



Fundamentos de Ingeniería de Software

# STOCKMASTER PRO

Project presentation to manage inventory and  
administer sales.



# PRODUCT DESCRIPTION

## **StockMasterPro**

The product is a software designed to automate inventory management, cash register closures, and sales reports in supermarkets and medium-sized stores. It allows the manager to control inventory and generate detailed reports, enables the cashier to perform quick and accurate cash register closures, and allows the customer to check product availability and location in real time through scanning.

# **REQUIREMENTS ENGINEERING PHASE**

**StockMasterPro**

At this moment, we are in the **INVESTIGATION** phase, which is crucial to understanding in detail what is needed from the system. During this phase, the goal is to gather precise and complete information from key stakeholders, such as clients, users, and other involved parties, to clearly define the software requirements.



# PROJECT OBJECTIVES

## Purpose of the project

Its purpose is to facilitate and automate the inventory process in medium and large stores, as well as to control and manage resources.

## Resources

The resources for the application include 5 people, 5 computers, and a budget of approximately 2000 pesos.

## Definition of the objective

Develop a software application that allows medium and large stores to optimize their inventory management, reduce human errors, minimize losses, and maximize efficiency in the management of their resources.



# PERSONS

## STORE MANAGER

### ACTIVITIES

- Manage store inventory, cash register closures, and employee shift schedules.
- Place orders, receive product shipments.
- Promote a sense of belonging among the employees.

### GOALS

- Have successful control over the management of money received in the cash register closure.
- Minimize waste as much as possible.
- Avoid constant employee turnover.

**TYPE OF PERSON:** Primary

## CASHIER

### ACTIVITIES

- Scan products, perform cash register closure, return to their station, and arrange products that were not purchased.
- Provide friendly service to customers.

### GOALS

- Ensure an accurate cash register closure, make the payment system efficient, and streamline the process of returning a product.
- Build trust with customers.

**TYPE OF PERSON:** Secundary

## COSTUMER

### ACTIVITIES

- Be able to purchase the required products correctly and efficiently.
- Compare products by brand and price.

### GOALS

- Buy products of their choice and complete their shopping.
- Buy products quickly.

**TYPE OF PERSON:** Secundary





# VALUE PROPOSITIONS

## REAL-TIME INVENTORY OPTIMIZATION.

The software will have real-time updates on the inventory status, both in-store and in the warehouse, with automated alerts for low-rotation products or those at risk of expiration.



## COMPARISON WITH THE SOFTWARE: BSALE

Unlike this software, StockMasterPro has the capability to provide the location of the product the customer wants within the store.



## SUSTAINABILITY AND WASTE REDUCTION.

The software helps manage products that are about to expire or have low sales.



## COMPARISON WITH THE SOFTWARE:: DOC DIGITALES



Unlike our system, this software does not generate sales reports with profit or loss percentages.

# Functional requirements

- Automatic product registration:** The system must automatically register scanned products or those manually entered and display them for immediate verification on the cashier's screen.
- Total purchase calculation:** The system must calculate the total purchase by adding prices, taxes, and applicable discounts, displaying the total on the screen.
- Payment options:** The system must offer different payment methods (cash, card, and multiple options) and confirm successful payment before completing the transaction. The cashier must be able to easily select different payment methods and allocate amounts to each. The system should allow transactions with multiple payment methods, automatically calculate the remaining balance, and adjust the amount after each payment. Each payment method must be confirmed individually before proceeding to the next one.

# Functional requirements

- Digital receipt sending:** The system must offer the option to send the receipt via email or SMS, in addition to the printed version. The cashier must record the customer's email or phone number to send the digital receipt.
- Digital receipt format:** The digital receipt must contain all standard information (product details, taxes, discounts, payment methods) and be legible on electronic devices.
- Receipt sending confirmation:** The system must confirm the successful sending of the digital receipt to the customer, with a notification in case of failure.
- Receipt storage:** The system must store the digital receipts sent for future resending if the customer requests it.
- Inventory update:** The inventory must automatically update after the transaction, reflecting the quantities sold.

