
SOFTWARE REQUIREMENTS SPECIFICATION

for

Nintventario

Version 1.0 approved

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Abstract

PRICOTERCORP S.A. is a company that has a notable presence in the sale of products related to the world of video games at the provincial level. The only means it has to promote its products are the points of sale and a page on Instagram and Facebook. The company is seeking a technological solution to increase its presence in the web market based on its inventory products. This document details the requirements requested by PRICOTERCORP S.A. for the development of software that allows inventory management through a mobile application and the creation of a catalog on a website. Initially, a general description of the system's features will be presented, along with a description of each. Subsequently, system requirements will be detailed using requirements engineering techniques. These will be divided into functional and non-functional requirements. In order to delve into the functional requirements, a MoSCoW categorization model will be applied for each of the modules. On the other hand, non-functional requirements will be broken down into features that the product must have for user interaction, and features it must have to work with the system at the enterprise level. Finally, the contribution of each team member to this project will be detailed.

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Revision History

Name	Date	Reason For Changes	Version
1	06/11/2023	Nothing	V1.0

1 Introduction

This document will showcase the entire process undertaken to establish the necessary product for the company "Pricotercorp S.A.," which is a franchise of a video game, manga, and other pop culture item store. In general terms, one of the main issues this company faces is inventory management, as it becomes a cumbersome task when adding, updating, and/or reviewing a product. Therefore, a proposal to optimize these tasks will be presented. Additionally, a website construction process will be initiated to facilitate remote product visualization for customers; this will also help increase business clientele.

Similarly, the functional and non-functional requirements of the system will be presented, including both the inventory as a mobile module and the web module as the website. For this, the MoSCoW classification will be used for functional requirements, and the Sommerville classification will be used for non-functional requirements. User stories will also be used as a guide to identify these requirements.

1.1 Client

The main client for this project is Joffre Morales, owner of the company PRICOTER-CORP S.A. The company is dedicated to the sale of video games from various brands, along with different items related to the industry and accessories. Currently, the commercial presence of this company is distributed in a total of three points of sale in the province of Guayas and one point of sale in the province of Oro. On the other hand, the means used to advertise its products are through an Instagram account and a Facebook page.

1.2 Purpose

A system is needed that provides functionalities for both the company's workers and customers interested in the products of the available stores. Firstly, there is an inventory that contains all the details of the products such as stock, price, name, and code (id) in order to streamline the inventory update process. On the other hand, there is a web page that shows all the available products from each store by city; moreover, customers will be able to view the details of the aforementioned products except for the code of each product so that customers can reserve a product of interest.

1.3 Glossary

1. **Duplicate Products:** Products that share the same essential characteristics, such as name, in the inventory.
2. **Real-time Inventory:** Maintaining an accurate and updated view of existing products in the database as changes occur.
3. **Comprehensive and Organized Catalog:** An organized list of products that allows users to search and explore efficiently.
4. **Responsive:** Refers to the ability of a design or system to adapt and function effectively on different devices and screen sizes.
5. **Mobile Module:** The part of the application or system related to inventory management on mobile devices.
6. **Web Module:** The part of the application or system related to the web platform for users to search, explore, and purchase products.
7. **Database:** A data storage system used to keep a record of products, actions, and other relevant details.
8. **Login:** An authentication process that restricts access to certain functions of the system.
9. **Password Encryption:** The conversion of passwords into an unreadable format to protect access information.
10. **Data Privacy Regulations:** Compliance with laws and regulations related to the protection of user data privacy.
11. **Version Control System:** A system that tracks and manages changes in the application's source code, such as Git.

1.4 Project Scope

The company "Pricotercorp S.A." has a wide variety of items such as video games and comics, which are currently inventoried in Excel. A software system with two modules is needed, one exclusively for company workers and the other for customer use.

