Online Activity No. 8 and 9: Applying the User-Centred System Design Process

Chapter I. Introduction

Background

In the Philippines, many individuals who own valuable items, such as jewelry or electronics, often face significant challenges in determining the authenticity and value of their possessions. Additionally, they struggle to find suitable pawnshops that will offer the best price for their items. With the Philippines Jewelry market projected to reach US$1.07 billion by 2024 (Statista, 2024), and approximately 17,421 pawnshops operating in the country, each entertaining around 300 customers per day, there is a pressing need for strategic decision-making and advanced technology (Borres, 2020).

Pawnquest is an application that aims to resonate with the hearts of serviceable obtainable Filipinos of around 1.9M in our first year by providing a service such as an appraisal of jewelry and electronics, a fake detection mechanism to determine the authenticity of an object by 3D capturing the item and if device uploads its software details in the cloud to be determined by our model. It also aims to provide a pawnshop locator near you that makes an offer for an item, subsequently being able to message them and exchange another type of media.

Additionally, the app facilitates direct communication with pawnshops through a built-in messaging feature, enhancing the user experience and enabling real-time discussions. It also maintains a list of all transactions made by the user, providing a clear record of items pawned, prices, dates, and pawnshops involved. To ensure the integrity of transactions, the application implements a verification system for both ends - the user and the pawnshop. Once a transaction is successful, both parties should confirm it in the app. This feature helps prevent disputes and enhances trust in the platform.

PawnQuest aims to revolutionize the pawnshop industry by implementing a user-centered design (UCD) approach. The development of PawnQuest is driven by the need to address specific issues prevalent in current systems. These include inconsistent user interfaces, cumbersome document management, and inadequate customer engagement features. By leveraging UCD principles, PawnQuest will focus on enhancing the overall user experience, ensuring that the system is not only functional but also easy to use and aligned with the needs of its users.

Procedure

A. Identify a Scope or Agenda

The scope of PawnQuest involves developing a comprehensive user interface (UI) for a pawnshop management system. The agenda includes identifying key issues in existing systems and designing solutions that enhance usability and operational efficiency.

B. Statement of the problem

The current pawnshop management systems face several critical issues such as poor technology, including:

1. **Time Delays in Transactions**: There are significant delays in processing transactions due to outdated software and manual data entry.
2. **Cumbersome Inventory Management**: Managing inventory, including tracking and retrieving pledged items, is inefficient and prone to errors.
3. **Inadequate Customer Engagement**: Existing systems lack robust features to engage customers, resulting in a subpar customer experience.

Assumption of the study

The proposed PawnQuest system will address these problems through:

1. **Consistent User Interface**: A streamlined and intuitive interface that enhances navigation and usability.
2. **Efficient Transaction Processing**: Automated and optimized processes to reduce time delays in transactions.
3. **Enhanced Inventory Management**: Robust features for tracking and managing inventory efficiently.
4. **Improved Customer Engagement**: Tools and features designed to enhance customer interaction and satisfaction.

These features will validate the proposed design, ensuring it meets the needs of the users and resolves the issues identified in the current systems.

Significance of the study

The study will benefit various stakeholders, ranked by their relevance to the system's success:

1. **Pawnshop Owners and Managers**: They will experience enhanced operational efficiency, reducing overhead costs and improving profitability.
2. **Employees**: The streamlined processes will make daily tasks easier and less error-prone, improving job satisfaction and productivity.
3. **Customers**: A more intuitive and engaging system will enhance their overall experience, fostering loyalty and repeat business.
4. **Regulatory Bodies**: Improved compliance features will ensure that pawnshops adhere to legal and regulatory requirements more effectively.
5. **Developers and IT Teams**: The clear and consistent design will facilitate easier maintenance and future upgrades.

By addressing the needs and challenges faced by these stakeholders, PawnQuest aims to create a superior pawnshop management system that sets a new standard in the industry.

Chapter II. Research Design

The group should be able to identify where the steps of the design process model used and its corresponding description from the reference book. Aside from this, the researchers should also relate their own experiences and add them to 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**

Provide the hierarchical task analysis of the proposed design based on the chosen scope both textual and figure.

