An Information System Presented to the Faculty of the

College of Computer and Information Science

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Chapter I. Introduction

Background of the study

In the recent years, with the introduction of more profound technologies the banking sector of the Philippines economic industry has found its ways into the pockets of many citizens. These technological advancement and applications has proven itself to be useful and subsequently reliable for majority of consumers. However, despite being reliable, some part of the demographic especially those who have impaired vision or even blindness, they would find themselves at hard use of such applications. According to WHO (World Health Organization) The total number of people who have impaired vision or are blind amounts to 2.2 million people worldwide creating a barrier when deciding to access financial services, ranging from difficulty in navigating app interfaces to the inability to read transaction details. The need for an inclusive banking solution that ensures financial independence and security for visually impaired individuals is in need of addressing.

This study aims to develop a banking application that leverages modern AI tools and user-centered design principles to enhance accessibility for blind users. By integrating features such as voice-assisted navigation, text-to-speech functionality the app will provide a seamless banking experience for visually impaired individuals. Additionally, the app will incorporate robust security measures to protect users' financial data and ensure their transactions are safe. The goal is to create an inclusive banking environment that empowers visually impaired individuals to manage their finances independently, thereby promoting greater financial inclusion and equality.

Statement of the problem

The following problems are what prompted the team to create the above said application to ensure that visually impaired users may be able to use banking apps more effectively:

Complex Navigation:

The navigation structure of most banking apps is intricate and not optimized for screen readers or keyboard-only input, making it difficult for blind users to perform basic banking tasks efficiently.

Insufficient Voice Command Integration:

Few banking apps offer robust voice command features, limiting the ability of blind users to perform tasks hands-free, which is essential for those relying on auditory feedback.

Inadequate Feedback Mechanisms:

Existing apps often do not provide appropriate audio feedback for user actions, leading to confusion and difficulty in confirming whether actions, such as transactions, have been successfully completed.

By addressing these problems, the teams' proposed banking app aims to create a more inclusive, efficient, and user-friendly experience for blind users, empowering them to manage their finances independently and confidently.

Assumption of the study

The proposed banking app created by the team, aims to address the problems identified in the current system design by integrating features and functionalities that cater specifically to blind users. By doing so, the app will provide a seamless, efficient, and user-friendly banking experience. The following assumptions are made regarding the features and capabilities of the new design:

Optimized Navigation:

The app will feature a simplified and intuitive navigation structure, designed specifically for ease of use with screen readers and keyboard-only inputs. Key features will be easily accessible through logical tabbing sequences and shortcut keys.

Robust Voice Command Integration:

The app will incorporate advanced voice command functionalities, allowing users to perform tasks hands-free. This feature will include commands for checking balances, transferring funds, paying bills, and other essential banking operations.

Clear Audio Feedback Mechanisms:

The app will provide immediate and clear audio feedback for all user actions, such as successful transactions, input errors, and navigation actions. This feedback will help users confirm their actions and reduce confusion.

Significance of the study

Blind Users: The primary beneficiaries of the proposed banking app are blind users who will gain increased independence and convenience in managing their finances. The app's features, voice commands, text to speech feedback by the system, will ensure they can perform banking tasks without relying on external assistance.

General Public: The general public will benefit from increased awareness and normalization of accessibility features in everyday technology. This application also aids in the convenience of use for the general public allowing a much more smoother and better experience for everyone to follow.

Banking Institutions: Banks and financial institutions will benefit from an expanded customer base by providing an accessible platform for blind users. This inclusivity will enhance the bank's reputation, customer satisfaction, and compliance with accessibility regulations, potentially leading to increased market share and customer loyalty.

Chapter II. Research Design

The group should be able to identify here the steps of the design process model used and it's corresponding description from the reference book. Aside from it, the researchers should also relate their own experiences and add it into the description of every stage of the design process model.

User – Centered System Design Process

This section discusses the design process model used by the group wherein it is composed of the following stages:

A. **Task Analysis**

1. **Start**
    - Voice recognition activation
    - Then; systems confirm activation
2. **Transaction**
    - User command
    - System processes command
    - System provides auditory feedback
3. **Confirmation**

- Transaction confirmation by user
- System confirms completion
- User is exited from system