# Functional requirements

- Partial or full purchase cancellation:** The cashier must be able to cancel specific products or the entire purchase without affecting the inventory or database. The system must revert all changes after a full cancellation.
- Transaction corrections:** The cashier must be able to correct errors (mis-scanned products, incorrect prices) without affecting the database, and the changes must be immediately reflected on the screen.

# Non-Functional Requirements:

- Response speed:** The system must process product registration, calculations, and payment method selection quickly and without delays.
- Secure system:** Personal data (email, phone number) must be handled securely and comply with data protection regulations.
- Accessibility:** Digital receipts must be readable and compatible with different devices (mobile phones, tablets, computers).
- Resending availability:** The system must allow digital receipts to be easily and quickly resent to the customer when requested.

## Prioritization - (Mandatory- High Priority)

### Functional requirements

- Automatic product registration
- Total purchase calculation
- Payment options
- Inventory update
- Corrections during the purchase without affecting the data
- Partial or full purchase cancellation

### Non-Functional Requirements:

- Secure system
- Accessibility

## Prioritization - (Important - Medium Priority)

### Functional requirements

- Payment with different methods
- Sending digital receipts via email or SMS

### Non-Functional Requirements:

- Response speed

## Prioritization - (Desirable- Low Priority)

Functional requirements	Non-Functional Requirements:
<ul style="list-style-type: none"><li>• Clear and detailed format of the digital receipt</li><li>• Storage of digital receipts for later resending</li></ul>	<ul style="list-style-type: none"><li>• Resending availability</li></ul>

# USER STORIES

## Manager



As a store manager, I need to keep track of the products sold and those in inventory, as well as the shrinkage and the money received each day, to ensure proper product restocking, optimize revenue, and guarantee efficient management of stock and financial resources.

## Cashier

I am the store cashier, and I need to process sales, perform cash register closings, return and organize products that weren't purchased, and maintain a friendly attitude with customers to ensure a pleasant shopping experience, make sure the cash flow is accurate, and keep the store in order.



## Customer



I am a store customer, and I need to receive good service and buy the products I want correctly, quickly, and efficiently to save time and meet my shopping needs without any issues.

# DATA COLLECTION METHOD

Questionnaire



Surveys



Design

Apply

Analyze

Make report

# DATA COLLECTION RESULT: QUESTIONNAIRE

## Manager

- Well-structured
- Inventory system
- Efficient schedule
- Fast ordering
- Don't like complicated software



## Cashier

- Fast system
- Easy to use
- Optimize work
- Process refunds
- Notifications about stock



## Customer

- Fast checkout
- Error-free
- Split payments
- Promotions
- Discounts



# USE CASES

## DEFINITION OF ACTORS

**Main actors:** Store manager, cashier, and customer.

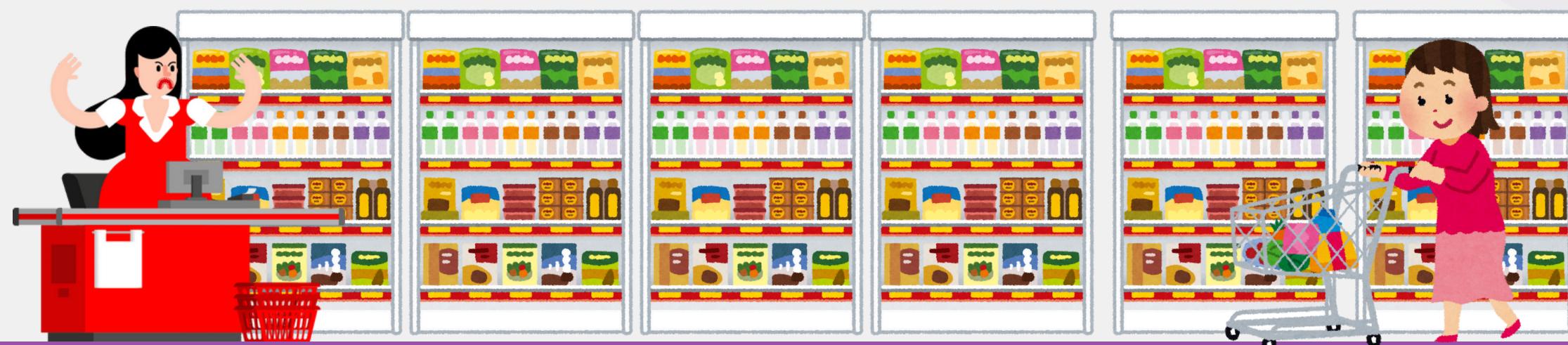
**Secondary actors:** Store database, store barcode scanner, and software search function.