1. Login/Make Account
    a. Has Account
        i. Input username
        ii. Input password
    b. No Account
        i. Input Personal Information (Full Name, Address, Birthdate, Gender, Civil Status, Contact Number, Email Address)
        ii. Input Account Details (Username & Password)
        iii. Account Verification
            1. Using Email
            2. Using a Mobile Number
2. Fake Detection
    a. Take a picture of the item you want to pawn
    b. The system will analyze the data
    c. It will show the authenticity percentage and estimated value
3. Picking the pawnshop
    a. There will be a list of all available pawnshops where you can pawn with the estimated price of each
    b. The user can filter based on their needs
    c. The user can pick a pawnshop
4. Messaging
    a. After Picking a pawnshop the user can message the pawnshop to make the final negotiation
    b. Verify that the transaction is pawned
5. Transaction History
    a. History of all the successful transactions

    b. You can see the detailed information of that certain transaction
6. Premium
    a. There is a limit to using the application thus there is a subscription in this mobile application
    b. The user will pick a plan and pay it in cash
7. List of Pawnshop
    a. There is also a list of all partnered pawnshop of pawnsquest with its information
    b. It shows the number of transactions made
    c. It shows the rate in a range of 5-0stars
    d. When clicking the certain pawnshop it will give more detailed information
8. About us
    a. Here it shows the information of what pawnquest is for new users who don't know the application
    b. There is also “why you should use pawn-quest”
9. Editing Account
    a. The user can also edit the profile picture
    b. The user can also change the

B. **Requirements Gathering**

The evaluation is split into three separate parts: System Usability, Heuristics Evaluation, and Participant Survey and Feedback.

Technique	Description
System Usability Scale	System Usability Scale (SUS) is a questionnaire that is used to evaluate the usability of products and services. The questions from this survey are used as a quantitative method to evaluate and get valuable insights into a system. The users are tasked to answer 10 questions with a formula to be used.
Heuristics Evaluation	Heuristics Evaluation aims to identify design problems in a user interface. It will help developers measure the usability of user interfaces in independent walkthroughs and report issues and reveal insights that can help the developers enhance product usability.
Participant Survey and Feedback	A survey will be given to participants after successful prototype usage. The survey will contain qualitative questions in the form of feedback. To ensure no biases will be made in the evaluation.

Table 1: Data Gathering Methods

The tasks for this Prototype are split into different sections: account registration and details task, menu and dashboard task, and appraisal and messaging task.

User Requirements

		iOS	Android
Minimum Requirements	Processor Cores	Dual-core (2 cores)	Quad-core (4 cores)
	OS	iOS 12 or later	Android 8.0 (Oreo) or later
	RAM	2 GB	3 GB
Recommended Requirements	Processor Cores	Quad-core (4 cores)	Octa-core (8 cores)
	OS	iOS 14 or later	Android 10.0 (Q) or later
	RAM	4 GB	6 GB
Other Requirements	Item Appraisal	Camera Access	Camera Access
	Pawnshop Navigation	GPS Access	GPS Access
	Messaging and Video Calls	Internet connectivity, Microphone & storage	Internet connectivity, Microphone & storage

Table 2: System Requirements

To ensure seamless navigation for users, as seen in Table 2 PawnQuest for iOS requires at least a dual-core processor, iOS 12 or later, and 2 GB of RAM, with better performance on a quad-core processor, iOS 14 or later, and 4 GB of RAM. On Android, the minimum requirements are a quad-core processor, Android 8.0 (Oreo) or later, and 3 GB of RAM, with the recommended setup being an octa-core processor, Android 10.0 (Q) or later, and 6 GB of RAM. The app uses the device's camera for item appraisal, GPS for finding nearby pawnshops, internet, microphone, and storage for messaging and video calls. These capabilities enable features like 3D capture for accurate item pricing, cloud-based detection of counterfeit items, and seamless communication with pawnshops.

