

A Review and Analysis of the Mobile App Development Industry

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Abstract: *We live in an era where disruptive technologies that shift the market's overall viewpoint appear on a regular basis. One example is the rise of Mobile App Development, which fundamentally altered how people interacted with software. Previously, software development mainly meant a stand-alone or Web application, but now there is a lot of room for Mobile App Development. Standalone technologies required the user to have at least a Personal Computer to use their applications. However, because the platform on which an app may be delivered is simply a mobile phone, the target audience for this sort of application development expands dramatically. Because practically everyone has access to a mobile device, app development for portable devices has now become the norm for getting services to their intended audience faster. The App Development industry has evolved. Since its start, it has only expanded by leaps and bounds. This report goes into great detail on the Mobile App Development Industry and its dominance in India.*

Keywords: Mobile App Development, Android, iOS, Industry Analysis.

I. INTRODUCTION

Since the launch of the Information Technology assiduity, a variety of software has been changing the way we look at effects. nearly every other operation that we used to take over manually is now automated and covered by technology. This includes the software development sector. parent and is a broad word used in the development and deployment of software for websites and standalone apps. The minimal tackle conditions stated while developing these programmes were generally a particular computer with applicable capabilities. People who could buy and enjoy a computer could only use or use it in the period of software. Until lately, druggies could only pierce websites through Cyber Cafes. Despite the fact that numerous people have access to laptops and PCs, the number remains much lower than the population. Following the preface of mobile phones, which were primarily hand- held computers, the number of persons who begun Copping mobile phones has mainly increased, and the number of individualities who can gain a conception of apps has risen. People currently, anyhow of age group, are learning to use an operation in the form of a Mobile App. Since also, the App Development Industry has taken use of it.

II. OBJECTIVES

- Gain a broad understanding of the App Development Industry.
- To investigate the Indian app development industry.
- To comprehend mobile app usage and revenue generation.
- To comprehend the cost and scope of app development in India in comparison to other countries.
- Research the various sorts of applications in demand as well as the least desired apps.
- Conduct a SWOT analysis for the App Development Industry.

III. METHODOLOGY

The material given and analysed in this work is mostly based on secondary data gathered from various online sources such as websites, journals, internet blogs and articles, discussions, books, and so on.

V. MOBILE APP DEVELOPMENT OVERVIEW

Mobile App Development is the process of creating software that operates primarily on a portable digital device such as a mobile phone. It is a rapidly expanding industry that is now an essential component of every business we can think of.

S.No.	Mobile Operating System	Percentage
1	Android	71.81 %
2	iOS	27.43 %
3	Samsung	0.38 %
4	KaiOS	0.14 %
5	Unknown	0.14 %
6	Linux	0.02 %

Table 1: Mobile Operating System Market Share Worldwide - March 2021

Despite the fact that there are several mobile phones on the market, Android and iOS control the majority of the market. Let us look at the global market share of mobile operating systems: People in this industry typically seek the creation of Mobile Apps in Android and iOS, which now account for 99.24% of the worldwide market. Despite owning 96.07% of the market in India, iOS has 59.97% in the United States [2]. As a result, the App Development business primarily targets these two Operating Systems. Although traditional software development is still profitable, app development outperforms it by giving functionalities that a standard desktop or web application does not. The application might fail to provide. The availability of GPS, Compass, Accelerometer, Sensors, Bluetooth, and other features, for example, makes the mobile phone a far more capable deployment device than a PC. We must select a programming language and/or a suitable framework when designing a Mobile App, just as we would when constructing traditional software [3]. Even if we may perceive Android and iOS development separately, it is critical to understand the many forms of Mobile App Development accessible [4]. There are three major types of app development, which are as follows:

Web App / Html5 Development

Web applications are just webpages that have the appearance and feel of a responsive website. They are typically created in a browser using HTML5, CSS, and JavaScript. Installing such an app simply implies that we are making a bookmark to this page and designating that link as an app. Because they are responsive, they will adapt themselves to whichever device screen size is requested. They are restricted in functionality and perform poorly when compared to native app development. Because constructing a web app is similar to developing a website, the technologies required are HTML5, CSS, JavaScript on the client side, and PHP, Perl, Python, Ruby, and other server-side technologies [9].

Advantages

- No need to target a specific platform; once created, it may be deployed on any platform.
- Because there is nothing to download into the device, very little storage is used.
- Maintaining the app is simplified because any modifications or updates are automatically published over the web, eliminating the need for upgrades.

Disadvantages:

- Because it is fully dependent on the browser, the user experience may change depending on the browser used by the user.
- Because they are essentially websites, they will not function without access to the internet.
- You cannot use all of the capabilities available on a mobile device.
- It is not available in the Google Play store, therefore adding or downloading it to a phone requires special instructions or marketing.

