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BULACAN CAMPUS

"Threaded Futures: A Digital Leap for Ukay-Ukay Retailing through the Kleish Collection Management System."

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CHAPTER I: PROJECT BACKGROUND

Project Background

Ukay-ukay stores in the Philippines are popular because they offer affordable and eco-friendly fashion to many people. Thanks to online selling and live-streaming, many thrift stores are now reaching more customers, not just those who visit their physical stores.

But running both physical and online shops at the same time can be difficult. Many stores still do things by hand—like writing down sales, checking inventory manually, and tracking employee attendance on paper. These old methods can cause problems, like delays, wrong stock counts, and poor customer service.

This project will create a system that helps ukay-ukay businesses manage everything in one place. It will make sales faster, keep inventory up to date, track employees better, and collect customer feedback. With this system, the store can run more smoothly, avoid mistakes, and grow more easily both online and in-store.

This chapter consists of three main parts:

Client Background

Kleish Collection is a growing thrift and *ukay-ukay* business that offers affordable secondhand fashion to a wide range of customers. It operates through multiple physical branches and also sells online through popular platforms like live-selling sessions on social media. By combining affordable style with sustainability, Kleish Collection has built a loyal customer base both in-store and online.

As the business continues to grow, Kleish Collection faces increasing pressure to keep up with daily operations. Currently, they rely on manual methods to track sales, monitor inventory, and manage employee activities. While this setup worked in the beginning, it now causes delays, errors, and limits their ability to serve customers efficiently—especially during fast-paced online selling.

To stay competitive in a busy market and improve their overall performance, Kleish Collection is seeking a digital solution that will bring all parts of their business together in one system. This includes streamlining sales, keeping real-time track of stock, improving employee monitoring, and collecting feedback to enhance customer satisfaction.

Client Problem

Even though ukay-ukay shops and online live-selling are becoming more popular, **Kleish Collection** still struggles with how they run their daily operations:

- Manual Processes: They rely on manual tasks for sales and employee management, leading to slow service, stock counting errors, and missed opportunities for efficiency.
- No All-in-One System: Their physical stores and online selling platforms aren't connected, making real-time sales and inventory tracking difficult, especially during busy periods like live-selling.
- Little Customer Feedback: They lack a proper system to collect and understand customer insights, limiting their ability to improve service.

As the business gets bigger, these issues also get harder to handle. Without a smart system that connects everything, Kleish Collection might lose customers, miss out on sales, and struggle to keep up with other businesses.

Researchers' Background

We are a group of Bachelor of Science in Information Systems (BSIS) students from Bestlink College of the Philippines. Our team is made up of people with different skills in system development, user interface design, quality testing, and documentation. With the help of our academic mentors, we came together to solve the problems that Kleish Collection, a local thrift store, is facing.

Problem Opportunity/Description

This section outlines the key challenges faced by Kleish Collection in managing their daily operations and the opportunities available for improvement through a digital solution.

Problem	Description
Manual Processes	The business still relies on manual methods, such as handwritten sales records and employee attendance logs. This leads to delays, mistakes in inventory counts, and inefficiencies in operations.
No All-in-One System	Kleish Collection operates both physical and online stores, but these are not integrated into a single system. This disconnection causes difficulties in tracking sales, managing inventory, and offering consistent service.
Little Customer Feedback	There is no streamlined system to collect and analyze customer feedback. Without this, it's hard to know customer satisfaction levels or areas for service improvement.
Limited Automation	The lack of automation in sales, inventory, and employee management hinders operational efficiency, especially during busy online live-selling events.

Opportunity for Improvement

By implementing an integrated system, Kleish Collection can leverage these opportunities:

- **Automated Processes:** Replacing manual record-keeping and employee tracking with a unified system will reduce errors, save time, and increase efficiency across all operations.
- **Real-Time Sales & Inventory Tracking:** An all-in-one system will allow for seamless integration between online and in-store sales, enabling real-time stock updates and streamlined order processing.
- **Improved Customer Feedback Mechanism:** With built-in tools for collecting customer ratings and reviews, Kleish Collection can gain actionable insights into customer preferences and improve service accordingly.
- **Enhanced Efficiency During Live Selling:** Automated stock tracking and sales management will help the business run more smoothly during high-pressure events, such as live-selling, improving both customer experience and sales performance.

PROJECT SCOPE

The primary objectives of the **Kleish Collection POS and Inventory Management System** include:

1. **Real-Time Inventory Tracking:** Provide accurate, real-time tracking of inventory across both physical stores and the TikTok shop.
2. **POS Integration:** Digitize the point-of-sale process to speed up transactions and ensure accurate sales tracking.
3. **Sales Reporting:** Generate comprehensive sales reports, including revenue trends, best-selling products, and stock levels.
4. **Employee Data Management:** Streamline employee attendance tracking, payroll, and other HR-related functions.
5. **User-Friendly Interface:** Design an intuitive and easy-to-use interface for both sales staff and management.

1.2.2 Deliverables

The system will deliver the following key components:

Module	Description
CSV Files	Real-time stock reports, downloadable/exportable CSV files for inventory logs.
Receipts	Auto-generated sales receipts (printable & digital), daily transaction summaries.

Table 1: Deliverables

OUT OF SCOPE

The system will not include:

- Features for managing customer relationships in detail (this could be added later).
- Using advanced technology to predict inventory needs (it will only have basic prediction features).
- Buying new hardware (the system will work with the devices you already have).
- Creating a mobile app.
- Handling social media accounts.
- Redesigning the website (the focus will be on managing the backend, not the design).