C. **Storyboarding and Prototyping**

Storyboard:

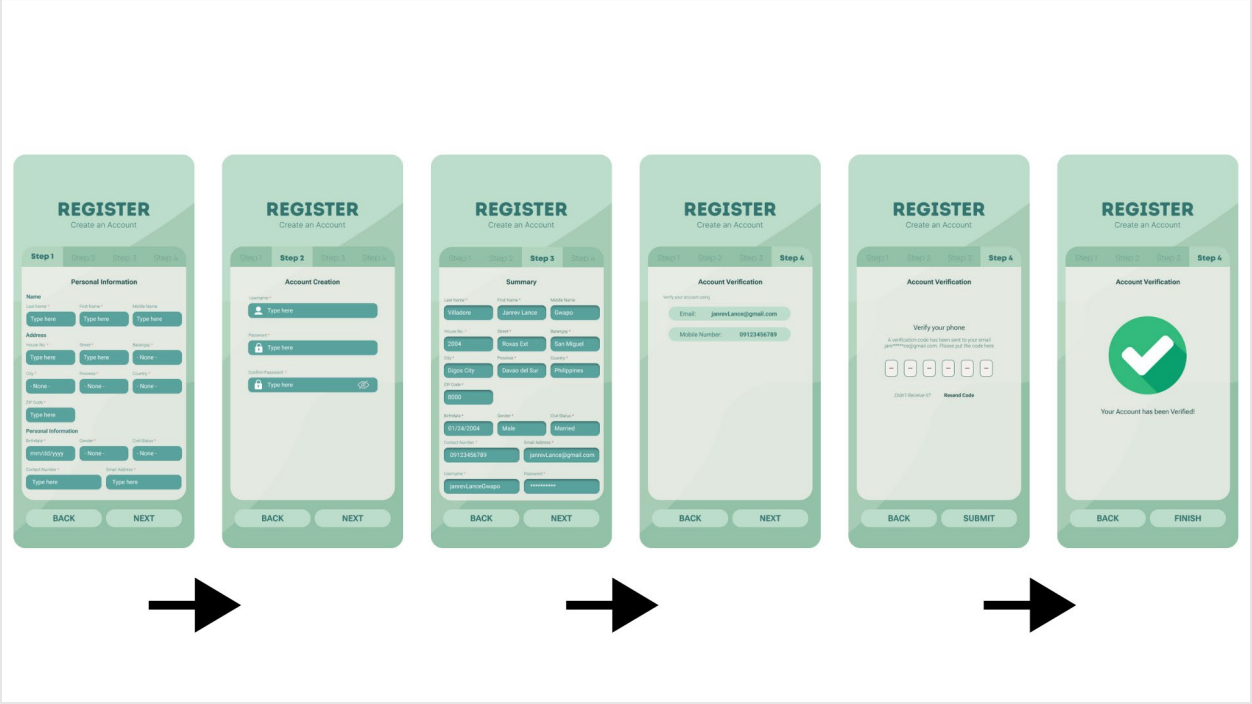
Storyboard 1

Storyboard 2

Prototype

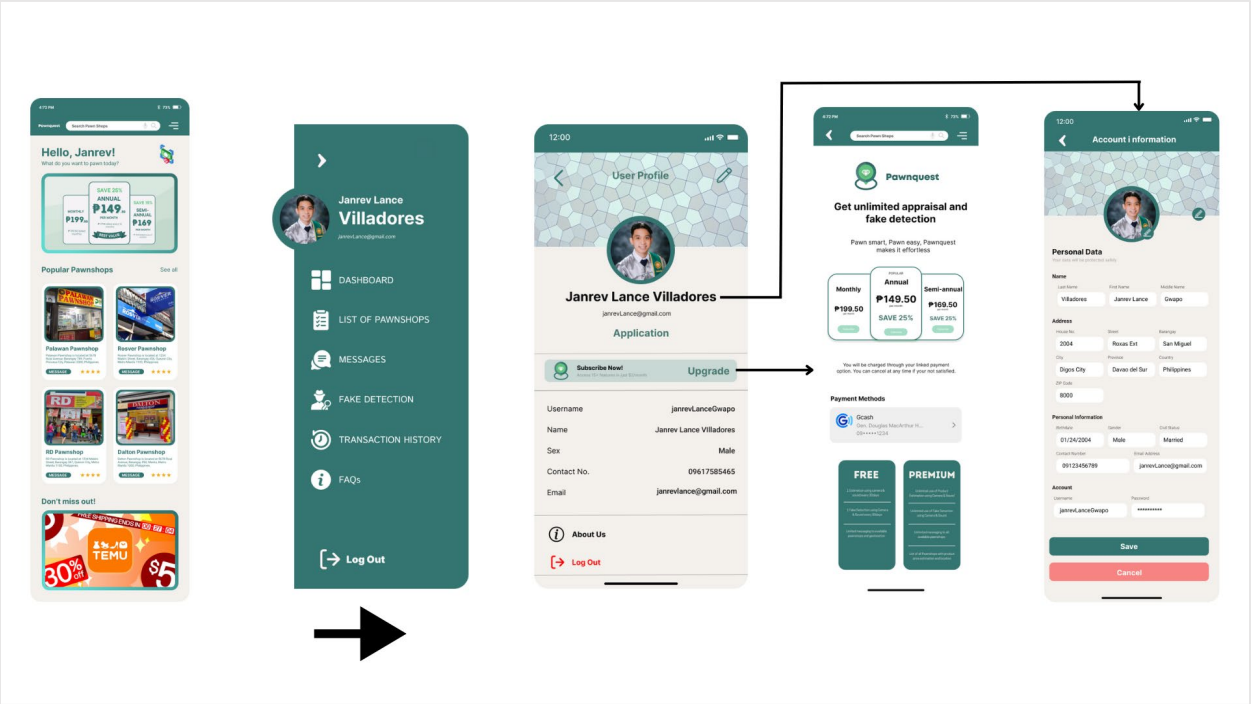
Prototype 1: Login & Logout

Prototype 1 shows the flow for a user who is about to log in and log out which also has a prompt message for logout.