Hybrid App Development

Hybrid applications are composed of half native apps and half online apps. They may be deployed via an app store and take advantage of certain native capabilities as well [10]. Because they are web applications, they rely on HTML that is shown in a browser. Despite the fact that they have the appearance and feel of a native app, The hybrid app would still be a simple web programme running in a browser, hence the name. It allows developers to reach a bigger target audience and track how many people downloaded their apps, for example, without having to create two separate apps [11]. There are several approaches to create a hybrid app, including React Native, Flutter, Cordova, Ionic, Xamarin, and others.

Advantages

- Much faster to create and less expensive than native app development. • Only need to maintain one code base that will update concurrently onto each platform that is targeted.
- Can be accessed even while not connected to the internet.
- It is best to make an MVP (Minimum Viable Product) instantly available via an app.

Disadvantages:

- It cannot be used to create performance-oriented programmes, like as games, that need the utilisation of 3D capabilities.
- Because Web View limits performance, it is substantially lower than that of native programmes.
- Not ideal in terms of UI because the User Experience cannot be changed [8]

Even though there are many applications on the market that employ a combination of the above-mentioned methods of development, each app is produced in a specific type by taking a few factors into account such as Cost of Development, Time Required, Features Required, and a variety of other customizable options. The global app development business has developed considerably and is still growing. Do this every day. This market was worth \$106.27 billion in 2018 and is anticipated to be worth \$407.31 billion by 2026 [12]. Aside from the money earned by the app, the development industry must also be discussed. The cost of developing a standard app is determined by a variety of factors

VI. INDIA'S APP DEVELOPMENT INDUSTRY

In a 2019 analysis, the progressive Policy Institute of the United States predicted that India, as one of the world's leading technology-centric countries, will surpass the United States as the largest developer population centre by 2024 [13]. According to the survey, India is one of the leading countries in terms of mobile app downloads, with over 500 million smartphone users. This is necessary to understand India's position in the field of applications and app development. One cannot dispute that India has made great strides in the field of app development. Apps made by Indian App Developers have been hosted in the Google Play Store and the Apple App Store in recent years.

The Arrival of the 5G Network

5G is the most recent addition to a family of network technologies that enable high-speed with zero latency. The speed of the Internet is critical in today's high-demanding technological age. Whereas formerly data was charged by the KB, we now have an almost limitless supply of data in mobile devices. While there is a significant disparity between internet access via broadband at home and mobile data, 5G will serve as a leveller [15]. The data will not prevent you from downloading and utilising Data Heavy Applications.

Wearable Apps and Others for the Medical Industry

App development has expanded beyond mobile devices and tablets to include apps that must be loaded in wearable devices such as watches and body monitoring devices. etc., which primarily benefit individuals and health-care personnel. Agriculture and health care are industries that must not be overlooked at any cost [15]. The creation of apps that aid in the monitoring of a person's heartbeat and other vitals, as well as how many steps are taken, calories burned, and so on. Many health-conscious folks are looking forward to using the wearable to check their own health.

M-Commerce

E-Commerce has evolved into m-Commerce, with the bulk of orders placed using an app. Some large e-commerce sectors make a lot of offers to consumers who choose to purchase using an app rather than a website, so that they can swiftly bring alerts and future offers to the attention of the customer. the client [15]. The payment for these orders conducted on internet platforms was the user's greatest concern. It has now been diluted by the market's many payment modalities, which include Cash on Delivery, Credit Cards, Debit Cards, Net Banking, and even UPI-based payments.

VII. MOBILE APP DEVELOPMENT LIFE CYCLE:

In recent years, it has become clear that individuals consume digital media primarily on mobile phones, with apps accounting for 90% of the time spent on a mobile phone aside from calls and SMS. The creation of a mobile app is not as difficult as it appears. We have previously seen the many App kinds. Possible growth [18]. Let us now examine the App Development Life Cycle of a typical mobile application project, regardless of the app's complexity [18]:

Mobile App Goals and Requirements

Setting the objectives of constructing an app is an important phase of the development process in which the client intends to define objectives that the app must be able to meet. This step also ensures that the whole the app's technical and non-technical requirements are well documented [5]. This step requires the developer to properly comprehend the issue description as well as the customer's needs [19]. For example, we must be able to respond to queries such as the following:

- Who are the app's target consumers / end users?
- What is the goal of creating this app?
- What would the developer/company gain from developing this app?
- What technologies and tools could be required to create this app?
- Who are the market's rivals, and what will this app's Unique Selling Point (USP) be?

These are only a handful of the questions that must be answered before the conclusion of the First Stage. In addition, it is critical to search for a way for this app to be updated and able to provide new services as the company or area expands.

App Development and Prototyping

Once the app's objects are articulated explicitly, it's apparent what the app will offer. We should be suitable to construct a prototype (17) and produce a storyboard in the ensuing round of development. In During this phase, we must concentrate on the app's functionality as well as the stoner interface. The stoner interface (UI) is where we design what people will see, interact with, and give functionality. It is how the software will be used by the stoner. To produce a workable prototype of the stoner interface, the Wireframing is a frequent practise. Wireframing is a fashion for creating a shell for our programme. inventors use it to more grasp the app's functionality, and contrivers use it to more understand the UI design process (20). Wireframing is divided into three sections, which are as follows

Information Architecture

The emphasis in this section of wireframing is on where to show, position, and prioritise significant information similar that it aids the stoner's appreciation (20). It's a type of UI Design in which information is displayed in such a way that it allows for straightforward communication.