PROJECT PLAN

Why We Chose the Agile System Development Life Cycle (SDLC)

We chose the Agile SDLC model to guide the development of the system for Kleish Collection because it is flexible, adaptable, and focuses on delivering work in small, manageable pieces. Since Kleish Collection's business is always changing and needs constant improvement based on feedback, Agile is a great fit for this project. Below are the main reasons for choosing Agile:

1. Flexibility and Adaptability

Agile allows us to make changes as the project progresses. This is important because Kleish Collection's business needs might change while we're developing the system. Agile's iterative process helps the team adjust and improve the system based on new feedback and insights throughout the project.

2. Incremental and Continuous Delivery

Agile breaks the project into small parts called sprints, each delivering a piece of the system. This means we can show progress regularly and deliver working features to stakeholders early on. With each sprint, the system improves and is tested, so we can make adjustments as we go along.

3. Continuous Feedback from Stakeholders

Agile encourages getting feedback from stakeholders regularly. At the end of each sprint, we review the work and gather input from Kleish Collection's management, employees, and customers. This helps ensure the system meets their needs and expectations, and lets us make adjustments right away.

4. Improved Risk Management

Since we test and review each part of the system as it's developed, we can find and fix any issues early. This reduces the risk of bigger problems later on and helps make sure the final system is stable and meets the requirements.

5. Efficient Resource Allocation and Time Management

Agile focuses on the most important tasks during each sprint. This helps make the best use of time and resources, so we can deliver the most valuable features first. It keeps the development process organized while still allowing flexibility.

6. Aligning with Kleish Collection's Evolving Needs

As Kleish Collection grows and its needs change, the Agile model lets us make updates and add new features to keep the system aligned with the business's changing requirements. This ensures the system stays relevant and useful in the future.

In summary, the Agile SDLC is a good choice for developing the system for Kleish Collection because it allows for flexibility, continuous improvement, and regular feedback. It ensures that the system will meet the business's current and future needs while adapting to changes as they come.

Approach and Methodology

The Kleish Collection Management System will use an Agile approach. This is because the needs of ukay-ukay stores are always changing, especially with platforms like TikTok. Agile lets us stay flexible, move quickly, and make continuous improvements.

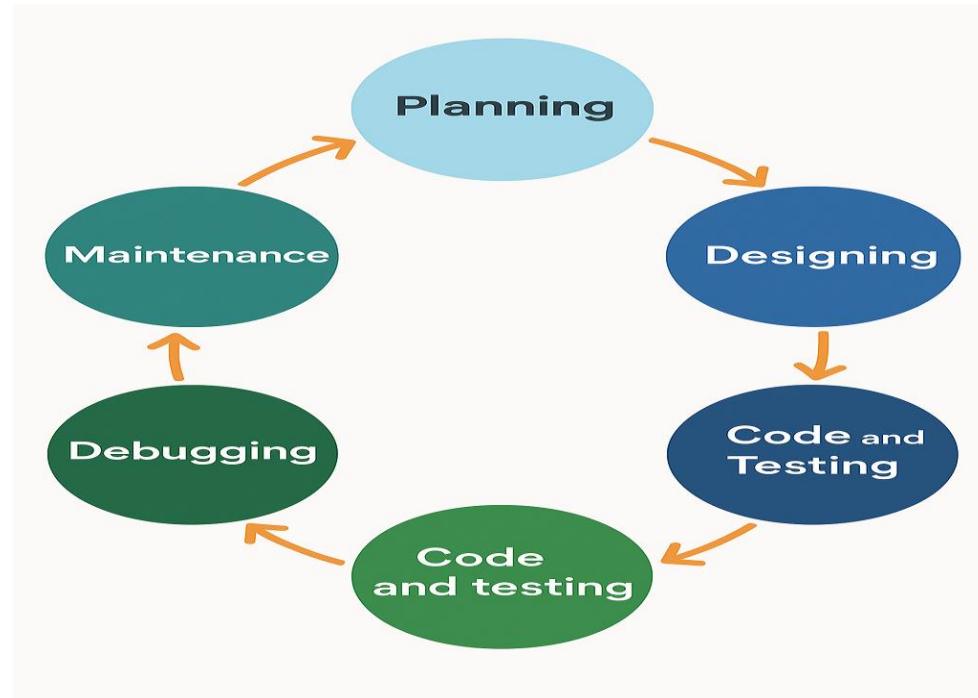


figure 1: Agile Methodology Life Cycle

1. Planning and Requirements Gathering

Focus on understanding the client's needs and defining project goals. For Kleish Collection, this included addressing manual processes, disconnected systems, and customer feedback challenges.

Key Activities:

- Define project scope and objectives
- Identify key stakeholders
- Gather initial requirements for POS, inventory, and employee management
- Develop a project roadmap

2. Analysis and Feasibility Study

Break down the requirements into clear, actionable tasks. Assess the feasibility of integrating physical and online store operations into a single system.

Key Activities:

- Analyze the current manual processes
- Identify pain points and improvement opportunities
- Evaluate technical requirements for real-time tracking and automated reporting
- Prioritize features for the minimum viable product (MVP)

3. System and Architecture Design

Design the overall system architecture, including database schemas, API layouts, and user interfaces that align with Kleish Collection's goals.

