Part 3.1 System Prototype

Comon, Rashid

Cordero, Kiah Nhame

Villadores, Janrev Lance

Human Computer Interaction

CS152

CHERRY LISONDRA

I. Project Description

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.

II. Requirements Summary

		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 1: System Requirements

To ensure seamless navigation for users, as seen in Table 1 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.

III. Prototype Description

The prototype was created using the Figma web application that contained tools and features designed for collaborative interface design and prototyping. This allowed the team to create interactive mockups to collaborate with members and share the designs with others for testing and feedback.

PawnQuest Figma Link: https://bit.ly/Pawnquest-Prototype

Scenario from a User's Perspective:

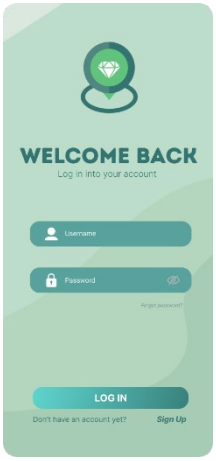
Aling Nena, a senior citizen who would like to treat her granddaughter, browsed through her things and found several items left untouched and had the idea to sell them. She wondered on the internet about the market price of the item but ended up with nothing as its results were not reliable or too old.

One day, Aling Nena heard through her friend about an app that helps users identify an object and even appraise its worth. She also realized that it guides the user to the pawnshop location and has a messaging option to allow communication beforehand rather than going to the pawnshop physically which wastes time.

PawnQuest Mock-up/Prototype:

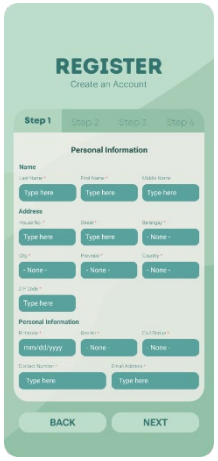
Splash Screen

This screen lasts for a short second after opening the application.



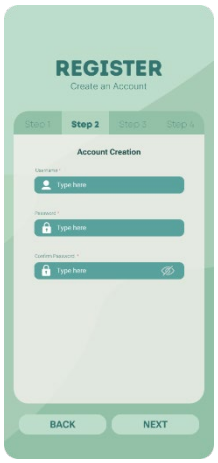
Login

This screen pops up after the splash screen and asks the user to log in or register an account.



Register-1

This screen asks users for their personal information.

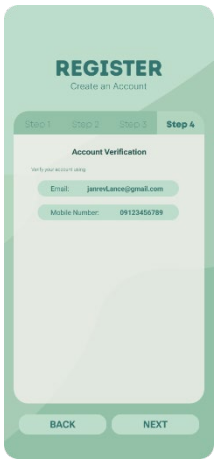


Account Creation

A screen that will ask the user to input a username and password for PawnQuest

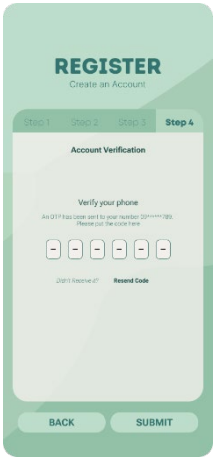
Summary Preview

A screen that displays the listed credentials of a user to easily review them.



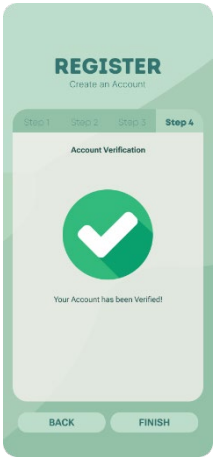
Verification Method

A screen that asks the user where the verification code should be sent.



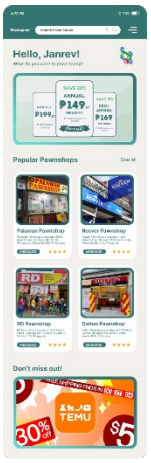
Verification Code

This is the part where a user inputs the verification code received.



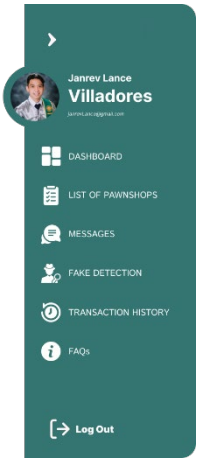
Verification Success

A pop-up will appear upon successful verification.



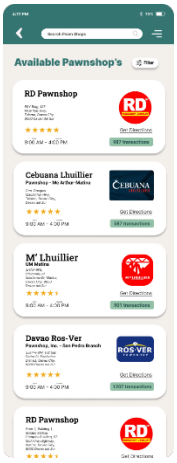
Dashboard

This is the dashboard upon successful login of a user.