The mobile module will have only the necessary features to prioritize efficiency in inventory usage. Adding additional features such as sharing product information on social networks will not help achieve the inventory objective and will create noise in the interface. For this module, it is expected that inventory management in each store will be done within a single working day with 8 hours. The mobile application must restrict access to unauthorized individuals to avoid vulnerabilities in the inventory. Therefore, what is required for the mobile module is to provide a way to make inventory simpler by making Excel tables transparent for those who perform the inventory, but still allowing them to visualize it.

The web module must allow the user to quickly and concisely view information about the products offered by each store in a specific city. The city can be selected through the filters on the website, as explained in the following sections. What is expected from the web module is to attract more customers who are not familiar with the associated stores for this franchise, allowing anyone to view the extensive web catalog of all products without any restriction; and if a customer wants to purchase a product, the website should allow it. Therefore, the web module needs to allow any internet user to view everything it has to offer.

2 Objectives of the System

2.1 General Objective

- Create a software system that allows for the management of inventory in a fast manner, both for internal use by workers and for external use by customers.

2.2 Specific Objectives

- Design a database containing all information about the company's available products for use in both the web module and the mobile module, using MySQL for the creation of this database.
- Implement a mobile application that allows workers to perform all recurring operations within the business to facilitate all daily transactions, using the previously designed database.
- Develop a website that functions as a digital catalog for customers to observe the products available in each store, using web development tools.

3 Overall Description

3.1 Product Perspective

For any business, it is important to keep a record of all products they have to offer to their customers. Generally, this is done through inventories that are commonly kept in Excel tables, which leads to spending more time on the activity of recording, counting, and updating that database. Therefore, the goal is to implement a database with more advanced tools for the creation of a mobile application.

On the other hand, most formal businesses have websites that are used to offer their products because it provides better visibility to customers who already buy from those businesses, and it also helps attract new ones, expanding the reach of the products offered. For this reason, it is important to implement a website to showcase the products found in the business's database.

3.2 Product Functions

In this section, the key features and functionalities being developed for both the web page and the mobile application are described. These functions are designed to meet specific needs and ensure an efficient experience.

On the website, a complete product catalog will be implemented, allowing customers to explore the products offered by the company Pricotercorp S.A. Each product will be accompanied by images, detailed descriptions, and prices to provide complete information. Furthermore, each product will have its own detailed page with additional information such as technical specifications and current availability. To enhance the user experience, a search function will be included to allow customers to quickly find specific products. Filtering options will also be provided by parameters such as category, price, and location of the point of sale.

The mobile application will allow the introduction of new products into the inventory system. Workers will be able to enter key details such as the product name, stock quantity, acquisition date, and other relevant data. The product deletion function will also be enabled to allow workers to remove products from inventory when necessary. To maintain an accurate record, workers will be able to update the quantity of available products as sales occur or new products are received in inventory. Additionally, a search function will be included to locate specific products within the inventory, stream-

lining management. For more efficient data entry, the ability to scan barcodes will be integrated, facilitating the incorporation and tracking of products in inventory.

4 User Stories

In the context of this project, user stories are divided into three distinct levels: Epics, Themes, and Sprintable Stories. Each plays a fundamental role in project requirement management and understanding.

For clarity, next to each level, a word indicating the corresponding level will be written in parentheses.

4.1 Inventory Registration (Epic)

As a system administrator, I want functionality to register products in the inventory system to ensure efficient and accurate control of stored items.

4.1.1 Product Registration Interface (Theme)

As an employee assigned to the inventory section, I want to register new products without complications to make my work more efficient and less complex.

Sprintable Stories

- As an inventory area employee, I want the application to offer me the option to register a product using a code or QR that directly identifies the product to facilitate the registration of new products.
- As an inventory area employee, I want auto-complete functionalities to expedite the process of registering new products.
- As an administrator, I want the system to show me images and key features of each of the products available in the inventory to facilitate the review and efficient management of relevant product information.