Key Activities:

- Create the system architecture and data models
 - Design POS, inventory, employee, and feedback modules
 - Plan the integration with live-selling platforms and physical stores
 - Develop user experience (UX) wireframes and prototypes
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4. Development and Unit Testing

Start coding each component of the system, focusing on modular, scalable code that supports the rapid growth of Kleish Collection.

Key Activities:

- Develop POS, inventory, and employee management modules
 - Implement automated stock tracking and sales features
 - Conduct unit tests for each module to ensure functionality
 - Integrate APIs for seamless data exchange
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5. Integration and Debugging

Combine all developed modules and conduct comprehensive testing to identify and fix bugs before full deployment.

Key Activities:

- Perform integration testing for end-to-end workflows
 - Debug logic errors and fix UI issues
 - Optimize database performance
 - Prepare for system rollout
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6. Deployment and User Training

Deploy the system to live servers and provide training to the Kleish Collection team to ensure a smooth transition.

Key Activities:

- Deploy the system to production
 - Train store employees and management on using the new platform
 - Set up user roles and permissions
 - Gather initial user feedback for future iterations
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7. Maintenance and Continuous Improvement

Ensure long-term stability and performance by continuously improving the system based on user feedback and business needs.

Key Activities:

- Monitor system performance and uptime
- Provide ongoing support and bug fixes
- Release feature updates and security patches
- Collect customer feedback for future improvements

Project Timeline

Phase	Timeline	Description
Requirement Gathering	Week 1–2	Identify system features, workflows, and UI expectations with Kleish Collection staff.
System Design	Week 3–4	Develop database schema, UI wireframes, and module flowcharts.
Development (Sprint 1)	Week 5–7	Build Inventory Management and POS Modules.
Development (Sprint 2)	Week 8–9	Implement Employee Management, Attendance, and Payroll features.
Testing and Debugging	Week 10	Perform unit testing, integration testing, and bug fixing.
Deployment & Training	Week 11	Soft launch in selected stores, conduct training, and gather feedback.
Final Launch & Evaluation	Week 12	Full deployment across all branches and TikTok live selling setup.

Issues and Policy Implications

Building a centralized system for Kleish Collection comes with both technical and operational challenges.

Issues in Developing the System

- **Complex Retail Workflows** – The system needs to handle both in-store sales and live-selling sessions, which makes it more complicated.
- **Data Security** – It's important to keep customer and sales data safe, especially for online purchases.
- **Scalability** – The system needs to be able to grow with the business, including adding more stores and handling more sales.
- **Third-Party Integration** – The system must work with other platforms like social media, payment services, and delivery companies.
- **User Training** – Staff will need to be trained to use the new POS system, inventory tools, and admin dashboards properly.

Dependencies

- **Integration with Payment Gateways** – The system will rely on third-party services for online payments and cashless options.
- **TikTok and Social Media Sales** – The system must be able to handle sales from live-selling sessions on TikTok and other platforms.
- **Regulatory Compliance** – The system must follow local rules for e-commerce, taxes, and labor laws.
- **Legacy Data Transfer** – The system needs to move old inventory data into the new system without mistakes.

Legal Considerations

- **Data Privacy Act of 2012 (RA 10173)**: Ensures personal data is protected.
- **Consumer Act (RA 7394)**: Product prices and descriptions must be accurate.
- **BIR e-Invoicing**: Sales receipts are recorded for tax purposes.
- **Copyright Law**: All assets used are licensed or original.

Risk Management Plan

Risk Category	Risk	Impact	Description / Solution
Technical	System Downtime	High	Implement automated backups, redundant hosting, and cloud-based infrastructure.

Risk Category	Risk	Impact	Description / Solution
Data Security	Data Breach	Critical	Use secure authentication, encrypt sensitive data, and conduct regular security audits.
Compliance	Non-Compliance with E-Commerce or Labor Laws	High	Consult with legal advisors to ensure the system meets regulatory standards.
Operational	System Integration Issues	Medium	Conduct thorough API testing and design modular system connectors for easy integration.
User Adoption	Poor Training or UI Confusion	Medium	Host workshops and design an intuitive user interface for ease of use.
Financial	Budget Overrun	High	Track expenditures against project milestones and adjust scope where necessary.
Cyber Threats	Hacking or Malware	High	Utilize firewalls, antivirus software, and run penetration tests regularly.
Performance	Lag During Live Selling	Medium	Optimize server-side performance, implement CDNs, and stress-test under load.
Project Workflow	Double Entry / Task Overlap	Medium	Avoid bottlenecks by improving task assignment, using a project tracker and assigning support roles to reduce dependency on a single lead developer.

Service Transition

To make sure the Kleish Collection Management System is launched smoothly, we will follow these steps:

1. Seminars and Workshops

- Hold presentations for branch managers and live-selling hosts.
- Explain how the system will improve past problems.

2. Face-to-Face Training

- Provide hands-on training for POS operators, TikTok live sellers, and admins.
- Teach IT staff how to maintain the system and fix any problems.

3. User Manuals and Documentation

- Provide simple guides for all parts of the system, including screenshots, examples, and answers to common questions.

4. Pilot Testing

- Test the system in one branch and during one live-selling session to get feedback.
- Fix any issues and make improvements before the full rollout.

5. Technical Support

- Provide a support team for any issues after the system is launched.
- Plan regular updates and check the system's performance.