Navigation Design

During this phase, wireframing builds a navigation system that provides a collection of stoner defences that generally choose which runner to show next grounded on the environment and conditioning performed in one screen (20). Each screen and its connections must have a clear relationship so that the stoner understands how to move around the app for colourful functionalities.

Interface Design

This stage of wireframing entails creating an interface in which the stoner selects or inputs data using UI factors similar as Text Boxes, Check Boxes, Radio Buttons, and so on (20). It ensures that the software is as easy to use as doable and runs as efficiently as possible.

Choosing a Backend:

Every app requires data storage, but where it is kept is determined by the type of data, the cost, and the efficacy of the storage environment. Users can normally save data in the phone's memory. itself in a key-value pair of data commonly kept in an XML format or even in a Relational Database like SQLite. However, if the data must be persistent across users and devices, a Web Server is the best option [21]. Depending on the requirements, there are several options, including employing a bespoke server, a cloud server, or an MBAs. (Mobile Backend as a Service such example employing a custom server, a cloud server, or an MBAs (Mobile Backend as a Service)

Custom Server:

We may host the data in a relational or NoSQL database on the company's own server. makes sure that the data stays within the company yet available everywhere via an API request Scaling and optimising may be difficult in this case [22].

I. Cloud Server:

Cloud servers are available in a variety of sizes and forms for customers to select from, such as Amazon Web Services, Google App Engine, and others. Data is stored in these cloud servers, which are accessible from anywhere by a service call and are highly scalable and optimised [22].

7.1 MBAs:

It is one of the most current and popular solutions for delivering data in cloud services, as well as the fastest expanding. Finally, there is the option of selecting a certain type of MBAs. and the developer's preferences, as well as the app's goals. It is especially useful for scaling our backend if we intend to target both iOS and Android apps. Kumolo's, Progress Kinley, and Kyi are a few examples [22].

App Development

Once the previous two stages are completed successfully, there will be a clear image of what is required and how it must be accomplished. The following stage would be to begin creating the app using the knowledge gained during the initial planning, designing, and lessons learned. The developer/company can then select the type of development environment in which they want to work [23]. There are many options depending on the app's intended audience. For Ex. If the programme is exclusively intended for Android users, it will be developed in Android Studio with Java or Kotlin. If there are solely iOS users, the iOS app will be developed in XCode with Swift.

Testing and Quality Assurance

Once the app has been completed with all of its capabilities, it is critical that we test the app regularly in order to detect any and all flaws that the app may have. The app should be thoroughly tested with a large number of users. various real-world events to identify any technological flaws in the app. It is usually suggested that the testing team is not the same team that created the app because there is a significant risk of oversight from their end. There may be more difficulties and insights that the development team is unable to identify because they are not clear to them.

Publishing

Releasing the app is dependent on the platforms where we require people to obtain an official copy of the software. It might be the Google Play Store or the Apple App Store; each would have their own testing procedure. The application. Once it is completed successfully, the app is officially published, and users may begin downloading it on their mobile devices [27]. Prior to this step, the team will have chosen how much and how the user would be charged, such as Single

Purchase, Freemium, Subscription, and so on. Each download will incur a publication fee and/or a transaction fee, depending on the host.

Maintenance:

The final stage is the continuous maintenance of that software after its original release, which is what makes this a Life Cycle. There may have been certain scenarios or concerns that were ignored during the testing period and are now being addressed. being pointed up by users, as well as ensuring that the app runs smoothly over the course of hardware and software modifications. Failing at this step renders the software obsolete after a time, therefore it is critical that developers check the app's vibrancy and serviceability for as long as the app is required.

VIII. CONCLUSION

The Mobile App Development Industry is a Newcomer to the Market and has already surpassed the income of other IT or IT Enabled Industries. This industry has changed and grown dramatically in a short period of time, and it now includes people who would never have considered using software before. in their entire lives and are now professionals in the use of a Smart Phone and all of the necessary Apps that the phone has to offer. It is reasonable to claim that a mobile phone is today utilised for much more than just making phone calls and sending SMS [43]. Every day, a large number of new customers join Apple or Google to activate a new gadget. Every day, a large number of new customers join Apple or Google to activate a new gadget. India has used this business to position itself as a country with the fastest-growing app users and app developers in the world. Other than that, India has also led to the country becoming the third largest, with app revenue being spectacular. This business has paved the road for India to become a world leader not just in app use, but also in app development. India has also emerged as a favoured destination for worldwide app development investment. We have gone through how this industry is and will be in great detail. We can be certain that the App Development Industry will prosper in the next days since we do not see a drop in the use of mobile phones in our daily lives. If it focuses on properly exploiting current IT developments and providing Apps that aren't merely remakes of old apps, the Mobile App Development Industry will continue to develop in the future years.

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