform. The world of mobile applications is rapidly advancing and a future trend in mobile application development is tremendously encouraging with many innovative functionalities and features continually emerging. Several of these promising indications are because of technologies developed by major players like Apple and Google who are constantly at the forefront of new and innovative technological design [6, 10-11, 18].

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