Technical Features

Hardware Requirements

Component	Minimum	Recommended
Server	Intel Xeon / Ryzen 7, 16GB RAM, 512GB SSD	Xeon Gold / AMD EPYC, 32GB RAM, 2TB SSD
POS Devices	Intel i3, 4GB RAM, 128GB SSD	Intel i5, 8GB RAM, 256GB SSD
Database Storage	500GB Local or Cloud Storage	1TB SSD or Scalable Cloud DB
Internet Speed	10 Mbps	50 Mbps for live selling
Network Setup	Basic Wi-Fi / LAN	Firewall, VPN, Secured Wi-Fi

Software Requirements

Software	Requirement
Server OS	Windows Server 2019 / Ubuntu Linux
Client OS	Windows 10/11, macOS
DBMS	MySQL
Backend Framework	PHP
Frontend Framework	HTML, CSS, JavaScript (Vue.js)
Web Server	Apache
Reporting Tools	Built-in Dashboard, Chart.js

Project Organization

Task	Role	Start	End	Description	Status
Project Management	Project Manager	Mar 6, 2025	Ongoing	Oversees project timeline, budget, and team coordination.	In Progress
Business Analysis	Business Analyst	Mar 6, 2025	Mar 15, 2025	Identified client needs and ensured system alignment with store goals.	Completed
System Design	System Architect	Mar 10, 2025	Mar 25, 2025	Designed system architecture, database schema, and API layout.	Completed
Frontend Development	Frontend Developers	Mar 20, 2025	May 15, 2025	Develops responsive UI for POS, admin panel, and mobile access.	In Progress
Backend Development	Backend Developers	Mar 25, 2025	May 20, 2025	Creates logic for inventory, sales, payroll, and analytics.	In Progress
Database Management	Database Administrator	Mar 20, 2025	May 10, 2025	Manages DB integrity, backups, and optimization.	In Progress
Quality Assurance	QA Testers	Apr 25, 2025	May 25, 2025	Tests features, identifies bugs, and verifies that specs are met.	Not Started
UI/UX Design	UI/UX Designers	Mar 6, 2025	Apr 5, 2025	Designed intuitive, mobile-friendly layouts.	Completed
Security Management	Security Specialist	Apr 10, 2025	May 15, 2025	Ensures security protocols, encryption, and data protection.	In Progress
Support and Maintenance	Support Team	May 15, 2025	Ongoing	Provides maintenance, bug fixes, and customer service.	Not Started

CHAPTER II: REVIEW OF RELATED STUDIES AND SYSTEMS

2.1 LOCAL RELATED STUDIES AND SYSTEMS

Local Study 1: Maya POS System

Maya POS is a popular point-of-sale (POS) system in the Philippines, particularly known for its affordable monthly fee of ₱949.00 and easy setup through the Maya Business app on mobile devices (Peddlr, n.d.). It integrates an e-wallet, QR code payments, and card terminals into a single compact device, allowing businesses to accept digital payments from major networks like Visa, Mastercard, BancNet, and BSP QR Ph—all without needing bulky hardware (Maya, n.d.).

The system is designed to be simple to use, which is perfect for small businesses and their employees who might not have technical experience. Its straightforward interface allows staff to quickly ring up sales, check daily totals, and access basic transaction reports (Peddlr, n.d.).

Key Features

1. Affordability & Accessibility

Maya offers an affordable monthly rate of ₱949, with transaction fees starting at 3.5% for card payments and 1.5% for QR code payments. There is no need for an expensive upfront cost for hardware, making it an accessible option for small businesses (HashMicro, 2024).

2. Secure Transactions

The system is EMV-certified and PCI-DSS compliant, ensuring that customers' card information is protected, and businesses meet global security standards (Maya Business Support, n.d.).

3. QR Code Payments

Maya was the first major provider to implement the QR Ph standard set by the Bangko Sentral ng Pilipinas (BSP), enabling easy, cashless payments through any QR Ph-enabled wallet (Maya, n.d.). This helps businesses cater to a wider range of customers, including those who prefer mobile payments.

4. Multiple Payment Options

Maya POS can accept various types of payments, including card swipes, EMV chip cards, and NFC/contactless payments, providing flexibility for both customers and merchants (Maya Business, n.d.).

5. Real-Time Reporting & Analytics

Merchants can easily access real-time sales figures, top-selling items, and transaction history via the Maya Business app. This helps business owners make quick decisions on inventory and promotions (HashMicro, 2024).

6. Value-Added Services

Maya also offers Dynamic Currency Conversion, allowing international customers to pay in their own currency at the point of sale. This feature makes Maya a great choice for businesses that serve tourists (Maya Developers, n.d.).

Implementation & Support

Maya provides 24/7 customer support through its in-app chat and dedicated hotline, ensuring that merchants can resolve any issues quickly. The device and app are updated regularly to add new features and security patches automatically (Maya Business Support, n.d.).

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Local Study 2: Utak POS System

Utak POS is a cloud-based point-of-sale system that launched in 2018. It's designed for small and medium-sized businesses in the Philippines, with over 7,000 users. Utak POS costs ₱1,500 per month after a free trial. It works on tablets, which you can download from the Apple App Store or Google Play. The system helps businesses by combining different features into one easy-to-use platform, including sales, inventory, employee attendance, reports, and customer loyalty features.

Key Features

Sales & Receipts

Utak POS automatically generates receipts after every sale, making checkout faster and reducing mistakes at the counter.

Real-Time Inventory

Whenever an item is sold or restocked, the inventory updates instantly. This helps businesses keep track of their stock and avoid selling out-of-stock items.