4.1.2 Data Validation and Stock Checking (Theme)

As a system administrator, I want to validate and save the existence of a product to avoid duplicate records and ensure the consistency of the information entered in the inventory.

Sprintable Stories

- As an inventory area employee, I want the system to automatically validate the format of entered data to avoid errors and ensure consistency in the information.

- As a system administrator, I want a mechanism that alerts about the existence of duplicate products when trying to register a new one in the inventory to maintain system coherence.
- As an administrator, I want to receive system alerts when the inventory of a product is low in units, to make advance requests and avoid running out of stock.

4.1.3 Real-time Inventory Update (Theme)

As a system administrator, I need any changes in the inventory to be reflected in real-time in the database to maintain an accurate view of existing products.

Sprintable Stories

- As a system administrator, I want any change in the quantity of products in the inventory to be automatically and instantly reflected on the web interface to provide a complete user experience.
- As an inventory section employee, I want to improve stock management at Pricotercorp S.A. by being able to view the updated stock of products in each establishment, including information on items stored in the warehouse, to request what is needed in case of stockouts in a specific store.

4.1.4 Product Registration History (Theme)

As a system administrator, I need to keep a detailed record of all actions taken on inventory products for control and auditing.

Sprintable Stories

- As a system administrator, I want a tool that allows me to easily search and filter the history of actions taken on inventory products to better identify changes made in the records.
- As a system administrator, I want the ability to export the history of actions taken in the inventory in a format that allows for review and external analysis for decision-making purposes.
- As a system administrator, I want to be able to manage who can access the action log history in the inventory to keep the registration system secure.
- As a decision-making team member, I want the system to display the inventory flow, highlighting products with higher and lower movement frequency to facilitate decision-making by providing key information about product management.

4.2 Web Management (Epic)

As the owner of Pricotercorp S.A., I want a web platform for products to provide users with a comprehensive experience when searching, exploring, and purchasing different products.

4.2.1 Comprehensive and Organized Catalog (Theme)

As a user, I want to be able to navigate all offered products in a simple and organized way according to my interests to quickly find what I am looking for.

Sprintable Stories

- As a user, I want to filter among different products on the screen by categories and subcategories to have fewer elements on the screen.
- As a user, I want to search among all products by name, type, or brand to easily find a product.
- As a user, I want each product to have a detailed description, including features, technical specifications, and relevant details to make an informed decision.
- As an administrator, I want the products shown to users to be directly related to those we have in the inventory to avoid inconsistencies when selling products.

4.2.2 Intuitive User Experience (Theme)

As an administrator, I want the website to have an intuitive and easy-to-use interface so that users with little experience with technology can navigate without any problem.

Sprintable Stories

- As an administrator, I want to provide clear and easy-to-understand resources to help beginner users navigate the platform.
- As a user, I want to experience a smooth purchasing process from product selection to transaction completion to avoid any complications during the payment process for one or more products.

4.2.3 User Account Management (Theme)

As a user, I want to manage my account efficiently and access personalized functions to improve my shopping experience.

Sprintable Stories

- As a user, I want to have total control over the creation and editing of my profile to accurately reflect my preferences and personal data.
- As a user, I want to create and manage a wish list to save products that interest me for a later purchase.
- As a user, I want to access a detailed history of my previous purchases and track the status of my active orders.
- As a user, I want to receive relevant notifications about offers, product updates, or special events according to my preferences.

