



Opportunities with Flutter Development

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Abstract— The COVID-19 pandemic has resulted in a significant surge in mobile app usage, intensifying the competition among various mobile app development platforms. Consequently, there is a heightened demand for skilled developers who can thrive in this competitive landscape. Flutter, an open-source SDK tool that offers a robust platform for creating applications on both iOS and Android platforms, has emerged as a formidable contender. Its cost-effectiveness and streamlined development process position Flutter as the preferred choice for developers seeking to enhance their app development endeavors. This paper delves into the increasing need for Flutter developers in light of the evolving mobile app market, shedding light on the platform's capabilities and the benefits it offers over alternative development approaches.

Keywords— Flutter developers, mobile app market, cross-platform development, app framework, post-pandemic requirements.

I. INTRODUCTION

Mobile development is undergoing an unparalleled surge in growth across numerous sectors, encompassing business, telecommunications, healthcare, and government services. In the contemporary digital landscape, mobile devices serve as the primary conduit for users and enterprises to engage with the Internet, necessitating organizations to foster innovation and adaptability to cater to customers' demands.

However, one of the foremost challenges confronted by developers is the arduous task of crafting competitive applications. Traditionally, developers are compelled to make a choice between developing apps for Android or iOS, or allocating supplementary resources to fulfill the requirements of both platforms. This approach not only entails acquiring proficiency in distinct programming languages but also entails employing disparate testing methodologies, thereby incurring additional time and expenses.

To solve these problems, Google released Flutter, an open source mobile interface, in 2017. Flutter brings revolutionary

changes that allow developers to create native applications. It uses the same framework for Android and iOS platforms, thus simplifying the app development process. This means that developers can use the Dart integration language to simplify development and eliminate the need for platform-specific coding and testing [1].

Although Flutter is relatively new, it is rapidly gaining popularity in software development and is ranked as one of the best frameworks for app development. Its ability to facilitate cross- development while providing improved user experience makes it the first choice of developers and enterprises.

Flutter not only solves the challenge of cross- platform development but also brings more benefits to developers and organizations. The entire software industry. These benefits include increased productivity, reduced development time, and improved performance, ultimately contributing to the overall profitability and success of mobile applications [2, 4].

RELATED WORK

Flutter, an adaptable UI software development kit (SDK) created by Google, enables the construction of native applications on various platforms such as mobile, web, and desktop. It boasts a comprehensive framework encompassing a robust architecture, customizable components, and integration tools, thereby offering developers a distinctive app development environment. Moreover, its open-source nature and cost-free accessibility make it an appealing option for developers seeking to enhance their projects. Notably, one of the key advantages of Flutter lies in its ability to enhance usability and accelerate development speed. By providing a unified platform for application development across multiple platforms, Flutter empowers developers to expedite the development process without compromising quality.

Its cross-platform compatibility allows integration with important functions such as cameras, geolocation services,

network connections and storage management. Comparative analysis shows Flutter's superiority over other integrated development methods such as React Native and Xamarin. Essentially, Flutter outperforms these options in terms of performance, functionality, and overall user experience. This is thanks to Flutter's carefully designed and structured design, which is important for responsiveness and customer preferences in application development [3].

OVERVIEW OF FLUTTER JOB MARKET

The Flutter market has seen significant growth in recent years. Flutter attracted the attention of both startups and established businesses with its strong growth platform and broad platform support. In this section, we examine the entire structure of Flutter's business operations, including the number of job postings, geographic distribution, and business needs.

The number of job postings specific to Flutter developers has increased significantly. Sites like Indeed, LinkedIn, and Glassdoor regularly list job opportunities for Flutter developers in a variety of fields. We then dig into the data to understand the situation and identify potential studies.

Different regions have different needs for Flutter developers. While work may be plentiful in some regions, Flutter adoption may be increasing in others. To understand where professionals can find work, we'll look at the countries and cities where Flutter developers are most in demand.