Employee Attendance

Employees can clock in and out directly in the app, so businesses don't need a separate system to manage attendance. This also makes payroll easier.

Accessibility & Remote Management

Because Utak POS is cloud-based, business owners can access it from any device with an internet connection. This allows them to manage their business remotely and keep track of sales and attendance even when they're away.

Hardware Bundle

Utak offers a starter kit that includes a tablet, security stand, receipt printer, and cash drawer, so you can get up and running quickly without needing extra equipment.

Limitations

While Utak POS is great for small businesses, it may not offer some advanced features, like third-party integrations (for accounting or deliveries), that larger businesses might need. Additionally, it may not work as well for companies with many branches or large-scale operations.

Conclusion

Utak POS is an affordable and practical solution for small to medium-sized businesses in the Philippines. With features like automatic receipts, real-time inventory tracking, and employee attendance management, it simplifies business operations. While it may not have all the advanced features of larger systems, it's a reliable choice for local businesses that need a simple, flexible POS system.

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Local Study 3: Mosaic POS System

Mosaic POS is a cloud-based point-of-sale system that operates on a subscription model. This means businesses pay for a service that includes regular updates and customer support. The subscription model makes it easier for businesses to budget, while also ensuring that the system can grow as the business expands.

Cloud-Based Access:

Since Mosaic POS is cloud-based, business owners can check sales, inventory, and staff performance from any device with an internet connection. If the internet goes down, the system can switch to offline mode, allowing businesses to continue running smoothly without interruption. This is especially important for businesses with high customer traffic or mobile operations.

Key Features:

- **Multi-Location Inventory Management:**

Mosaic POS allows businesses with multiple locations to manage inventory from one central dashboard. This system updates stock levels in real time, alerts you when products are running low, and makes it easy to update prices across all branches, reducing the risk of over-selling and errors.

- **Real-Time Analytics & Custom Reporting:**

Mosaic includes built-in analytics that provide valuable insights into sales trends, top-selling products, and customer behaviors. Business owners can generate custom reports to help identify opportunities for growth and address any issues in their operations.

- **Integrated Payment Processing & Compliance:**

The system includes built-in payment processing, which means you don't need to rely on third-party services. It also complies with Philippine tax regulations, including BIR (Bureau of Internal Revenue) requirements, making it a trusted solution for businesses.

- **Hardware Flexibility & Offline Mode:**

Mosaic POS works with a wide variety of devices, from simple tablets to full POS terminals. It also works on both Android and iOS devices. The offline mode allows businesses to continue making sales even if the internet connection is lost, and it automatically syncs data once the connection is restored.

Pricing & Plans:

Mosaic POS costs around ₱2,000 per month if you commit to a two-year contract. Additional hardware, like cash drawers, printers, and stands, are sold separately. The pricing makes Mosaic a solid choice for both small businesses and larger chains looking for a feature-rich solution without breaking the bank.

Support & Integrations:

Mosaic POS offers 24/7 customer support and regular updates to improve the system's capabilities and security. It also integrates with popular third-party services like accounting tools, delivery apps (e.g., Uber Eats), and loyalty programs.

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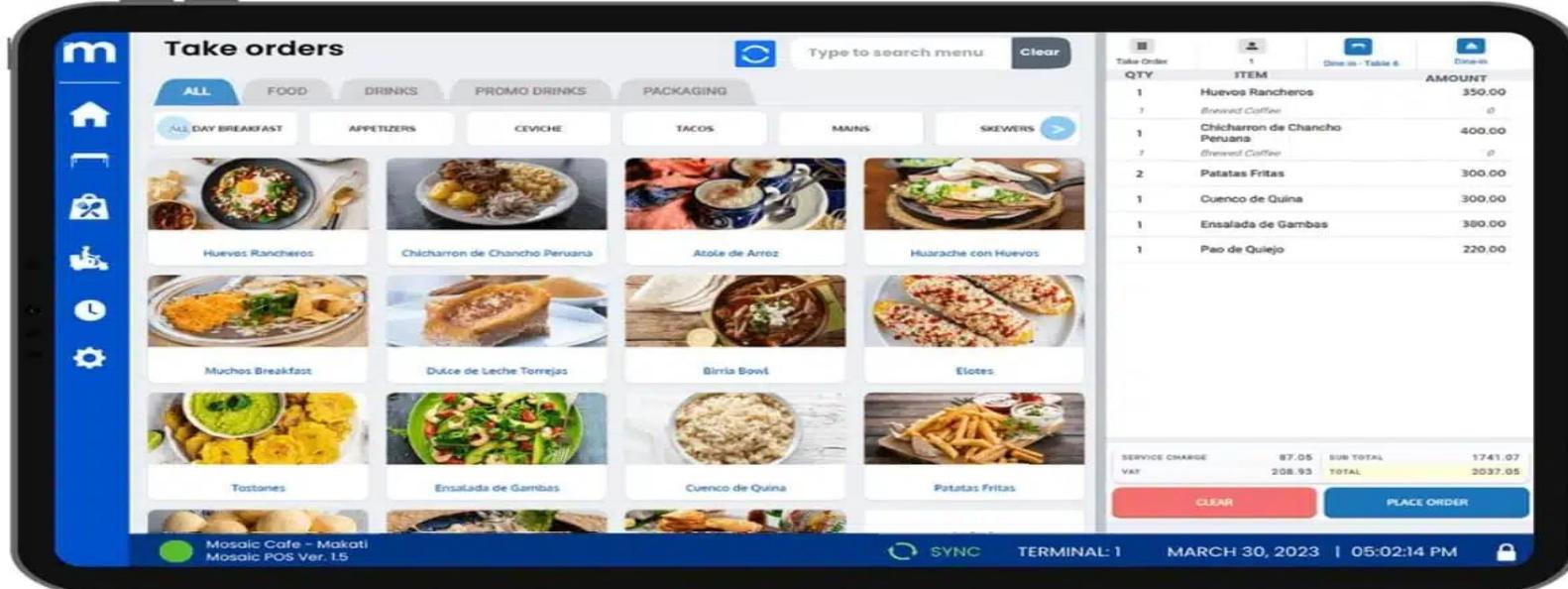
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2.2 FOREIGN RELATED STUDIES AND SYSTEMS