5 Functional Requirements

5.1 Mobile Module

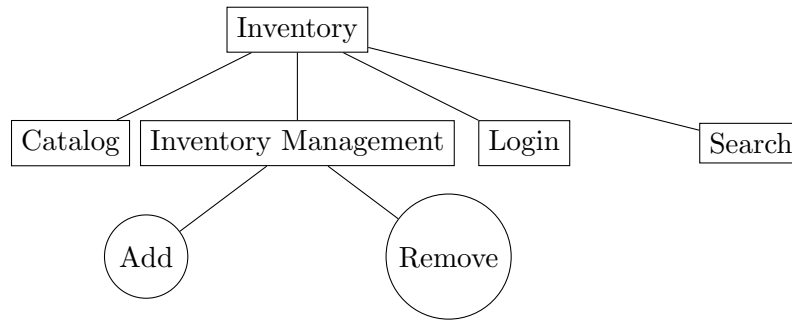


Figure 5.1: Feature Modeling Mobile Module Requirements

5.1.1 Must

Identifier	FRMM1
Priority	1
Dependencies	Nothing
Version	V1.0
Description	The system must allow adding new products to the inventory by entering details such as name, stock quantity, and acquisition date.

Table 5.1: First "Must" Functional Requirement of Mobile Module

Identifier	FRMM2
Priority	1
Dependencies	Contingent
Version	V1.0
Description	The system must have the ability to allow the removal of products from the inventory when necessary.

Table 5.2: Second "Must" Functional Requirement of Mobile Module

Identifier	FRMM3
Priority	1
Dependencies	Contingent
Version	V1.0
Description	The system must be able to update the quantity of available products as sales are made or new products are received.

Table 5.3: Third "Must" Functional Requirement of Mobile Module

5.1.2 Should

Identifier	FRMS1
Priority	2
Dependencies	Contingent
Version	V1.0
Description	The system should allow workers to search for specific products in the inventory to find them quickly.

Table 5.4: First "Should" Functional Requirement of Mobile Module

Identifier	FRMS2
Priority	2
Dependencies	Contingent
Version	V1.0
Description	The system should provide the option to scan barcodes to facilitate the entry of products into the inventory.

Table 5.5: Second "Should" Functional Requirement of Mobile Module

Identifier	FRMS3
Priority	3
Dependencies	Nothing
Version	V1.0
Description	The system should send notifications to workers when a product is reaching a low stock level so they can take timely action.

Table 5.6: Third "Should" Functional Requirement of Mobile Module

5.1.3 Could

Identifier	FRMC1
Priority	3
Dependencies	Nothing
Version	V1.0
Description	The system could include a function to organize products into categories or sections for better inventory organization.

Table 5.7: First "Could" Functional Requirement of Mobile Module

Identifier	FRMC2
Priority	3
Dependencies	Contingent
Version	V1.0
Description	The system could implement a verification the first time a modification is made to prevent errors and issues in the inventory.

Table 5.8: Second "Could" Functional Requirement of Mobile Module

5.1.4 Won't

Identifier	FRMW1
Priority	3
Dependencies	Nothing
Version	V1.0
Description	The system won't add additional features such as sharing product information on social networks. This won't help achieve the inventory's objective and will create noise in the interface.

Table 5.9: First "Won't" Functional Requirement of Mobile Module

Identifier	FRMW2
Priority	2
Dependencies	Contingent
Version	V1.0
Description	The system won't allow adding a product to the database that already exists in it.

Table 5.10: Second "Won't" Functional Requirement of Mobile Module

5.2 Web Module

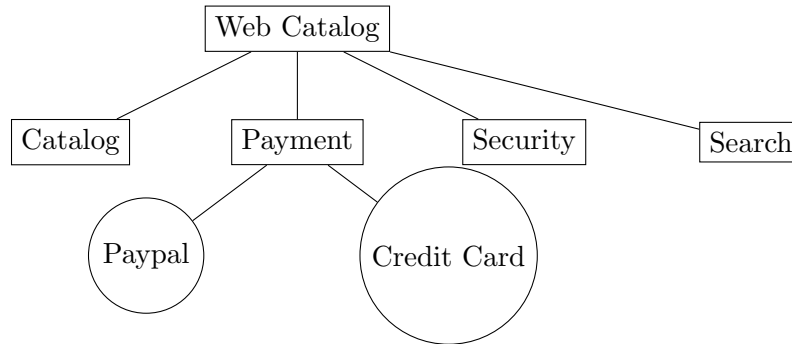


Figure 5.2: Feature Modeling Web Module Requirements

5.2.1 Must

Identifier	FRWM1
Priority	1
Dependencies	Contingent
Version	V1.0
Description	The system must display a list of products with images, detailed descriptions, and prices, allowing users to explore and search for products easily.