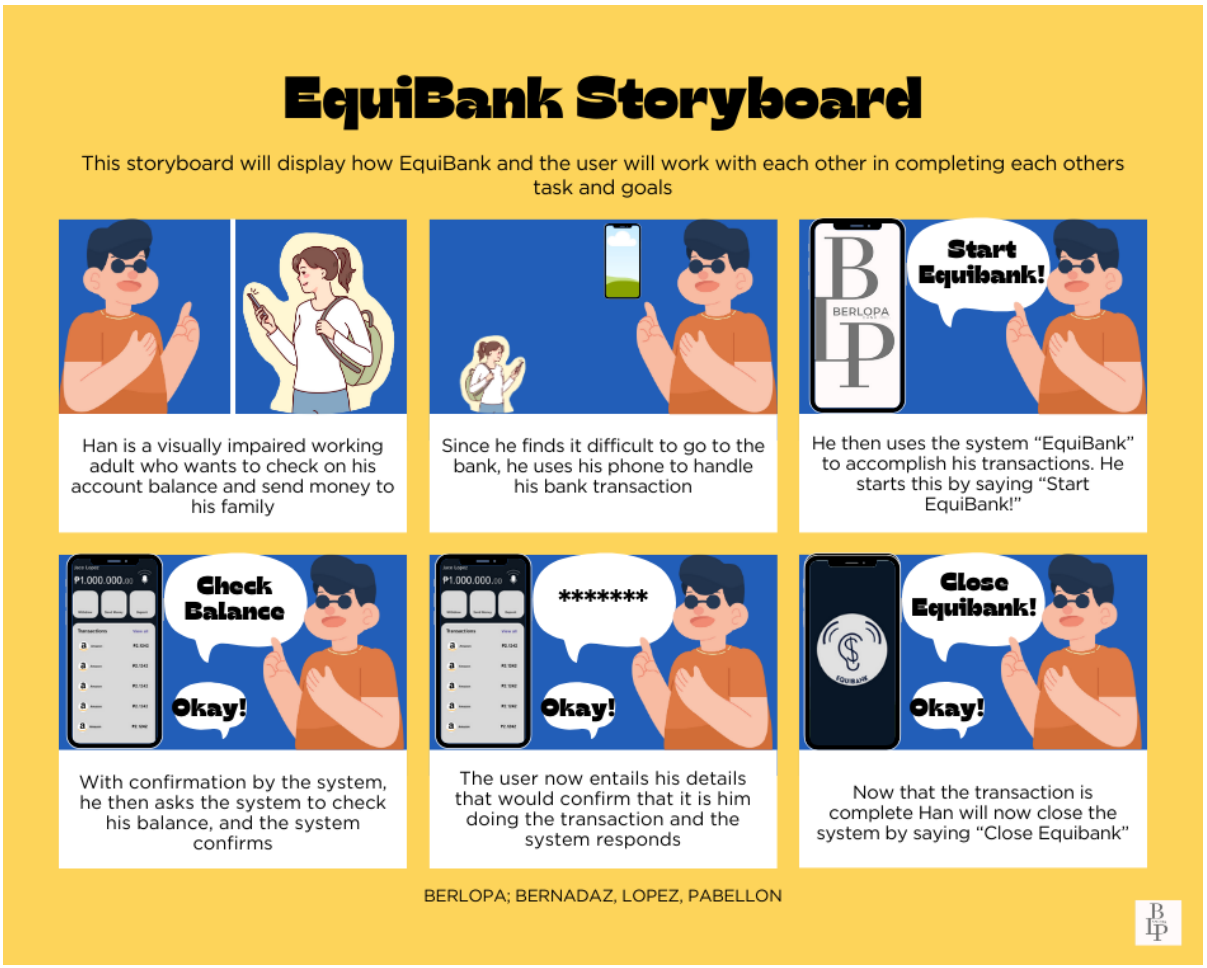
B. **Requirements Gathering**

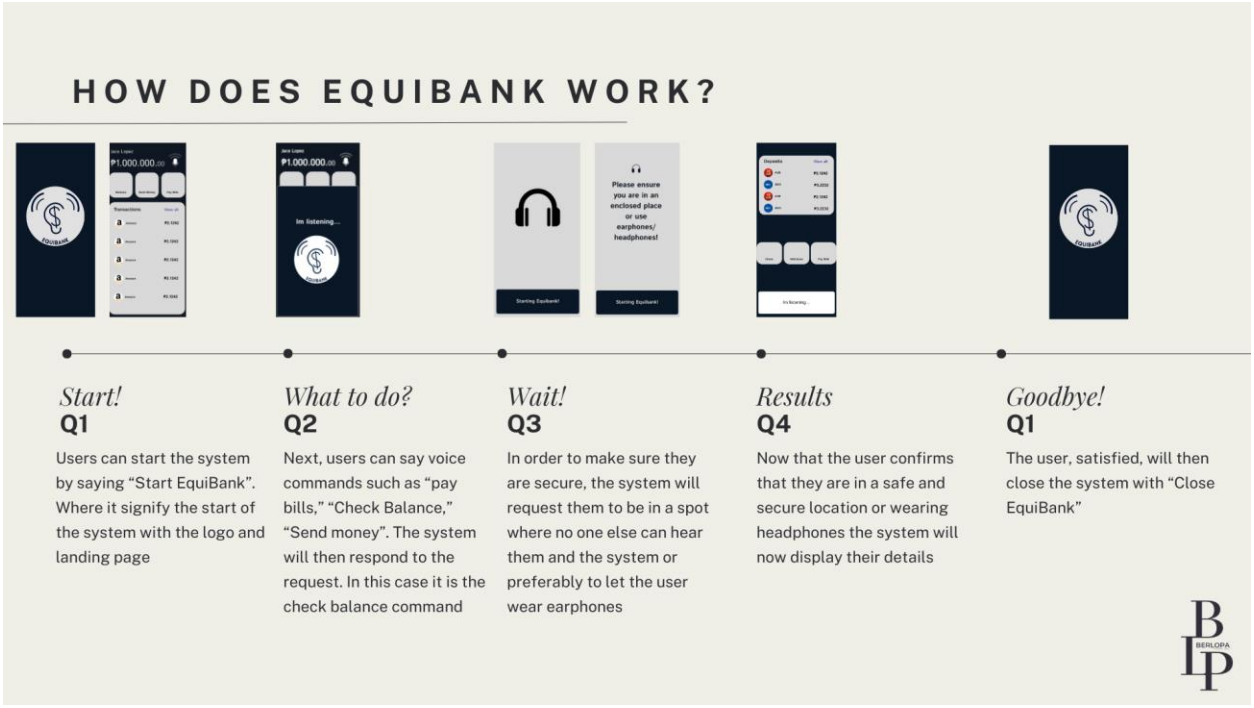
Through observation of other applications and how they perform with visually impaired individuals, we noticed that these 4 listed requirements are what's needed for their use:

- Accessible interface: Voice commands and audio feedback for all functionalities
- User-friendly navigation: Clear and concise voice prompts for menu options and actions
- Secure transactions: User verification and confirmation steps for financial operations
- Reliable performance: Accurate voice recognition and fast response times

C. **Storyboarding and Prototyping**

A storyboard or flow of the entire picture of the interactive system will be shown here.





D. **Evaluation of prototype**

Evaluation Criteria (Based on the 10 heuristics of design evaluation)

Area of Evaluation	5	4	3	2	1
A. Visibility of System Status - The system design provides appropriate feedback like message prompts in response to user actions.		x			
- The message prompts are clear, visible and understandable.		x			
B. Match between the system and the real world - Used words, phrases and concepts according to users' language rather than system oriented words and computer jargons.		x			
C. User control and freedom - The system design provides ways of allowing users to easily "get in" and "get out" if they find themselves in unfamiliar parts of the system.	x				
D. Consistency and Standards - The colors, text, labels, buttons and other elements in the design are uniform from start to finish**.**	x				
- Text and icons are not too small or too big.	x				
- Menus and other features of the system are arranged and positioned in a consistent way. (For ex. If your website has navigation buttons on the top under the page title on one page, the users will automatically look there for the same features on other pages.					
E. **Error Prevention** - The system design provides an automatic detection of errors and preventing them to occur in the first place.		x			
- Idiot proofing mechanisms are applied		x			
F. Help users recognize, diagnose and recover from errors **-** Error messages and the terms used are recognizable, familiar and understandable for the users.		x			
G. Recognition rather than recall **-** Objects, icons, actions and options are visible for the user.		x			
- Objects are labeled well with text and icons that can immediately be spotted by the user and matched with what they want to do.					
H. Flexibility and efficiency of use - The system design provides easy to navigate menus.	x				
- the system does not make wasteful time of system resources.					
Aesthetic and minimalist design **-**Graphics and animations used are not difficult to look at and does not clutter (mess) up the screen.		x			
- Information provided is relevant and needed for the system design.					

. **Help and Documentation** -the system design provides information that can be easily searched and provides help in a set of concrete steps that can easily be followed.			x		

Chapter III. Conclusion and Recommendation

This design is important to how the users will interact with the system. Being informed on the current status of the system greatly benefits the visually impaired in their transactions with the bank. We also believe that the base and simple design greatly helps in navigation of users who just want to navigate via voice commands. Showing easy to read texts and recognizable icons is one of the ways we can interact more effectively with the users.