Sidebar navigation

This is the sidebar navigation that contains the path to other features. Can be opened through the top right icon.

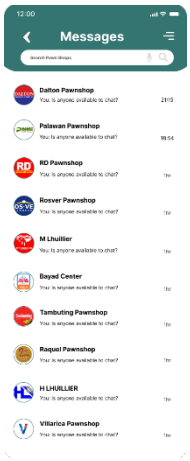


Pawnshop listing

This screen shows the list of pawnshops where a user can pawn an item.

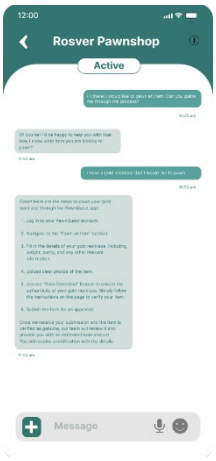
Pawnshop listing selection

This screen appears if a user selects a pawnshop from a pawnshop listing



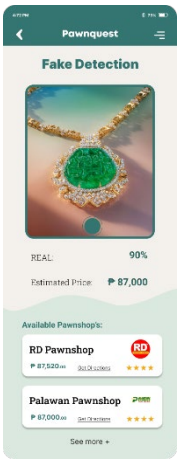
Messages Listing

This appears when a user selects messages from the sidebar navigation menu.



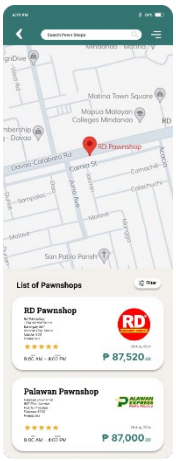
Messaging View

This messaging view appears after a user selects the pawnshops for the message.



Fake Detection

This fake detection screen appears if a user selects it from the sidebar navigation menu.



Pawnshop Direction

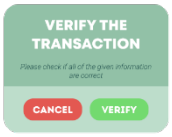
This appears if a user selects “Get Direction” from the fake detection screen.

Messaging view transaction

This is another sort of messaging wherein both parties have agreed on a transaction of an item.

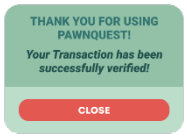
Verify Transaction

This is the screen that appears if the user hits verify from the messages view and reviews the details of the transaction.



Verify Transaction pop-up

This pop-up will appear if a user hits the “Verify transaction” button from the previous screen.



Successful Transaction pop-up

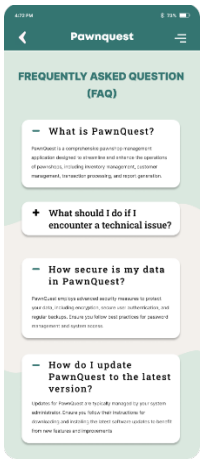
This pop-up will appear after a user hits the “verify” button from the previous pop-up.

Transaction receipt

This screen will appear after a user hits the “close” button from the previous pop-up.

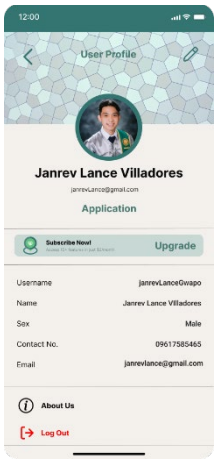
Transaction History

This screen appears if a user selects the “Transaction History” from the sidebar menu.



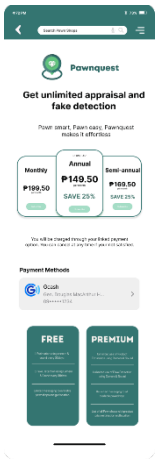
Frequently Asked Questions

This screen appears if a user selects the “Frequently Asked Questions” from the sidebar menu.



Edit Account

This screen appears if a user selects the account icon or name from the sidebar menu.

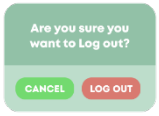


Subscription Options

This screen appears if a user selects the “upgrade” button from the previous screen.

Account Editing

This screen appears if a user selects the top right icon from the edit account screen. It enables a user to edit personal information.