Table 5.11: First "Must" Functional Requirement of Web Module

Identifier	FRWM2
Priority	1
Dependencies	Contingent
Version	V1.0
Description	The system must offer an efficient search function that allows users to find specific products or content.

Table 5.12: Second "Must" Functional Requirement of Web Module

5.2.2 Should

Identifier	FRWS1
Priority	3
Dependencies	Contingent
Version	V1.0
Description	The system should be able to manage user profiles, including modifying personal data and notification preferences.

Table 5.13: First "Should" Functional Requirement of Web Module

5.2.3 Could

Identifier	FRWC1
Priority	3
Dependencies	Nothing
Version	V1.0
Description	The system could send email notifications to users about special offers and new products.

Table 5.14: First "Could" Functional Requirement of Web Module

Identifier	FRWC2
Priority	3
Dependencies	Nothing
Version	V1.0
Description	The system could include an advanced search function that allows users to efficiently find specific products.

Table 5.15: Second "Could" Functional Requirement of Web Module

5.2.4 Won't

Identifier	FRWW1
Priority	2
Dependencies	Nothing
Version	V1.0
Description	The website shouldn't have a login restriction to view products.

Table 5.16: First "Won't" Functional Requirement of Web Module

6 Non-Functional Requirements

6.1 Mobile Module

6.1.1 Products

Usability

- The training time required to use the system must be less than 30 minutes.

Validation Criteria: During training sessions, the time users take to familiarize themselves with key system functions will be measured. The average training time must not exceed 30 minutes.

- Users should not take more than 3 minutes to register a product in the inventory from the mobile application through QR code scanning.

Validation Criteria: Tests will be conducted with inventory management personnel, measuring the time it takes for them to complete the product registration process using the mobile application with QR code scanning. The average time must be less than 3 minutes.

- Confirmation or error messages after scanning a code must be understandable and visible.

Validation Criteria: Tests will be conducted with inventory management members where 90% of users must understand the meaning of confirmation or error messages when scanning QR codes.

Efficiency

- The application should start within 5 seconds to avoid unnecessary time losses.

Validation Criteria: While workers use the application, the average time the application takes to start from the moment it is requested to open will be measured. The average time must be less than 5 seconds.

- The average time the system takes to process an action that updates the database should be 1.5 seconds.

Validation Criteria: Load tests will be conducted to ensure that the system meets the specified time limit, ensuring efficient performance in database update operations.

Security

- The system must have an authentication system that allows access only to authorized users.

Validation Criteria: It will be verified that only users with valid credentials can access the inventory management module.

- The system must encrypt the inventory registration information transmitted from the mobile application to ensure the confidentiality of the data.

Validation Criteria: Penetration tests will be conducted to identify possible vulnerabilities in encryption and password protection. Any detected vulnerabilities must be addressed immediately.

6.1.2 Organizational

Environment

- The system must be compatible with Android versions 11 and 12.

Validation Criteria: It will be verified that all functions of the application run correctly on the mentioned versions.

Development

- The database connected to the application must be developed in MySQL 8.0.

Validation Criteria: It will be checked that the application integrates successfully with the MySQL 8.0 database, allowing efficient data storage and retrieval.

- The system will be primarily developed in the Kotlin programming language (1.9.20).

Validation Criteria: A code review and development statistics will confirm that at least 90% of the code is written in Kotlin.

6.2 Web Module

6.2.1 Products

Usability

- During the use of the filtering function, the product loading time should not exceed 5 seconds.