Foreign Study 1: Lightspeed eCommerce System

Lightspeed eCommerce, developed in Canada, became widely available in 2023. It combines online retail with in-store point-of-sale (POS) tools to help businesses manage their sales. As a cloud-based platform, it allows business owners to access important data, like sales and inventory information, from any device connected to the internet, which makes remote work possible and ensures continuous business operations (LightspeedHQ, n.d.; TrustRadius, n.d.).

Since its launch, Lightspeed has expanded internationally, serving thousands of businesses. Its easy-to-use dashboard allows merchants to track both online and in-store sales from one system, which makes managing pricing, promotions, and product information easier and more consistent (TechRadar, 2024).

Key Features of Lightspeed:

Omnichannel Integration

Lightspeed connects physical stores and eCommerce platforms in one system. This integration allows businesses to process both online and in-store orders seamlessly. Inventory updates, customer information, and order history are shared across all platforms, reducing errors and improving management (LightspeedHQ, n.d.; TechRadar, 2024).

Unified Inventory & Customer Management

Lightspeed's inventory tools let businesses add and track products in real-time. Features like low-stock alerts and pricing updates help maintain accurate stock levels across all locations. Customer data is stored in one place, allowing businesses to personalize services and loyalty programs (LightspeedHQ, n.d.).

Real-Time Analytics & Reporting

Lightspeed provides live sales reports and dashboards that business owners can use to track key performance indicators (KPIs). Metrics such as revenue, bestselling items, and customer lifetime value help inform decisions. Historical data comparisons help identify opportunities for growth and improvements (Business.com, 2024; LightspeedHQ, 2021).

Customization & Marketing Tools

Merchants can customize their online stores using themes, product pages, and menus. Built-in marketing tools allow for automated email campaigns, SMS promotions, and social media ads. Integration with platforms like Facebook and Instagram enhances the reach of campaigns and supports omnichannel sales (Lightspeed, n.d.; FIPP, n.d.).

Additional Integrations & Support

In addition to core POS and eCommerce features, Lightspeed integrates with third-party apps for accounting, shipping, and loyalty programs. A notable integration includes Uber Eats for restaurant deliveries. Lightspeed offers 24/7 customer support and regular software updates, ensuring that businesses stay up-to-date with new features and security improvements (Wall Street Journal, 2024; LightspeedHQ, 2021).

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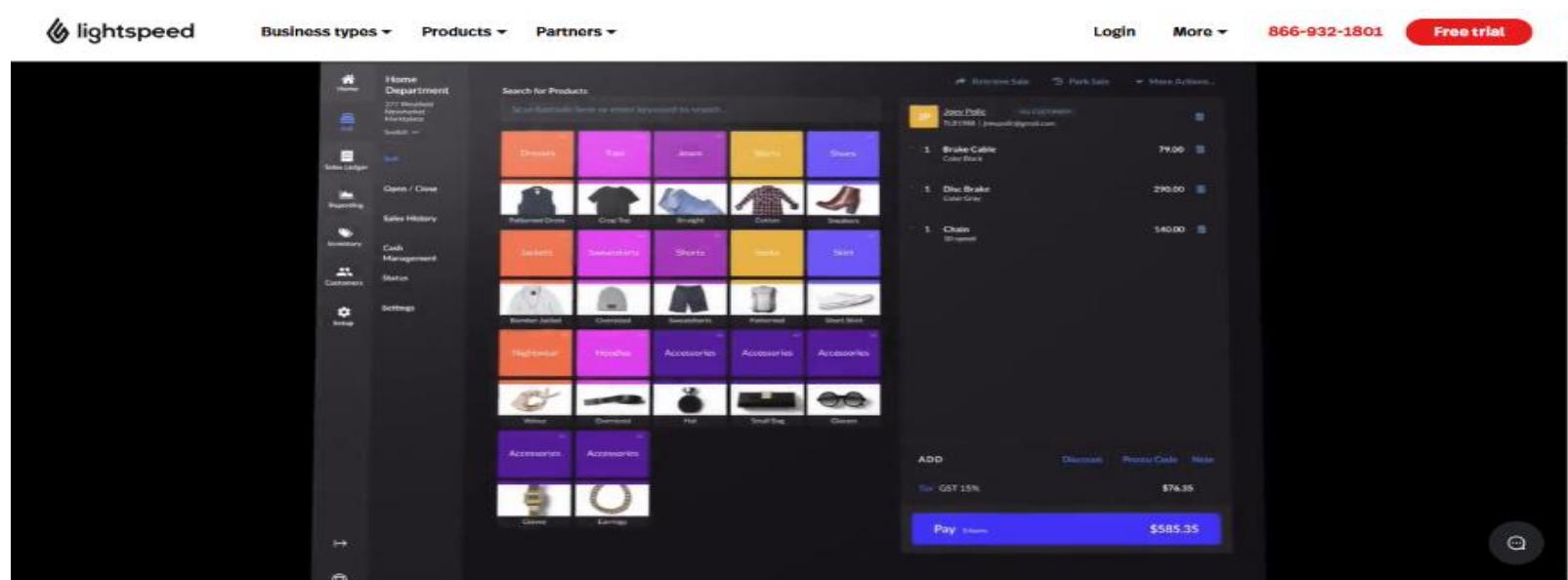
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Foreign Study 2: Shopify POS

