Lab 1- BetterSwipe Product Description Draft

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1. Introduction

Although receiving many reward credit cards in this modern financial landscape can be seen as a good thing, the large number of available rewards cards and the various types and values of rewards they offer make choosing the best reward card(s) more complex. A survey by Credit Karma in 2023 highlighted the overabundance of options that are available to consumers: 53 cash back cards, 12 miles cards, and 20 points cards (Credit Karma, 2023). This diversity stems from the three main reward systems- cash back, miles, and points; each providing different returns. Unfortunately, giving an average consumer a variety of choices does not translate well into easy decision-making. According to an article written by Experian in 2017, 69% of individuals have found the process of researching new credit cards very time-consuming (Experian, 2017). Added to the same article, 61% of individuals also feel overwhelmed by the vast number of available reward credit card options, and 57% of individuals struggle to find a reward credit card that meets their interests (Experian, 2017). Intensifying the issue, a 2022 report by M.L. Black reveals that 69% of reward credit card holders are not using the full potential of their rewards; which indicates a crucial gap between card offerings and consumer utilization (Black, 2022).

The predominant dilemma in the utilization of reward credit cards lies in the paradox of choice and the potential savings that can be achieved.. Consumers save a lot of their money through the use of reward credit cards, but the process of selecting a card that benefits a consumer the most is complex; the overwhelming number of choices makes this simple task a lot more difficult. The preferred scenario is to match consumers with cards that optimize rewards based on the individual's unique spending patterns. Nevertheless, this scenario requires an in-depth understanding of each of the card's reward systems and the consumer's spending

history. The challenge is not just in choosing a card, but in selecting a card that aligns with the consumer's specific financial behavior to ensure maximum benefit.

The solution to tackle the challenge of selecting the ideal rewards credit card comes in the form of BetterSwipe, a platform designed to revolutionize this process. BetterSwipe provides an analytic approach using the customer's expenditure profile and online information about available reward credit card offerings to recommend the best card, or combination of cards to maximize savings for the consumer.

2.   Product Description

Finding a reward credit card that the consumer finds the most beneficial to his/her lifestyle can be a challenging task. A lot of people shy away from this task due to its complexity, and the ones who attempt this task find it very time-consuming. BetterSwipe uses data about the individual's spending habits to create a spending profile and recommend reward credit cards that may benefit their needs. The main goal of the application is to simplify the selection process to make it easier for users to find a reward card that suits their financial habits.

2.1   Key Product Features and Capabilities

BetterSwipe simplifies and streamlines the way users select reward credit cards by constructing a spending profile for each user and using that profile to recommend users a few reward credit cards that provide the most financial benefits based on their transaction histories.

Unlike many existing apps, BetterSwipe dives deeper into the user's financial behavior in order to recommend to the user a few reward credit cards that are relevant to the user's financial situation. By capitalizing on the consumer's transaction history, BetterSwipe creates a personalized lavishing profile for each user; this process involves continuous monitoring and

updating of spending behavior to ensure the user profile remains accurate and up-to-date. Based on this customized profile, BetterSwipe will recommend the most suitable reward credit card that aligns with the user's spending patterns. To enhance profile personalization further, BetterSwipe will allow users to add other features like their credit score and the number of reward cards they currently own. This approach ensures that the recommendations are not only based on the user's spending history but also on the user's financial situation. Through BetterSwipe, users can make informed decisions that enable them to use the benefits of their reward credit cards to their maximum potential which is suitable for their financial lifestyle.

2.2   Major Components (Hardware/Software)

The architecture of BetterSwipe relies on the sophisticated blend of hardware and software components that are designed to offer a seamless and instinctive experience for selecting credit cards. The core of its hardware infrastructure is network-accessive devices, including personal computers running on operating systems Linux, macOS, and Windows, and smartphones that are equipped with Android and Apple iOS. These devices connect the users to BetterSwipe's services hosted on robust servers, ensuring reliable and efficient access.

On the software side, BetterSwipe harnesses a variety of programming languages and tools to build and maintain its platform. The website utilizes HTML, CSS, and JavaScript, creating a responsive and visually appealing interface. The web and mobile applications are developed using Python for its versatility and efficiency. The platform's data management needs are secured with mySQL database for its secure and organized storage of user data and spending profiles. BetterSwipe incorporates libraries and third-party software, including Visual Studio Code for development, Github/Git for version control, and Gradle for testing. The project

management and collaboration are streamlined through Agile development using Trello, while

Discore and Zoom make communication and collaboration among the development team easier.

3.   Identification of Case Study

The main demographic for BetterSwipe users is consumers who are looking for new

reward credit cards but are overwhelmed by the vast amount of options available. The other

demographic for this application is consumers who aim to use their reward credit cards to the

maximum potential.