Validation Criteria: The time elapsed from the initiation of the filtering function to the complete loading of products on the user interface will be measured. This time must be less than or equal to 5 seconds.

Efficiency

- The web page must fully load in less than 3 seconds.

Validation Criteria: Performance tests will demonstrate that the page loads in less than 3 seconds under various network conditions and devices.

- Users must be able to complete a purchase in fewer than four steps from product selection to order confirmation.

Validation Criteria: During user tests, the number of steps required to complete a purchase will be counted. The purchase process must consist of fewer than five steps from product selection to order confirmation.

- The web page must be able to handle 150 concurrent users.

Validation Criteria: Load tests will be conducted to simulate the interaction of 150 concurrent users on the web page. Evaluate performance and responsiveness under these conditions.

- Images and multimedia resources must be optimized (200-300 kb), with a total page size not exceeding 2 MB.

Validation Criteria: Page load analysis tools will be used to verify that the

total page size does not exceed the specified limit (2 MB).

Security

- The web page must comply with data privacy regulations and ensure the protection of users' personal information, such as the General Data Protection Regulation (GDPR).

Validation Criteria: It will be checked that the web page complies with GDPR regulations by reviewing the GDPR requirements on the page.

- The web page will implement packet filtering firewalls and intrusion detection systems to protect against cyber threats.

Validation Criteria: Intentional attacks on the web page will be carried out to verify that the security measures fulfill their function.

Environment

- The web page must be 100% compatible with the latest version of web browsers Chrome, Firefox, Safari, and Edge.

Validation Criteria: Tests will be conducted on each of these browsers to confirm that the web page looks and functions correctly in their latest version.

- The web page must be responsive, meaning its design and content will adapt to mobile devices (360px wide), tablets (768px wide), and laptops (1024px wide).

Validation Criteria: Visualization tests will be conducted on mobile devices (360px), tablets (768px), and laptops (1024px) to ensure that the design and content adapt appropriately in each case.

Development

- The Git version control system and the collaborative work system GitHub must be used to track and manage changes in the source code.

Validation Criteria: It will be constantly verified that descriptive comments are included in commits explaining the changes made, facilitating the understanding of modifications.

7 Individual Contribution

Name	Sections
Andrés Cornejo	Abstract, Client, Appendix
Jorge Mawyin	Functional Requirements, Product Functions
Kevin Roldán	User Stories, Purpose, Non-Functional Requirements
Angel Tomalá	Non-Functional Requirements, Project Scope

8 Appendix

8.1 Appendix A: Commitment Agreement

The company PRICOTERCORP S.A is seeking a technological solution to optimize the inventory process and improve the customer experience through web navigation.

The system to be implemented is a software system that allows inventory management quickly for internal use by workers and external use by customers. The system will enable the administrator to register products in the inventory database using a mobile application. Additionally, it allows customers to view the product catalog on a web page. Finally, it can reduce the number of items in both the inventory and the web page catalog when a specific product is sold.

To achieve this, the client Joffre Morales Mendoza with ID: 0909412504 agrees to actively participate in general meetings with the development team of the subject Software Engineering I, consisting of Andrés Cornejo, Jorge Mawyin, Kevin Roldán, and Angel Tomalá.

Meetings with the client will be held every 15 days or as deemed necessary, with coordination from both parties.

Meetings will be held virtually via Zoom on Fridays between 8:00 PM and 8:30 PM.

It is noteworthy that any meeting will be notified in advance via message or email.

This commitment is subscribed on the 22nd day of October 2023.

8.2 Appendix B: Initial Requirements Specifications

LEIDY C ¡magiconintendo@hotmail.com¡

LEIDY C ¡magiconintendo@hotmail.com¿;

Andres Alfredo Cornejo Figueroa

October 10, 2023

Dear Andrés Cornejo,

Through this letter and on behalf of the company "Mágico Mundo de Nintendo," we are pleased to inform you that we are interested in collaborating with you on the exciting and innovative project you have presented to us.