Shopify POS is an app that allows stores to sell both in-person and online using the same system. You can use it on your phone or tablet, so there's no need for expensive hardware like cash registers.

Whenever you make a sale or add new items, Shopify POS updates your inventory instantly, ensuring you don't accidentally sell products that are out of stock.

The app provides key information like daily sales and average order size, so you can easily see how your store is performing. It also tracks customer purchases, helping you understand which products are popular.

After each sale, the app can automatically send a receipt to the customer via email or text, giving them proof of their purchase right away.

Shopify POS includes built-in tools that let you send discounts, product updates, or loyalty offers directly through email or SMS. It also connects with social media platforms like Facebook and Instagram, so you can sell and advertise where your customers are most active.

All types of payments—credit cards, digital wallets, and gift cards—are processed through the app, making checkouts fast and easy. You can also set different permissions for your staff, so each employee only sees the parts of the system they need.

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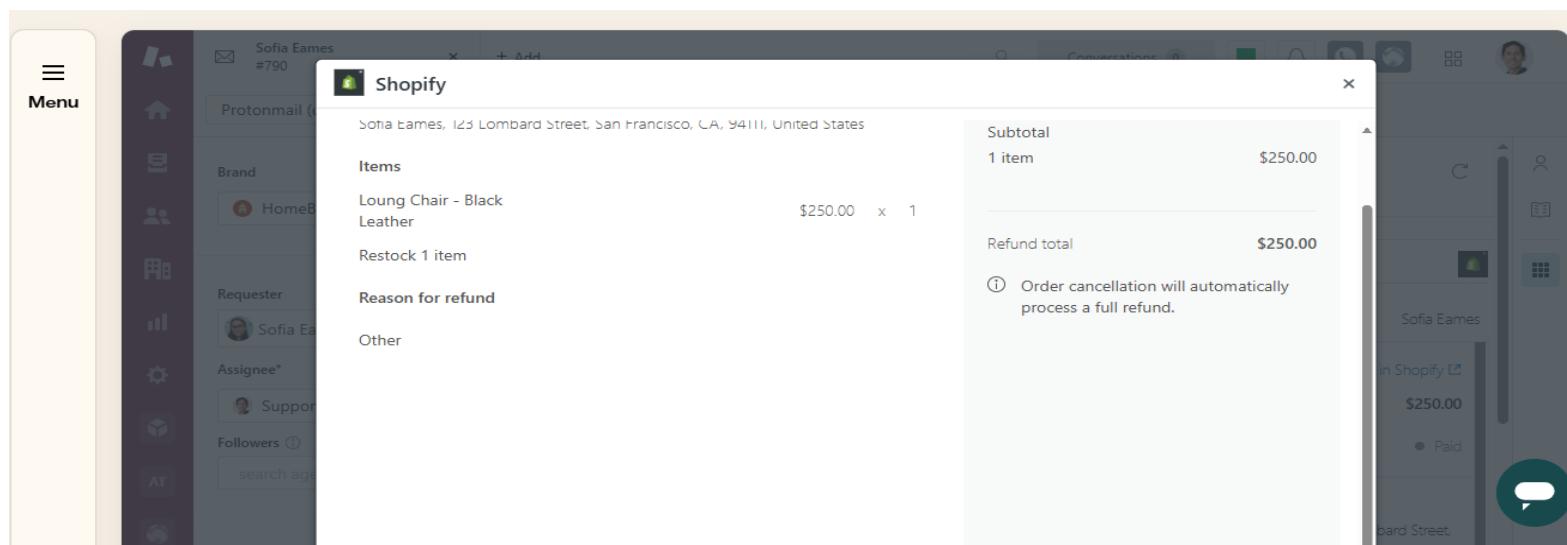
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Foreign Study 3: Square POS

Country: USA (2021)

Square POS is an easy-to-use system that works smoothly on smartphones and tablets. It includes helpful features for managing employees, like scheduling, tracking time, and calculating labor costs, all through its **Square Shifts** tool. After each sale, Square automatically sends receipts to customers via email or text message. It also lets customers leave ratings and reviews, which helps businesses get valuable feedback on their products and services.

Key Features

Mobile Compatibility

Square POS works on both iOS and Android devices. This means businesses can accept payments and manage their operations directly from a phone or tablet, without needing extra hardware.

Customer Ratings and Reviews

Customers can leave star ratings and written reviews through the Square Online Store or at the checkout. Business owners can read, respond to, and analyze these reviews to improve their service and build customer loyalty.