## POSSIBLE USES OF THE SOFTWARE

**Use 1:** The customer makes their purchases efficiently, the cashier scans the products, and the customer pays for their items.

**Use 2:** The store manager receives product shipments and modifies the inventory in the database.



# POSSIBLE RESULTS OF THE USES

## Use 1.

**Result One:** The payment is completed correctly, and the database is updated.

**Result Two:** There is an error in the payment, and the purchase is either fully or partially canceled

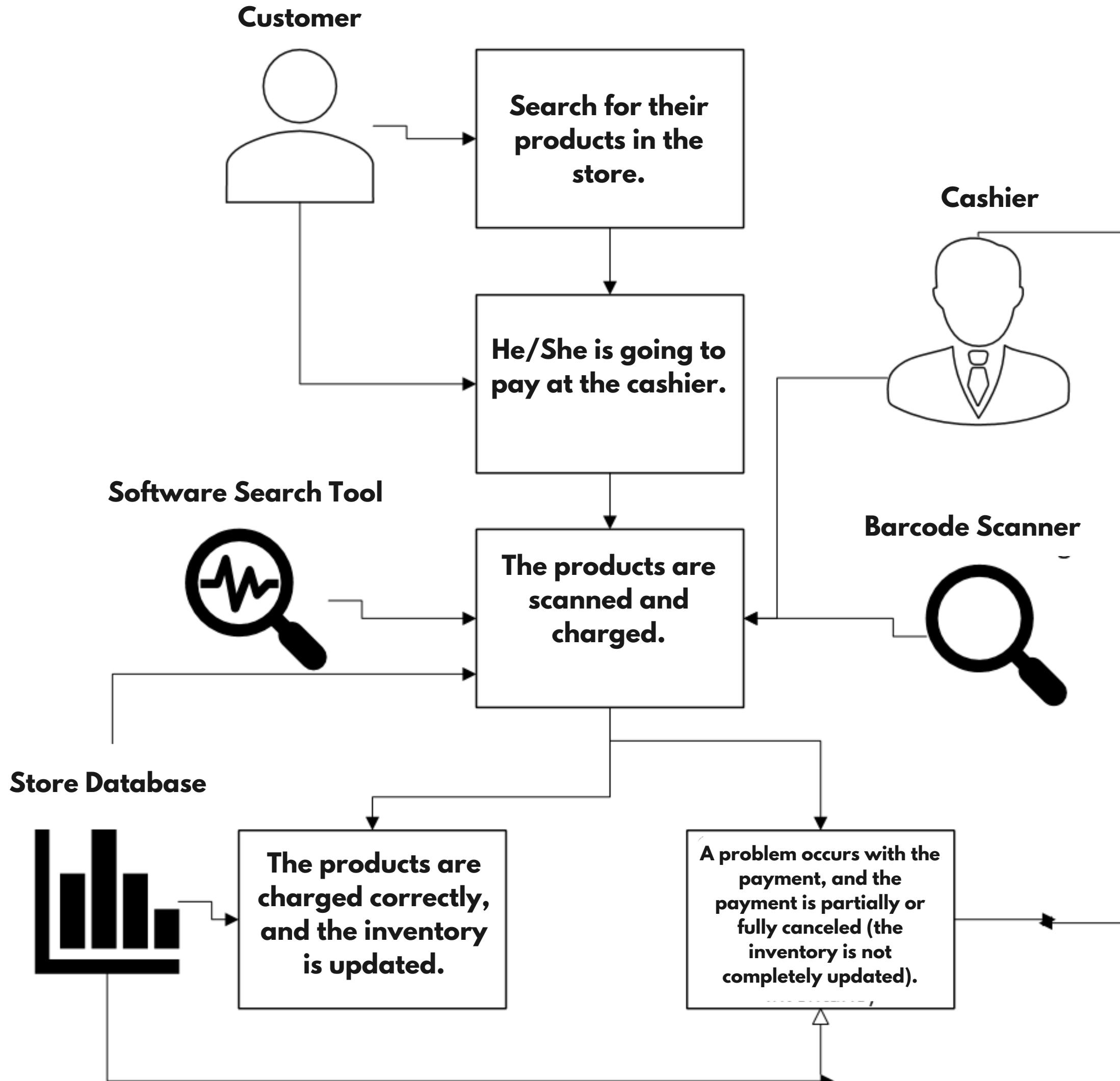
## Use 2.