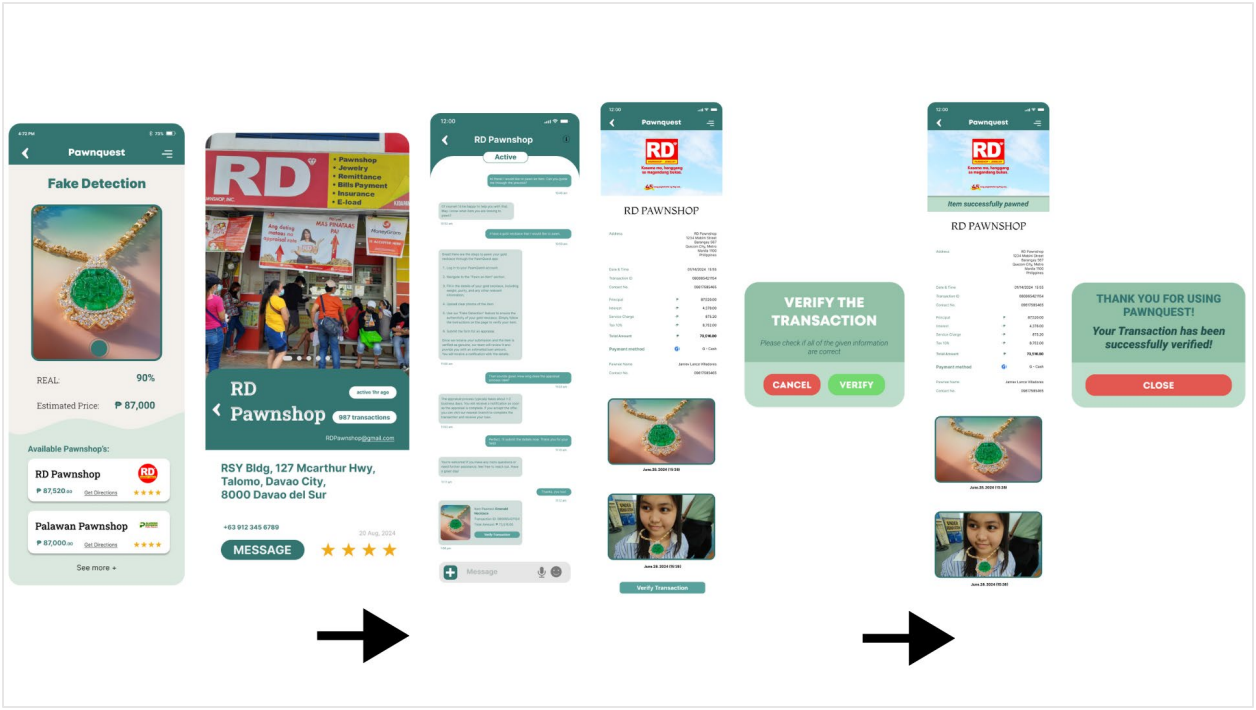
Prototype 2: Account Registration

Prototype 2 shows the flow for user registration, from verification, there have been options, however, there is only 1 change from “verify your phone” to “verify your email”, thus, we only included one design.