WHY FLUTTER

Flutter presents a promising initiative with a flourishing development community. Various intricate applications have been crafted using Flutter, such as Alibaba, Google Ads, Reflect, Birch Finance, Hamilton Musical, and Hooke (Skuzka, 2019). This dynamic environment showcases the extensive potential of Flutter in diverse applications, particularly in smaller projects where consistent content and user-friendliness are crucial. Moreover, Flutter's reach extends beyond mobile platforms, as demonstrated by Google's recent announcement of web support at the Flutter Interact conference (Sneath, 2019). This expansion creates new opportunities for developers to utilize Flutter across various digital landscapes, enhancing its appeal and relevance in the tech industry. Furthermore, Dart, Flutter's primary programming language, has emerged as one of the fastest-growing languages in recent times. Its ongoing enhancements have been influenced by several factors, including expansion and support from the community. These continuous advancements underscore Dart's efficiency and adaptability, solidifying Flutter's position as a preferred framework for mobile and web application development [5,6].

FEATURES OF FLUTTER

Flutter's hot reload feature guarantees enhanced performance by enabling applications to be compiled using ARM C/C++ libraries, resulting in code that closely resembles machine code and runs more efficiently. The Flutter team dedicates significant effort to offering a wide range of pre-built widgets that are highly customizable, ultimately saving developers time compared to other frameworks.

Through Flutter, developers can write, manage, and execute code across various platforms, including Android and IOS. This not only saves time, money, and effort for

developers but also streamlines the application development process by facilitating code replacement or updates.

Unlike many other cross-platform frameworks, Flutter does not depend on code centralization or commenting. By compiling Flutter applications directly into machine code, common operational issues related to interpretation are eliminated. Ultimately, Flutter provides developers with a fully compiled application, enhancing efficiency and ease of use.

DART PROGRAMMING LANGUAGE

It is important to highlight the significance of Dart, the programming language utilized in application development within the realm of Flutter. Although Flutter itself is not a programming language but an SDK containing pre-written code and customizable widgets, Dart serves as the foundation for constructing applications within the Flutter environment. Developed by Google, Dart plays a crucial role in enhancing application performance and minimizing communication issues between the Flutter framework and conventional systems like Android or iOS. In contrast to certain other communication-based cross-platform frameworks, Flutter utilizes Dart for seamless integration, thereby accelerating execution time and enhancing overall performance. Proficiency in Dart programming is essential when embarking on app development with Flutter. Fortunately, Dart's syntax and structure are crafted to be user-friendly and easily comprehensible, rendering it accessible to developers from diverse backgrounds. Dart shares similarities with popular programming languages such as Kotlin, Java, Swift, and JavaScript, and boasts a gentle learning curve for developers transitioning to Flutter development. Google characterizes Dart as a user-friendly programming language tailored for swift application development across various platforms. Dart amalgamates features from object-oriented programming languages like Java, C++, and Python with state-of-the-art resources to produce high-performance applications that seamlessly operate across multiple platforms. Whether compiling to native ARM or x64 machine code or generating JavaScript bytecode for web dissemination, Dart empowers developers to deliver applications that rival in terms of performance and functionality with those of their peers.

FEATURES OF DART PROGRAMMING LANGUAGE

Dart is an open-source programming language, means it is freely available. It is developed by Google, approved by the ECMA standard, and comes with a BSD license.

Dart is an object-oriented programming language and supports all oops concepts such as classes, inheritance, interfaces and optional typing features. It also supports advance concepts like mixin, abstract, classes, reified generic, and robust type system. International Journal for Research in Applied Science & Engineering Technology (IJRASET) ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538 Volume 10 Issue I Jan 2022- Available at www.ijraset.com ©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 | 805

Dart is easy language to learn, and Google developers have put in a tremendous effort in the documentation part. Developers with OOPS background can quickly plunge into programming if they know the basics because it having the Java- like syntax. Dart also allows for easy editing as they can

test small sections of code even if the complete application is not ready yet. Dart is fairly easy to grasp, modern, functional, flexible and competitive. The ecosystem is simple, understanding the terminologies, the proper tools and SDKs for the language is easy, and accessing the frameworks and libraries is easier. If a developer is familiar with any programming language, not just necessarily an OOP language, they can intuitively start using Dart.

