From Classroom to Boardroom: An Internship Experience in FinTech

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ABSTRACT

The banking sector is currently grappling with an increasing demand for secure and swift software solutions, a critical component in maintaining a competitive edge in today's market amongst large tech companies. Leveraging computer science principles, I contributed to developing a robust backend system using modern frameworks and tools such as RxJava (a programming library for composing asynchronous and event-based programs) and Spring Boot (a framework for building stand-alone, production-grade Spring-based Applications). The design process involved an analysis of the existing systems, followed by the iterative development of new features, employing Agile methodologies, and emphasizing a user-centric approach. Through this initiative, the company will be able to better manage and enhance its system's efficiency and utilize automated processes to improve the customer's experience. Moving forward, it is essential to focus on creating and maintaining automated processes, coupled with extensive testing to ensure that users have a seamless experience with the company's systems.

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1. INTRODUCTION

The fusion of finance and technology has given birth to novel platforms like Fidelity Investments, Allies, and Marcus Invest by Goldman Sachs, which aim to redefine the financial landscape to better cater to modern-day needs. My internship afforded me a valuable opportunity to contribute to the company's investment and banking web-app, specifically focusing on the savings account aspect. This endeavor provided a practical perspective to employ modern frameworks and tools, enhancing the digital banking experience for customers.

In this rapidly evolving domain, my involvement in developing a system for the savings account segment of the banking app was a real-world exercise in addressing contemporary challenges in digital banking. The meticulous design process, iterative development of new features, and the application of Agile methodologies highlighted the importance of a user-centric approach in developing financial software solutions.

2. RELATED WORKS

The synergy between finance and technology has been the subject of numerous studies and projects, which have significantly informed and inspired the work I carried out during my internship. One such influential work is the development and implementation of financial web-apps like Betterment and Wealthfront, which demonstrated the potential of modern software frameworks in streamlining financial operations.

The focus for my project was to automate a process that the company originally used so that human intervention was completely avoided. There is one topic that relates to this known as Robotic Process Automation (RPA). It refers to the use of software robots to complete repetitive and labor-intensive tasks. These can increase productivity and efficiency by a large amount. “With a combination of RPA and technologies such as CA and digital assistance, we can increase process automation by 20%” (Maček, 2020). One reason the company wanted to work on this new feature was to improve efficiency for both the firm and its customers.

3. PROJECT DESIGN

In my endeavor as a backend software developer, I worked closely with the Product and Development team. I was placed on the team that worked directly on the web and mobile app. During this time, I assisted the team on a project they had eagerly been waiting to develop and complete.

The system in place for the app was a very large one that consisted of various Microservices that allowed different features and capabilities to be organized and sectioned. The team I was on dealt with five major services that handled account transfers, deposits, withdrawals, and more. The team used frameworks enhanced for their own needs. For example, their version of RxJava was of a custom type that met company standards for both security and usability.

For the project, I was tasked with automating the Roth conversion account transfer feature, which allowed users to convert their traditional IRA account into Roth IRA accounts within the app. This aimed to replace the manual method, which required users to call and receive a form that would need to be filled out and sent to a middleman for review.

I carried out an analysis of the previous solution the team had started working on and the existing systems to get a better understanding of inefficiencies of the manual processes and the general structure and flow of the codebase. Working closely with the team, we identified the critical areas for improvement and defined the requirements for the new automated feature.

I was at the forefront of the backend development, ensuring that the new Roth conversion feature within the existing microservices architecture was integrated properly. This involved designing and implementing the backend logic to support the conversion process, ensuring proper data validation, and communicating between various microservices.

Additionally, working alongside our frontend developer intern, we ensured that the web portion worked hand in hand with the platform/backend, as well as providing a user-friendly interface for the Roth conversion feature, allowing users to easily initiate and complete the conversion process within the app.

Whenever logic was implemented, intensive testing was incorporated to ensure the functionality, security, and performance of the new feature. This involved unit testing, integration testing, and end-to-end testing to ensure a seamless experience and adherence to the performance standards set by the division I was in.

The entire design process allowed for the team to make great progress towards delivering this new automated feature. Given the size of the project, I was not able to see the new feature in its entirety. Through my work, however, a solid foundation for transitioning from a manual to an automated

Roth conversion process was established, aligning with the broader goal of leveraging technology to streamline financial operations.

4. ANTICIPATED RESULTS

The automation of the Roth conversion process in the app was designed to create a smoother experience for users and a more efficient system for the company. Transitioning from a manual to an automated process not only minimized the risk of human errors, but the feature could also be made available to a broader user base. This streamlined process was expected to encourage more users to utilize the bank's investment and banking platform for their IRA conversions, potentially leading to increased user engagement and positively impacting the company's quarterly earnings. The ease and efficiency of the automated Roth conversion feature would likely reflect well on user satisfaction, and by extension, on the company's reputation in the digital banking sector.

5. CONCLUSION

This project represents a significant stride in the realm of digital banking, particularly in enhancing the user experience and operational efficiency of financial services. The automation of the Roth conversion process within the company's investment and banking platform is not just a technological upgrade but also a pivotal move towards redefining how consumers interact with financial institutions. By transitioning from a manual, potentially error-prone process to a streamlined, automated system, the project addresses a crucial need for accuracy and efficiency in financial transactions.

The meaningful elements of this project such as integration with existing microservices, customized use of advanced software frameworks like RxJava, and a collaborative approach to backend and frontend development collectively contribute to its importance. Features such as user-friendly interfaces and sturdy backend support ensure that the automated Roth conversion process is not only efficient but also accessible and secure for all users. This initiative, therefore, has the potential to significantly benefit consumers by offering a more seamless and reliable way to manage their investments, thereby enhancing their overall banking experience.

The anticipated value to consumers includes reduced processing times, minimized risk of errors, and an enhanced sense of control and confidence in managing their financial portfolios. By leveraging cutting-edge technology and a user-centric design approach, this project sets a precedent in the digital banking sector for innovation and customer satisfaction. In essence, it embodies the evolving landscape of financial services, where technology and user experience converge to create more empowered and satisfied consumers.

6. FUTURE WORK

As the internship concluded, a critical component of the project was still in development: the implementation of the DocuSign page, where users can digitally sign the completed conversion form. This integration is essential for the automation process, ensuring that the Roth conversion is successfully completed on the users end. The next immediate step is to complete the integration of DocuSign, thoroughly test its functionality within the app, and ensure that it aligns seamlessly with the rest of the automated process.

There is potential for expanding the scope of this automation project. The underlying framework and methodologies applied in automating the Roth conversion process can be adapted to other banking services. For example, similar principles could be used to streamline account opening procedures, loan applications, or even regular account maintenance tasks. This approach not only enhances user experience but also positions the bank as a leader in digital innovation.

Additionally, the concepts and technologies employed in this project could find relevance in other financial products and services. For instance, integrating automated, user-friendly features in investment and wealth management platforms, or in the growing field of personalized financial advice (robo-advisors). According to Fisch, et al. (2019): "The robo-advisor uses computer algorithms to offer investment selections deemed appropriate in terms of asset allocation and diversification based on the information supplied by the client."

Technology as such could substantially benefit both the institution and its customers. This expansion would not only solidify the bank's position in the market but also open new avenues for customer engagement and satisfaction.

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