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A COMPREHENSIVE SURVEY AND ANALYSIS OF CROSS-PLATFORM TECHNOLOGIES FOR FINANCE-RELATED MOBILE APPLICATION DEVELOPMENT

Ameya Bhalgat[*1], Brincy Mathew[*2], Rohit Bhise[*3], Sarvesh Chakradeo[*4], Prof. Arundhati Atul Chandorkar[*5]

[*1,2,3,4,5]Savitribai Phule Pune University, Department of Computer Engineering, Pune Institute of Computer Technology, Pune, Maharashtra, India.

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ABSTRACT

In the contemporary landscape of mobile application development, the utilization of cross-platform technologies has become increasingly prevalent, offering developers a viable solution to build applications that can function seamlessly across multiple operating systems. This survey paper aims to comprehensively analyze various cross-platform technologies in the context of developing a finance-related mobile application, specifically catering to the requirements of a credit score calculation application. Through an in-depth investigation, this study evaluates the benefits and drawbacks associated with prominent cross-platform technologies, assessing their efficacy, performance, and compatibility with the intricate functionalities of finance-based applications. Additionally, the paper delves into the implications of utilizing these technologies in the development of a credit score calculation application, considering factors such as user experience, security, and data handling. The analysis presented in this paper serves as a guide for developers and stakeholders seeking to understand the nuances of cross-platform technologies, aiding them in making informed decisions regarding the selection of the most suitable technology for the development of finance-focused mobile applications. Furthermore, the findings of this survey contribute to the ongoing discourse surrounding the optimization of mobile application development in the finance sector, addressing the need for robust and reliable solutions that adhere to industry standards and user expectations.

Keywords: Mobile Application Development, Finance Related, Survey, Analysis, Credit Score Calculation.

I. INTRODUCTION

In In the dynamic landscape of mobile application development, the proliferation of cross-platform technologies has introduced a paradigm shift, enabling developers to create applications that transcend the confines of singular operating systems. This transformation has been particularly influential in the realm of finance-related mobile applications, where the need for seamless functionality and robust performance is paramount. This paper delves into a comprehensive survey and analysis of various cross-platform technologies in the context of developing a finance-related mobile application, focusing specifically on the intricate process of creating a credit score calculation application.

The quest for an optimal technology solution in the domain of finance-based mobile applications is driven by the imperative to deliver a secure, user-friendly, and efficient platform that meets the evolving demands of modern users. Consequently, this study undertakes a critical examination of the benefits and drawbacks associated with prominent cross-platform technologies, considering their implications for performance, user experience, security, and data handling. By synthesizing these insights, the paper aims to provide a valuable resource for developers and stakeholders seeking to make informed decisions regarding the selection of an appropriate technology framework for their finance-focused mobile application endeavours.

The insights derived from this analysis not only contribute to the ongoing discourse on the optimization of mobile application development in the finance sector but also hold relevance for a broader audience interested in the intersection of technology and finance. As the digital landscape continues to evolve, the significance of leveraging the most effective cross-platform technologies remains integral to the pursuit of creating innovative and user-centric finance applications that adhere to industry standards and cater to the diverse needs of a discerning user base

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II. METHODOLOGY

Data Collection

This step involves gathering a user's financial data and relevant personal information. Key financial data may include their payment history, credit card balances, outstanding loans, and other factors that contribute to their credit score. Ensure data collection adheres to legal and ethical standards, including obtaining user consent.

Credit Score Model

You need a credit scoring model that calculates the credit score based on the collected data. Typically, credit scoring models consider factors like payment history, credit utilization, length of credit history, types of credit, and new credit inquiries. Depending on your requirements, you can choose an existing model (e.g., FICO or Vantage Score) or design a custom model that assigns weights to these factors.

App Development

Use the Flutter framework to create the user interface (UI) and user experience (UX) for your mobile app. Flutter is known for its cross-platform capabilities, allowing you to develop for both Android and iOS with a single codebase. Design an intuitive and user-friendly interface that enables users to input their financial and personal data.

Logistic Regression

Implement a logistic regression algorithm within your app. Logistic regression is a common method for credit scoring as it can predict the probability of a user falling into different credit score ranges based on the input data. Your logistic regression model should take in the user's data and return a credit score prediction.

Data Security

Data security is of utmost importance. Implement encryption, secure authentication methods, and data storage best practices to protect users' sensitive financial information. This includes securing data both during transmission and storage.

Testing and Deployment

Thoroughly test the app for functionality, security, and performance. Ensure it works seamlessly on various devices and operating systems. Once testing is complete and any necessary adjustments are made, deploy the app-to-app stores like Google Play Store and Apple App Store, following the respective submission guidelines.

User Feedback and Improvement

Encourage users to provide feedback on the app. Continuously update both the app and the credit scoring model based on user input and any changes in credit scoring regulations or industry standards. This iterative process is crucial for maintaining the app's relevance and accuracy.