Our company is dedicated to providing our customers with the best products related to the world of video games and comics. Currently, we are looking for a technological solution that allows us to optimize our inventory process and enhance the experience for our customers.

We are interested in the development of a mobile application that allows both the administrative and support staff to scan the serial code of our products, thus facilitating

more efficient and accurate inventory management. We believe that your expertise and skills in the field of technology could greatly contribute to achieving this goal.

We would like to invite you to collaborate with us on this exciting project.

We appreciate in advance your consideration and the opportunity to work with you on this innovative project that we believe will be successful in its development.

Sincerely,

Joffre Morales Mendoza Legal Representative.

8.3 Appendix C: Mobile Application Flow

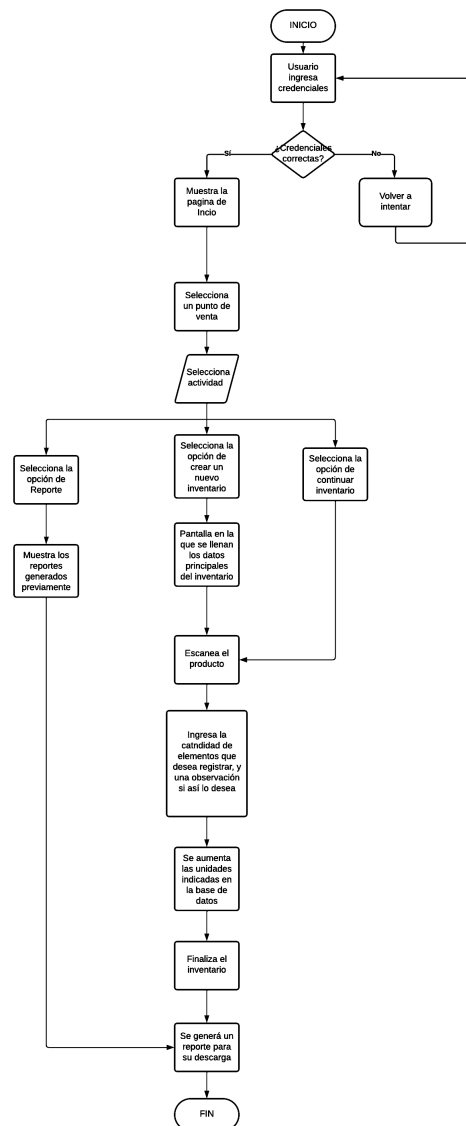


Figure 8.1: Mobile Application Flow in Figma

8.4 Appendix D: Web Page Flow

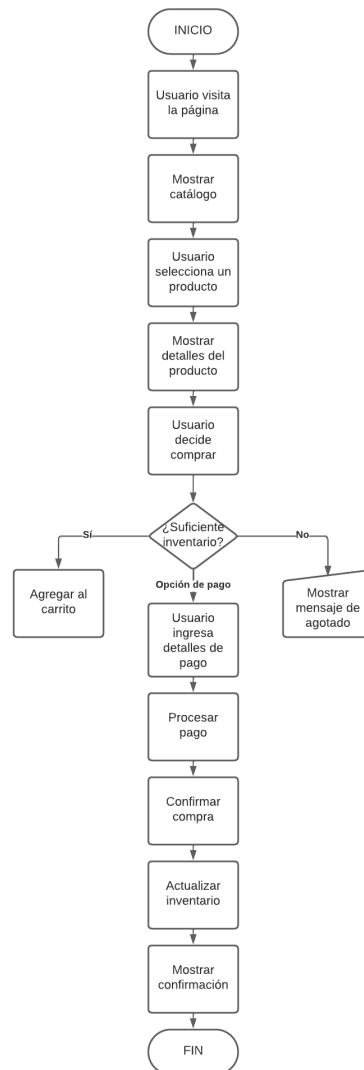


Figure 8.2: Web Page Flow in Figma