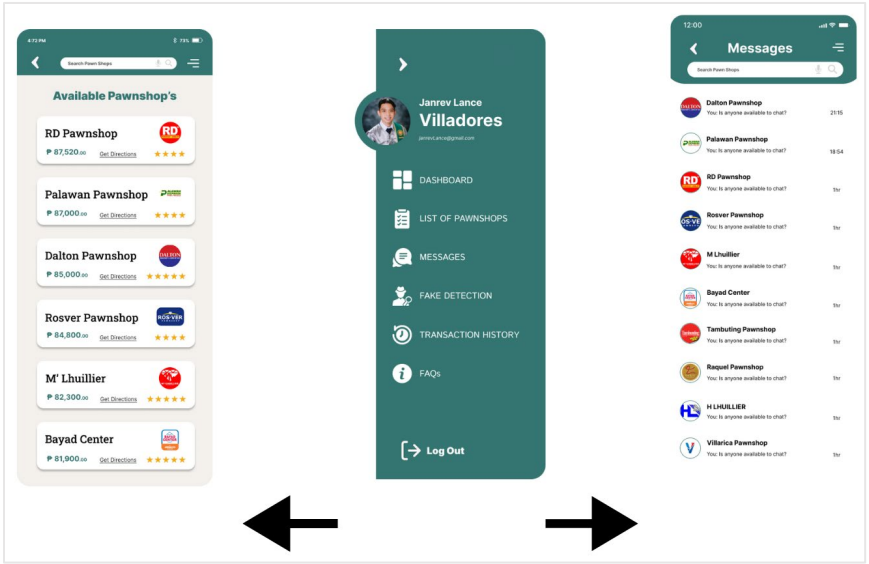
Prototype 3: Account Editing and Subscription

Prototype 3 shows the flow for a user who is about to edit their account details and the subscription options Pawnquest offers.



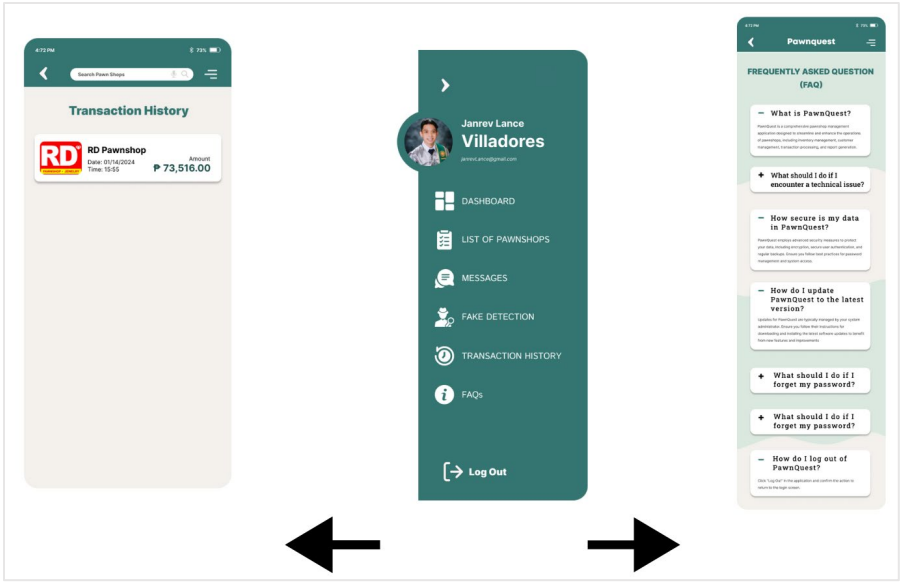
Prototype 4: Item Pawning & Messaging

Prototype 4 shows the flow for a user who selected fake detection from the menu bar in Prototype 3, it lists the pawnshop that has an offer for jewelry, its location, messaging with them, and verifying a transaction for an item.