The case study group for BetterSwipe involves a group of Old Dominion University

students who want to find a credit card so they can start building up their credit. This small group

represents a young demographic at the beginning of their independent financial journey, making

them the ideal demographic to test the application and provide valuable feedback. As users

navigate through the process of creating their profiles, managing their purchases, and receiving

credit card recommendations, they will assess the user interface, the ease of use, the relevancy or

beneficial factors of the card recommendation, and the overall effectiveness of this application in

aiding their credit journey. Their feedback is expected to be a mixture of usability insights,

security analysis, and the practicality of the application's features. The consumer's feedback will

provide a direct line to the user experience, highlighting the potential improvements, and validate

the application's core premise.

BetterSwipe also has potential use for credit card companies and banks. These

organizations can use data and analytics provided by BetterSwipe for market research and to

understand consumer transactional habits better. These businesses can also use BetterSwipe to

gain insight into consumer spending patterns, which could inform decisions on partnerships with card companies for co-branded cards.

4. BetterSwipe Product Prototype Description

BetterSwipe provides an advancement in the realm of financial technology, specifically designed to streamline the process of selecting the most beneficial reward credit card for customers. This prototype introduces a suite of features that leverage sophisticated algorithms and data analysis to provide personalized card recommendations based on individual spending patterns and financial goals. At its core, BetterSwipe aims to clarify the overwhelming array of credit card options, therefore transforming the decision-making process into a simple, informed, and user-friendly experience. This prototype description delves into the intricate details of BetterSwipe's hardware and software architecture, functional capabilities, and innovative solutions it offers to common challenges faced by credit card seekers.

4.1 Prototype Architecture (Hardware/Software)

The prototype architecture for BetterSwipe is composed of both hardware and software components in order to deliver a user-friendly experience. When it comes to hardware, the prototype mainly comprises support for various devices like computers, laptops, and mobile devices so that the application can ensure easy accessibility and better convenience for users.

When it comes to software, the prototype utilizes a diverse array of coding languages and tools. BetterSwipe is being developed using HTML, CSS, and JavaScript for a robust and interactive user interface. The website application is being developed using mainly Python for its versatility and efficiency. The prototype database will be implemented by mySQL to provide a secure foundation for user data and spending histories. The front-end development of this

prototype is going to be built using React, a JavaScript library, known for its efficiency in

creating dynamic user interfaces. The back-end development of this prototype is going to be built

using Django, a Python web framework, for its rapid development and practical designs. This

development also incorporates third-party software to enhance productivity and collaboration.

Visual Studio Code is going to be the main development environment, mainly for its coding

capabilities and versatility. Version control is going to be managed by Git/GitHub to ensure

efficient workflow. For prototype testing, Gradle is going to be implemented for comprehensive

and reliable testing processes. Trello is going to be used for agile project management for better

task tracking and project organization. Lastly, Discord and Zoom are going to be the main

environments for collaboration and communication between the development team.
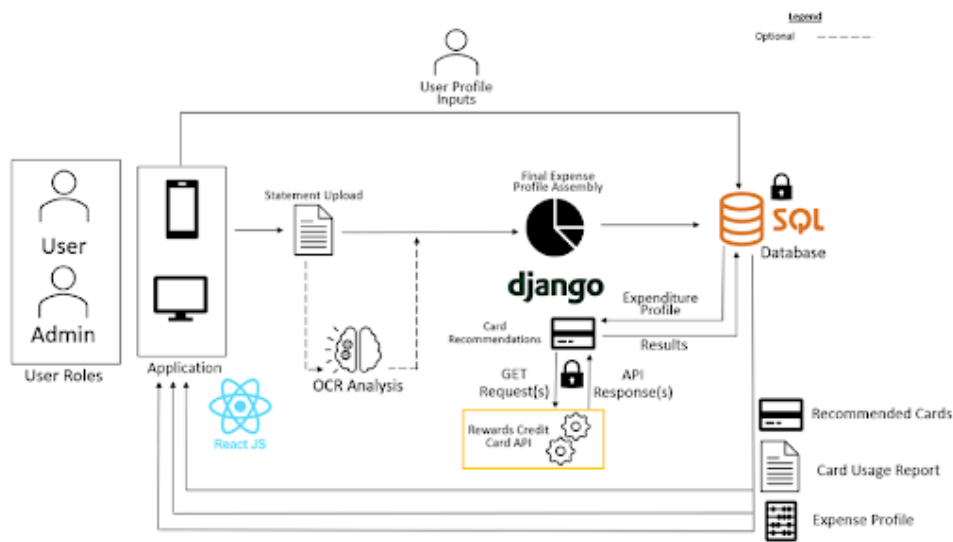

Figure 1. BetterSwipe Prototype Architecture Design MFCD

This diagram (Figure 1) illustrates an intricate network of technologies and processes,

highlighting the user and admin user roles, application workflow, and the integration with

external APIs for real-time credit card data retrieval, all converging to provide a seamless user

experience from profile creation to card recommendation.