FLUTTER 3.19

The utilization of zero-safety in Dart and Flutter significantly enhances the efficiency of developers and minimizes the occurrence of errors. This innovative attribute empowers developers to exert greater authority over their code by explicitly defining variables that can potentially hold null values. Previously unnoticed bugs related to null values are now promptly detected through static analysis, enabling developers to swiftly address and rectify them. This progress in development tools not only streamlines the development process but also contributes to the creation of superior applications.

To guarantee compatibility, it is crucial to offer seamless support for the utilization of native fonts in Flutter applications on iOS devices [7,8,9].

KNOWN COMPANIES THAT USE FLUTTER

BMW unveiled its innovative Flutter app, the My BMW app, in 2020. This in-house developed app, compatible with both Android and iOS, grants users the ability to conveniently manage their vehicles while on the move.

eBay Motors, the official app of eBay, embraced the user-centric and developer-friendly Flutter framework to enhance the capabilities and appeal of its native app. Prior to making this decision, eBay conducted an extensive month-long exploration of Flutter's potential, which ultimately confirmed its efficiency in handling all of the company's tasks. According to eBay's Senior iOS Engineer, Flutter not only met their expectations but exceeded them significantly.

Etsy, a prominent e-commerce company that supports the sale of creative handmade products, chose to utilize Flutter in order to expedite app development and establish a robust platform for its sellers.

An exemplary Flutter-driven app is Google Ads, which empowers users to customize their advertising campaigns based on their interests. The development enhancements provided by Flutter have made the Google Ads app more resilient and informative, offering developers improved insights and swift functionality.

Google Pay, a globally trusted online payment application, utilized the capabilities of Flutter. With a user base exceeding 70 million worldwide, Google Pay required a framework that could enhance its functionality, and Flutter proved to be the perfect solution. The revamped Google Pay application seamlessly adapts to both iOS and Android platforms, allowing for a smooth user experience across different devices.

Groupon, an application powered by Flutter, offers exclusive coupons and deals to its users. Users can explore various deals and discount coupons for specific brands, compare offers, and more. This application caters to two distinct user groups: customers and merchants. When Groupon aimed to improve its functionality, it made the strategic decision to integrate Flutter with its existing solution instead of rewriting the entire codebase. This integration

yielded impressive outcomes, enhancing the overall performance and user experience of the app.

iRobot, a popular coding application that provides a personalized learning experience, turned to Flutter to ensure accessibility for users of all skill levels. By leveraging the flexibility of Flutter, iRobot empowers users to learn coding through graphical, full-text, and hybrid methods. The integration of Flutter into the app's framework enables a seamless and user-friendly coding experience.

Since early 2018, Philips Hue has relied on the Flutter framework to deliver an intuitive and intelligent lighting system to its users. The Philips Hue application allows users to effortlessly control and customize the lighting in their homes. By utilizing Flutter, Philips Hue ensures a smooth and responsive user interface, enhancing the overall lighting experience for its customers.

The SpaceX Go app, a brilliantly simple SpaceX launcher, was developed using Flutter. The primary objective of this application was to provide users with a streamlined and efficient SpaceX experience. Flutter emerged as the ideal choice for crafting this app, enabling the development of a user-friendly interface and seamless performance.

CONCLUSION

In summary, the research findings indicate a significant demand for Flutter developers in the current landscape of mobile app development. Various sources such as business analysis, market research, industry usage, and user evaluation provide evidence of the increasing need for experts in Flutter development.

The growing adoption of Flutter across the industry, along with positive feedback from developers and organizations, highlights the platform's significance and its ability to meet the requirements of daily development practices. Job postings, salary trends, and industry publications further validate the rising demand for Flutter developers and emphasize the availability of lucrative job opportunities in this field.

Considering the continuous evolution and expansion of the mobile app industry, it is expected that the demand for Flutter developers will persist or even escalate in the future. Consequently, both developers and professionals can greatly benefit from acquiring or enhancing their Flutter development skills. By investing in education, gaining practical experience, and engaging in business development activities, individuals can effectively navigate the competition in this vast industry and contribute to the success and innovation of the Flutter community.

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