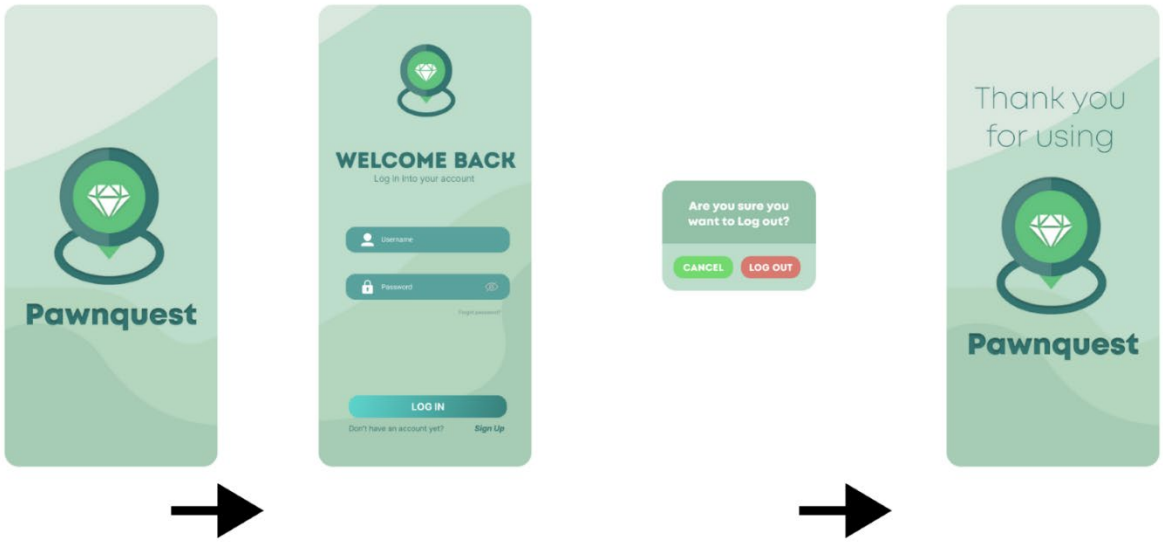
Logout pop-up

This pop-up will appear if a user hits the “Log Out” option from the sidebar menu.

Logout Splash Screen

This splash screen will appear if a user selects “Log Out” from the previous pop-up.

Prototype Flow:

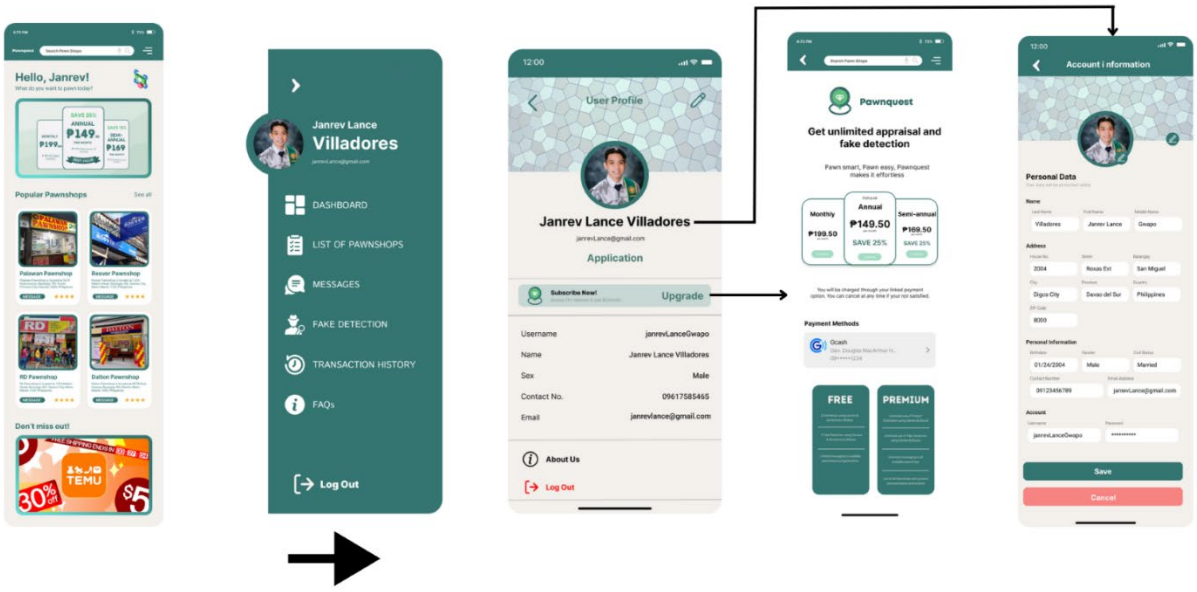


Prototype 1: Login & Logout

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.