4.2   Prototype Features and Capabilities

Functional Element	RWP	Prototype	Current Plan
General			
Web and Mobile Interfaces	Fully Implemented	Partially Implemented	Partially Implemented
Account Registration	Fully Implemented	Fully Implemented	Fully Implemented
Authentication	Fully Implemented	Fully Implemented	Fully Implemented
Profile CRUD	Fully Implemented	Fully Implemented	Fully Implemented
History of Reports	Fully Implemented	Fully Implemented	Fully Implemented
Security			
MFA	Fully Implemented	Eliminated	Eliminated
Data-at-Rest Encryption	Fully Implemented	Fully Implemented	Fully Implemented
Data-in-Transit Encryption	Fully Implemented	Partially Implemented	Partially Implemented
Statement Analysis			
Statement Upload	Fully Implemented	Fully Implemented	Fully Implemented
Expenditure Categorization	Fully Implemented	Fully Implemented	Fully Implemented
OCR/ML Analysis	Fully Implemented	Eliminated	Eliminated
Expenses Summary	Fully Implemented	Fully Implemented	Fully Implemented
Rewards Card Features			
Card Recommendations	Fully Implemented	Fully Implemented	Fully Implemented
Card Comparisons	Fully Implemented	Fully Implemented	Fully Implemented
Rewards Card Details	Fully Implemented	Fully Implemented	Fully Implemented
Continuous Monitoring			
Savings Prediction	Fully Implemented	Partially Implemented	Partially Implemented
Future Purchase Recommendations	Fully Implemented	Partially Implemented	Partially Implemented

Table 1. RWP/Prototype/Current Plan Table

Within the scope of the BetterSwipe platform, the feature set has been developed to

enhance user experience and security, as depicted by the RWP/Prototype/Current Plan table

above. The login and registration process has been fully implemented, ensuring users can

securely access their BetterSwipe profile. Once users have registered or logged into the account,

they will have access to a detailed and customized interface for card recommendations and

comparisons. Each reward is analyzed, providing users with a clear understanding of the benefits

and features of various rewards. Data security is essential for BetterSwipe; therefore, all user

data is encrypted whether at rest or in transit. The key feature of BetterSwipe is constant

transaction monitoring. This allows accurate categorization for each transaction, offering users a

clear view of their spending habits and a crucial role in tailoring card recommendations to match

each user's financial behavior. Lastly, users can view and download detailed reward details for

each reward credit card, which would let users make informed decisions based on the

comprehensive information they just acquired. For added convenience, users can upload

statements so they can further enhance their spending history and reward card recommendations.

4.3   Prototype Development Challenges

During the development of the BetterSwipe prototype, several issues are going to emerge,

each needing careful consideration and calculated solutions. One of the biggest challenges is the

potential risk of user data being leaked. The best solution for this challenge is to encourage users

to create strong passwords to prevent their data from getting accessed by unwanted individuals.

The next challenge is the constant monitoring and updating of card information, which is

resolved by consistently monitoring API(s) for updates and implementing the most up-to-date

card information. Speaking of API(s), the penultimate challenge is BetterSwipe not being able to

access API(s), in which the best response is to test API(s) and cache more responsibly. The last

challenge is the lack of data that will hinder the application's ability to provide users with

relevant and beneficial card recommendations.

5. Glossary

Artificial intelligence (AI): development of computer systems capable of performing tasks that historically required human intelligence, such as recognizing speech, making decisions, and identifying patterns.

Application Programming Interface (API): software intermediary that allows two applications to talk to each other. APIs are an accessible way to extract and share data within and across organizations.

Annual Percentage Rate (APR): the cost you pay each year to borrow money, including fees, expressed as a percentage. The APR is a broader measure of the cost to you of borrowing money since it reflects not only the interest rate but also the fees that you have to pay to get the loan.

Amazon Web Services (AWS): is a subsidiary of Amazon that provides on-demand cloud computing platforms and APIs to individuals, companies, and governments, on a metered, pay-as-you-go basis. Clients will often use this in combination with autoscaling.

CSS: Cascading Style Sheets, Programming language used to determine how HTML elements are displayed.

GitHub: Service that provides hosting and version control for software development projects.

Graphical User Interface (GUI): a form of user interface that allows users to interact with electronic devices through graphical icons and audio indicators.

HTML: Hyper Text Markup Language, a programming language used for creating Web pages.

JavaScript(JS): a scripting programming language that enables dynamic updates of content.

Machine Learning (ML): a branch of AI and Computer Science that focuses on the use of

data and algorithms to imitate the way humans learn, gradually improving its accuracy.

MySQL: Open-source database management system that could be used from creating a simple

shopping list to holding a large amount of company data.

Rewards Credit Card: credit cards that offer you some type of "reward"—typically cash back,

points, or travel miles—for every dollar you spend, sometimes up to certain limits.

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