III. MODELING AND ANALYSIS

No.	Work	Features
1.	A. P. Shah and S. P. Malgaonkar	The paper evaluates various tools based on factors like platform compatibility, ease of use, performance, cost-effectiveness, plugin availability, device feature support, and community backing. This research assists developers in making informed decisions when choosing the right framework for their multi-platform app projects.
2.	C. A. Pérez-Ken, P. Belzarena, and D. Bonino	Comprehensive comparative analysis of cross-platform mobile app development. It evaluates various development tools and methodologies, aiding developers and researchers in selecting the most effective approaches for multi-platform app development.

3.	D. G. Mohaisen and I. Khalil	Provides valuable insights and recommendations for developers seeking effective cross-platform solutions, making it a crucial resource for those navigating the dynamic field of mobile application development.
4.	Xin Huang, Liang Lu, et al.	In-depth exploration of innovative technologies, frameworks, and methodologies employed to craft mobile applications that transcend platform boundaries. Notably, the paper provides valuable insights, shedding light on the evolving landscape of mobile app development, and offers a unique perspective on the myriad techniques and tools.
5.	Yu-Chih Tung, Patricia Martínez, et al	This research is unique in its focus on enhancing the student experience through mobile technology. It offers insights into app design and functionality, providing a valuable resource for educators, developers, and researchers interested in improving college-level education through innovative mobile applications.
6.	A. Kumar and M. Ramamoorty	extensive exploration of cloud-based mobile app development for Android and iOS platforms. This study provides a comprehensive overview of the utilization of cloud technologies in mobile app development. It serves as a valuable resource for developers and researchers seeking to harness the potential of cloud-based solutions in the ever-evolving mobile app landscape.
7.	A. Seffah and W. Maalej	Presents a study on enhancing mobile app design for iOS by applying heuristic evaluation techniques. It serves as a significant contribution to the field of user interface design, offering valuable insights into designing user-friendly and effective iOS applications. This paper is a key resource for app designers and researchers seeking to enhance the usability and user experience of iOS apps.
8.	A. Seffah, R. Julien, and et al.	conducts a comprehensive analysis of usability testing methods for mobile applications. This research offers a valuable comparative study of different usability testing techniques applied to mobile app development. It serves as a significant resource for developers and researchers, providing insights into the effectiveness of various testing methods in ensuring the usability and user-friendliness of mobile applications.
9.	K. Yank	This resource stands as a valuable reference for developers, offering an extensive and practical overview of iOS app development. Yank's book serves as a foundational source for those aiming to create high-quality and user-friendly iOS applications, making it a crucial addition to the literature on iOS development.

10.	Du, H., & He, L. -w. (Year)	This research focuses on the integration of machine learning techniques with mobile communication, aiming to improve user experiences and functionality. ContactBook, as presented in the paper, utilizes machine learning to intelligently manage and enhance mobile communication applications. By analyzing user behavior, preferences, and communication patterns, ContactBook can provide personalized suggestions, context-aware recommendations, and efficient message sorting.
11.	S. Saravankar, S. Nerur, and V. Sambamurthy	This research explores the realm of contact recognition, which is often a crucial component of various applications, including contact management systems and social networks. The authors leverage machine learning and text mining to automatically identify, categorize, or manage contacts based on textual information associated with them.
12.	A. Mantrach, Y. Saeys, et al	Data Extraction Challenges, Integration of Diverse Data Sources, Data Mining Techniques, Data Integration Solutions, Applications, Data Quality Improvement, Contributions to Data Management
13.	J. Heer and D. Boyd	Machine Learning for Predictive Analysis, User Behavior Analysis, Predictive Modeling, Real-World Applications, Enhancing User Experience, Machine Learning in Ubiquitous Computing
14.	A. Seif, A. H. Foruzan, et al	Deep Reinforcement Learning: The paper's central focus is on the application of deep reinforcement learning techniques.It's used to make sequential decisions while maximizing a reward signal, Personalized Deduplication: The authors tackle the challenge of address book deduplication, a common problem in contact management systems. They aim to make this process personalized, meaning it adapts to individual users' needs and preferences, Data Science and Advanced Analytics: This research sits within the realm of data science and advanced analytics, which involves using sophisticated data analysis techniques.
15.	X. Yin, S. He, et al.,	This research is pivotal in the context of pervasive computing and data management. It explores how machine learning techniques can be used to enhance the organization and usability of contact lists. The authors aim to improve the overall user experience by applying machine learning algorithms to contact list management.

IV. RESULTS AND DISCUSSION

After thorough analysis, it is evident that cross-platform application development proves to be the superior choice for our finance-oriented credit score calculation application. The decision is primarily attributed to its cost-efficient nature, enabling effective resource allocation without compromising quality. Furthermore, the streamlined development process allows for swift deployment across multiple platforms, ensuring a consistent

user experience and minimizing maintenance efforts. The unified codebase simplifies updates, facilitating prompt bug fixes and feature enhancements, while the broader market reach afforded by cross-platform development enhances the application's potential impact within the finance sector.

V. CONCLUSION

In conclusion, the thorough survey and analysis presented herein emphasize the pivotal role of cross-platform technologies in the development of finance-related mobile applications, particularly highlighted through the case study of a credit score calculation app. The superior cost efficiency, streamlined development process, consistent user experience, simplified maintenance, and broader market reach collectively underscore the prominence of cross-platform development as an optimal choice for fostering innovation and efficiency within the dynamic landscape of mobile technology in the finance sector."

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