Prototype 5: List of Pawnshops and Messages

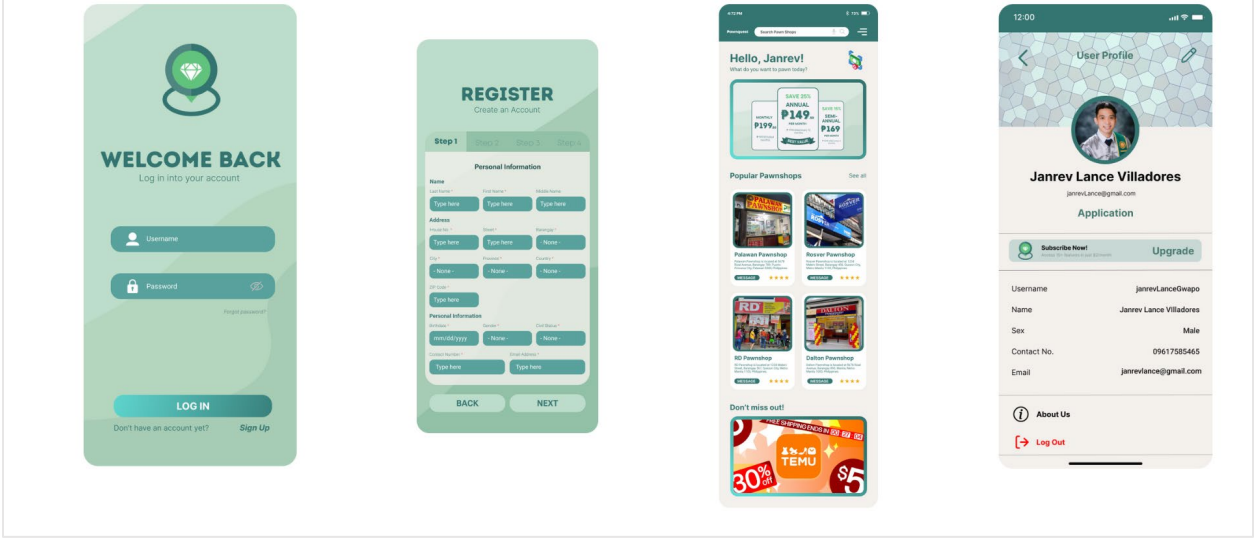
Prototype 5 shows the user design if a user hits “List of Pawnshops” and “Messages” from the menu bar.



Prototype 6: Transaction History and Frequently Asked Questions

Prototype 6 shows the user design if a user hits “Transaction History” and “Frequently asked Questions” from the menu bar.

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. - The message prompts are clear, visible, and understandable.	✓				
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 jargon.	✓				
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.	✓				
D. Consistency and Standards - The colors, text, labels, buttons, and other elements in the design are uniform from start to finish**.**	✓				
- Text and icons are not too small or too big.		✓			
- Menus and other features of the system are arranged and positioned consistently. (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 automatic detection of errors and prevents them from occurring in the first place.		✓			
- Idiot proofing mechanisms are applied	✓				
F. Help users recognize, diagnose, and recover from errors **-** Error messages and the terms used are recognizable, familiar, and understandable for the users.	✓				
G. Recognition rather than recall **-** Objects, icons, actions, and options are visible to the user. - 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. - the system does not waste wasteful time or system resources.	✓				
I. Aesthetic and minimalist design **-**Graphics and animations used are not difficult to look at and do not clutter (mess) up the screen. - Information provided is relevant and needed for the system design.		✓			
J. 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.					

Chapter III. Conclusion and Recommendation

Pawnquest has significant potential to aid Filipinos in pawning wisely due to its simple and easy-to-use interface. The design addresses the issues cited in Section II of Chapter 1 by incorporating features such as item appraisal through 3D capture, fake detection, pawnshop navigation, messaging and video calls, personalization options, and enhanced security measures. These features ensure a streamlined and secure pawning experience, facilitating seamless transactions and building user trust through transparency and authentication.

Through this project, the researchers gained valuable insights into Human-Computer Interaction (HCI). They learned the importance of intuitive design in ensuring user satisfaction and ease of use, as evidenced by participants' ability to complete tasks without assistance. The iterative design process, which included gathering and responding to user feedback, highlighted the significance of user-centered design in creating effective and engaging interfaces. This project underscored the critical role of HCI principles in developing applications that not only meet user needs but also enhance their overall experience.