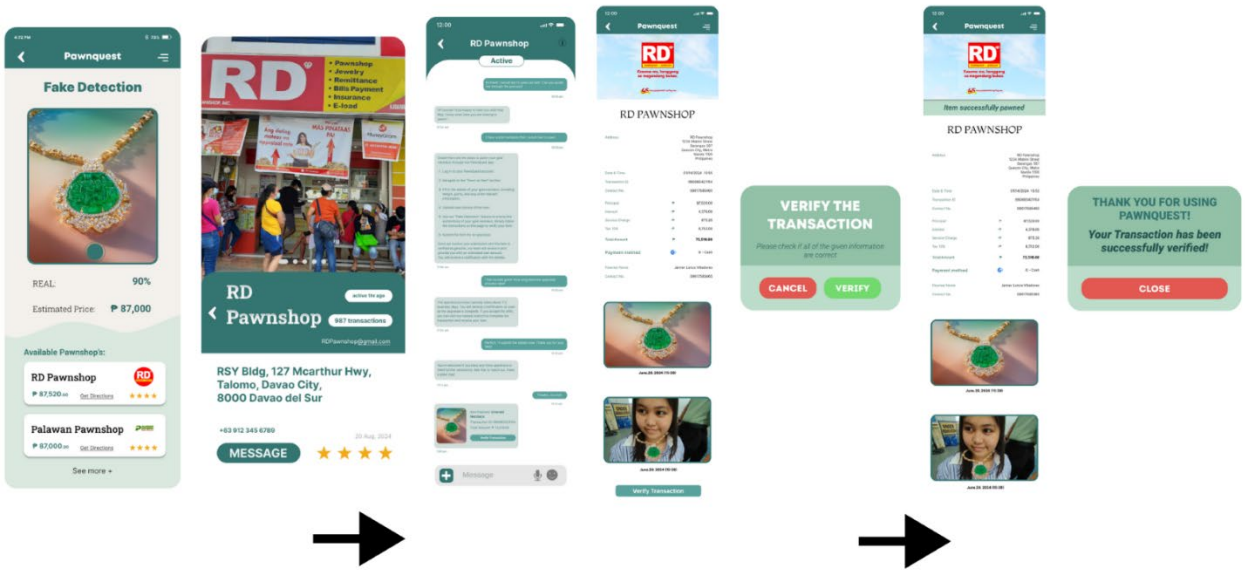
Prototype 2: Account Registration

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.



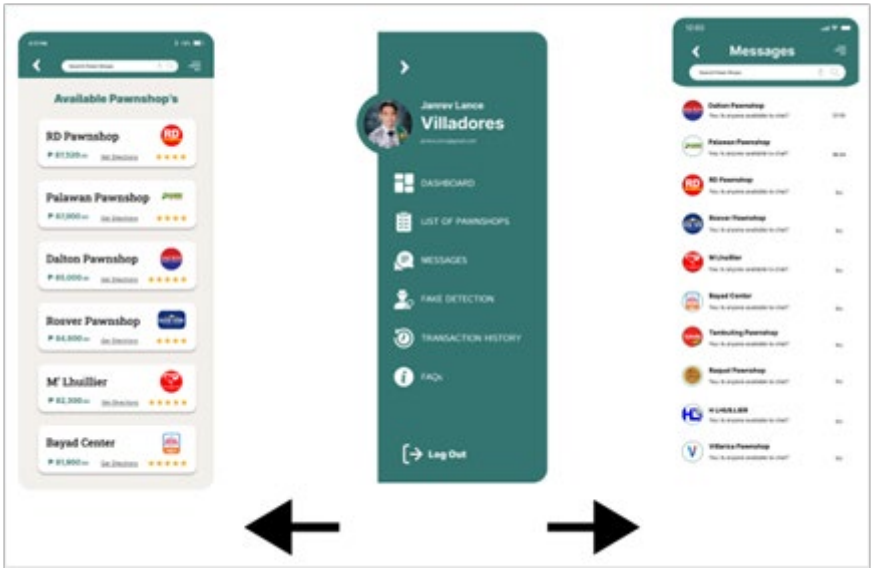
Prototype 3: Account Editing and Subscription

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.

Rationale

This prototype was chosen because it addresses the key needs of users in the pawning process. The advantages include security (fake detection), convenience (map and list views), communication (messages), and transparency (transaction history). However, the disadvantage might be the complexity of the app due to the number of features, which could potentially overwhelm some users.

Changes to requirements

Regarding changes to the initial requirements or usability criteria during the development of the prototype, there were no alterations made starting from part 2 paper. The development team adhered strictly to the initial requirements and usability criteria and modified them during part 2 of the project’s design phase.