**Result One:** The modifications made by the manager match what was ordered from the distributor.

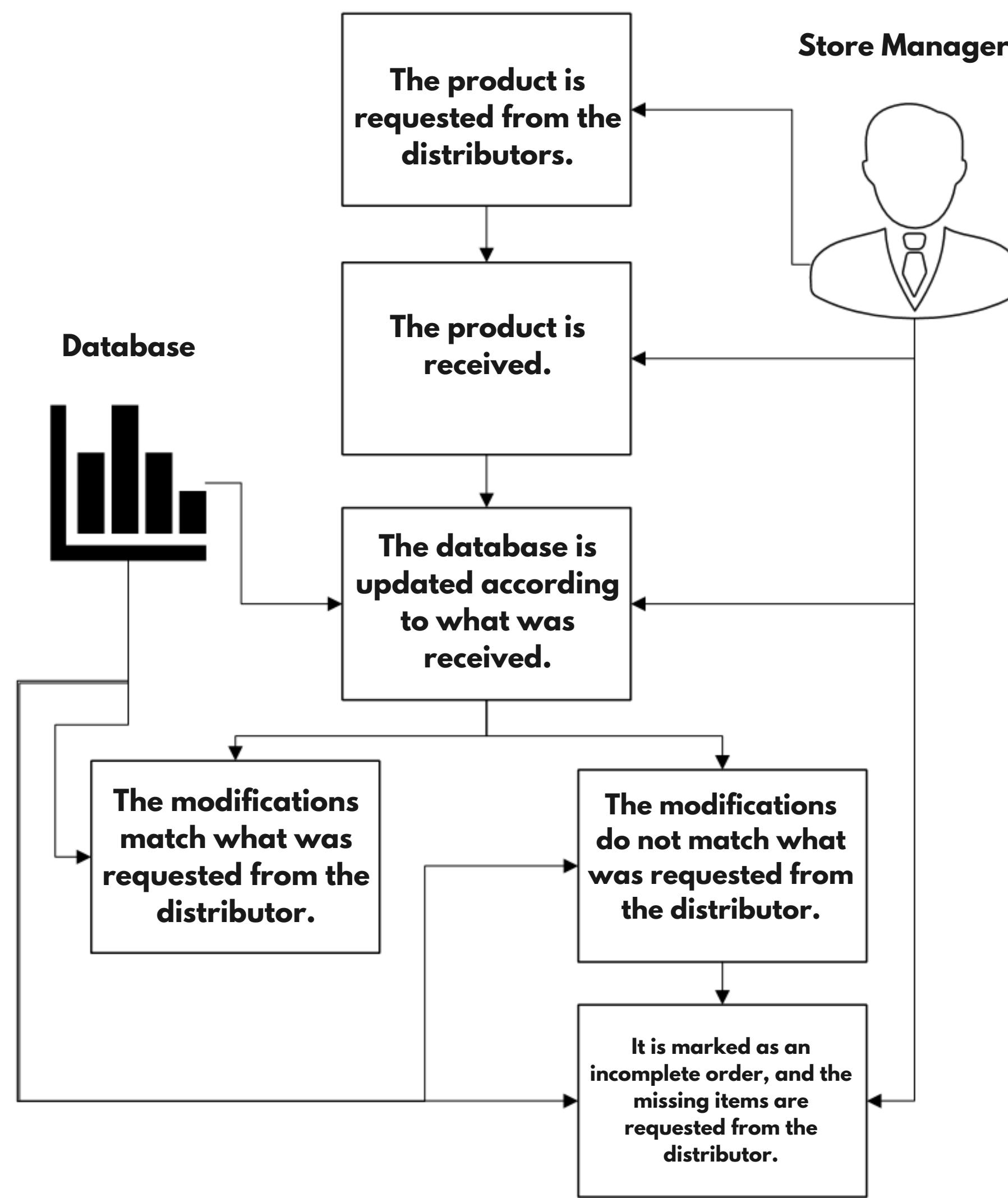
**Result Two:** The modifications made by the manager do not match what was requested from the distributor, so the distributor must be contacted to replace the missing items.