However, we have added a system requirement to ensure a smooth experience for users, specifically, it is recommended for Android users to have Android 10.0 or later and iOS 14 or later for iOS. Additionally, 4 GB and 6 GB of RAM for iOS and Android, respectively is recommended. However, iOS 12 and Android 8.0 would also work as a minimum requirement at 2GB and 3GB of RAM, respectively.

IV. Initial Evaluation Plan

The prototype that has been developed addresses several key usability criteria and requirements, which are integral to the user experience. These include user-friendliness, efficiency, accessibility, and security. Here's how we plan to address and measure them:

1. **User-Friendliness**: Comprehensive usability tests will be conducted with a diverse group of users, including those with varying levels of tech skills. The success rate of task completion without assistance and qualitative feedback about their experience will be used to measure the user-friendliness of the interface.
2. **Efficiency**: The user journey from login to obtaining pawnshop offers will be tracked. This will help quantify the time savings and identify areas for further optimization.
3. **Accessibility**: Extensive accessibility testing will be conducted under various conditions and demographics to ensure the app is usable by everyone. This includes testing under different lighting conditions and ensuring the app is usable for people with disabilities.
4. **Security**: User trust levels will be measured through surveys to ensure user data protection and secure transactions.

To measure the effectiveness of the interface, we plan to use a combination of techniques:

1. **System Usability Scale**: The developers will ask participants 10 questions; this is a quantitative method to evaluate and get valuable insights into a system. With the System Usability Scale criteria, the developers subtracted 5 to the sum of odd numbers and 25 to the even questions. Afterward, the developers got the sum of the two and multiplied it by 2.5 (Bhat, 2023).

Score	Interpretation
0% - 50%	Serious Deficiency in usability
51% - 68%	Average usability
69% - 99%	Decent level of usability
100%	Flawless usability

The questions in this technique would include:

1. I like to use this system frequently.

2. I find this system to be more complicated than it should be.
3. I think the system is simple and easy to use.
4. I think the system is simple and easy to use.
5. I think the system is simple and easy to use.
6. I think the system is simple and easy to use.
7. I think the system is simple and easy to use.
8. I think the system is simple and easy to use.
9. I think the system is simple and easy to use.
10. I think the system is simple and easy to use.

2. **Heuristic Evaluation**: The developers plan to measure the usability of user interfaces in independent walkthroughs report issues and reveal insights that can help the developers enhance product usability (Nielsen, 2024).

   Pawnquest will be evaluated qualitatively through Jakob Nielsen's 10 general principles for interaction design, which includes:

   1. Visibility of System Status
   2. Match Between System and Real World
   3. User Control and Freedom
   4. Consistency and Standards
   5. Error Prevention
   6. Recognition rather than recall
   7. Flexibility and Efficiency of Use
   8. Aesthetic and Minimalist Design
   9. Help Users Recognize, Diagnose, and Recover from Errors
   10. Help and Documentation

3. **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. This will include design evaluation and tasks that include:

   - Account Registration (Account registration and details task)
   - Logging in and out (Account registration and details task)
   - Exploring the main menu from the dashboard and exploring its functionalities (Menu and dashboard task)
   - Object appraisal (Appraisal and messaging task)
   - Pawnshop locator (Appraisal and messaging task)

•Pawnshop listing and messaging (Appraisal and messaging task)

The questions will be interpreted using a 5-Point Likert Scale Survey Interpretation. The survey link can be accessed through this: https://bit.ly/PawnQuest-Evaluation-Survey

Scale	Range Value	Interpretation	Classification
5	4.50 – 5.00	Highly Acceptable	Successful
4	3.50 – 4.49	Acceptable	
3	2.50 – 3.49	Moderately Acceptable	Neutral
2	1.50 – 2.49	Fairly Acceptable	Unsuccessful
1	1.00 – 1.49	Not Acceptable	

V. References

Statista. (n.d.). *Jewelry - Philippines | Statista market forecast*. https://www.statista.com/outlook/cmo/accessories/watches-jewelry/jewelry/philippines

Borres, I. L. (2020). Industry Analysis of Pawnshop in the Philippines. *International Journal of Business and Administrative Studies*, *6*(2). https://doi.org/10.20469/ijbas.6.10005-2

Bhat, A. (2023, August 14). *System Usability Scale: What it is, Calculation + Usage*. QuestionPro. https://www.questionpro.com/blog/system-usability-scale/

Nielsen, J. (2024, February 20). 10 Usability heuristics for user interface design. Nielsen Norman Group. https://www.nngroup.com/articles/ten-usability-heuristics/