# USE CASE DIAGRAM 1



# USE CASE DIAGRAM 2





# DESCRIPTION OF THE PROCESS

## StockMasterPro

The software development follows an adapted **Scrum** methodology to optimize the process. The team is organized into key roles: the **Product Owner** defines the needs and prioritizes features, the **Scrum Master** facilitates the process and resolves impediments, and the development team implements tasks in two-week sprints. Each sprint focuses on specific functionalities such as inventory or sales reports. Weekly meetings allow for work adjustments, and periodic reviews are held to ensure the final product meets user objectives and requirements.

# MANAGEMENT TABLE



Proceso

Backlog Item	Task	Task Owner
Use Cases	Define the use cases for the software	Agustin Dzib
	Define the results	Christopher Cen
	Define possible outcomes	Agustin Dzib
	Create the use case	Christopher Cen
Objectives	Establish the project purpose	The whole team
	Analyze available resources (economic, human, etc.)	The whole team
	Define the objective	The whole team
Techniques to interact with users and gather more information	Design questionnaires for the users (product owners)	Estefania Esquivel
	Design surveys for the users (product owners)	Jorge Arroyo
	Apply surveys to potential users	Amauri Sandoval
	Apply surveys to potential users	Agustin Dzib
	Analyze the results of the surveys	Amauri Sandoval
	Analyze the results of the surveys	Estefania Esquivel
	Write a brief report (summary) of the results obtained	Jorge Arroyo

Sprint Backlog

here

# GENERIC COMPETENCIES

## COMPETENCY

Communicates in Spanish both orally and in writing in professional settings and personal life, using the language correctly.

Uses ICT (Information and Communication Technologies) in professional settings and personal life in an appropriate and responsible manner.

Manages knowledge in professional settings and personal life in a relevant way.

## HOW THEY WERE PROMOTED IN THE PRODUCT DEVELOPMENT ACTIVITIES

These competencies are met, as the work was written in a way that anyone can understand it, and when developing the product, objectives, tasks, and responsibilities were defined, ensuring good communication. Similarly, when these tasks were created and divided, a management table (Sprint Backlog) was used, where we made the most of ICT.

# SPECIFIC COMPETENCIES

## COMPETENCY

Analyze the disciplinary evolution of Software Engineering, as well as the characteristics of the professional associated with it, according to the theoretical framework and the curricular models of the discipline.

Correctly interprets tables, graphs, diagrams, and texts expressed in mathematical and scientific language used in advanced mathematics.

## HOW THEY WERE PROMOTED IN THE PRODUCT DEVELOPMENT ACTIVITIES

They fulfill and promote these competencies, as they are able to analyze and implement the curricular models of the subject. Similarly, the correct use of graphs and diagrams is made to express statistics that reflect useful data when establishing the program's requirements and functionalities.



**StockMaster Pro**

# **THANK YOU**