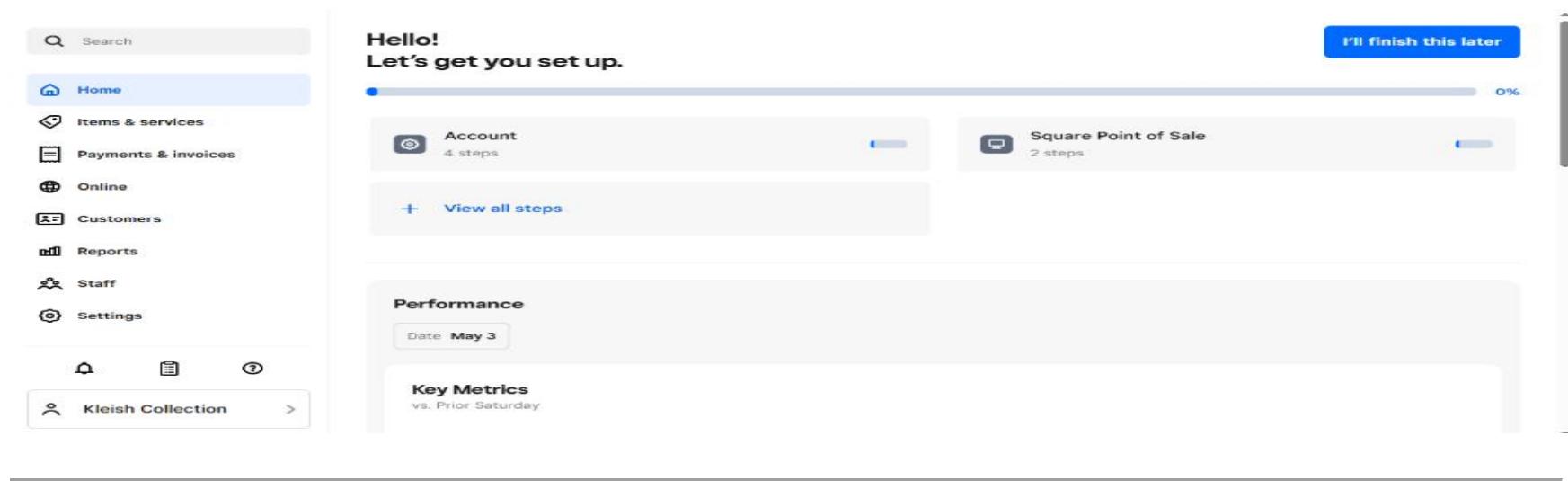
Employee Scheduling

Square POS, with **Square Shifts**, helps manage employee schedules and track attendance. Managers can create and share schedules, approve time off, and see attendance reports, all in one place.

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2.3 SYNTHESIS AND RELEVANCE TO THE STUDY

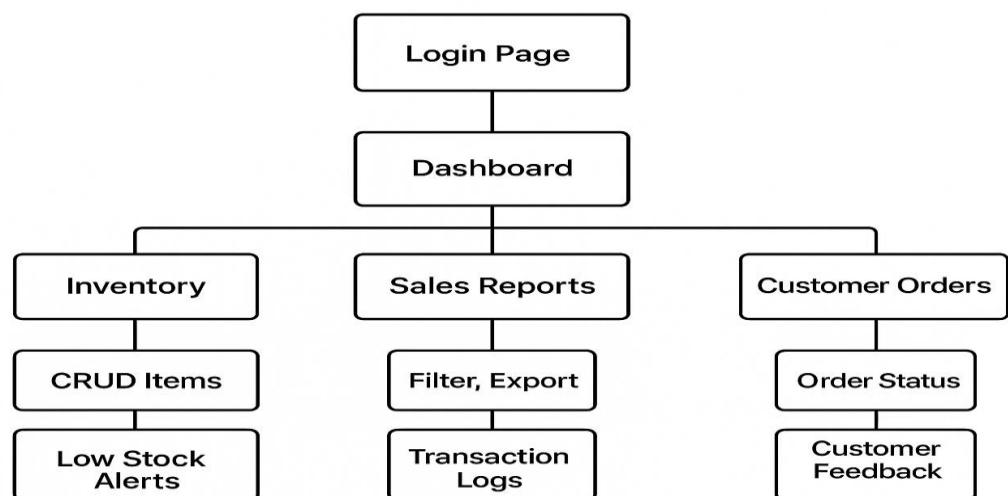
Comparison Table:

Feature	Local 1	Local 2	Local 3	Foreign 1(Lightspeed)	Foreign 2(Shopify POS)	Foreign 3(Square POS)	Kleish Collection System
POS Module	✓	✓	✓	✓	✓	✓	✓
Inventory Management	✓ (basic)	✓	✓	✓	✓	✓	✓ (real-time with alerts)
Multi-Branch Support	✗	✗	✗	✓	✓	✓	✓
Analytics Dashboard	✓ (basic)	✓ (basic)	✗	✓ (real-time)	✓	✓	✓ (detailed graphs)
Employee Management	✗	✓	✗	✓ (roles and shifts)	✓ (logins)	✓ (scheduling)	✓ (logins, roles)
Customer Feedback System	✗	✗	✗	✓ (ratings & history)	✓ (reviews tracking)	✓ (feedback forms)	✓ (ratings, suggestions)
Marketing Tools	✗	✗	✓	✓ (campaigns & SEO)	✓ (built-in tools)	✓ (email/text promos)	✓ (promo codes, campaigns)
Online/Live Selling Support	✗	✗	✓	✓ (eCommerce integration)	✓ (online store sync)	✓ (mobile/online tools)	✓ (for online & live selling)

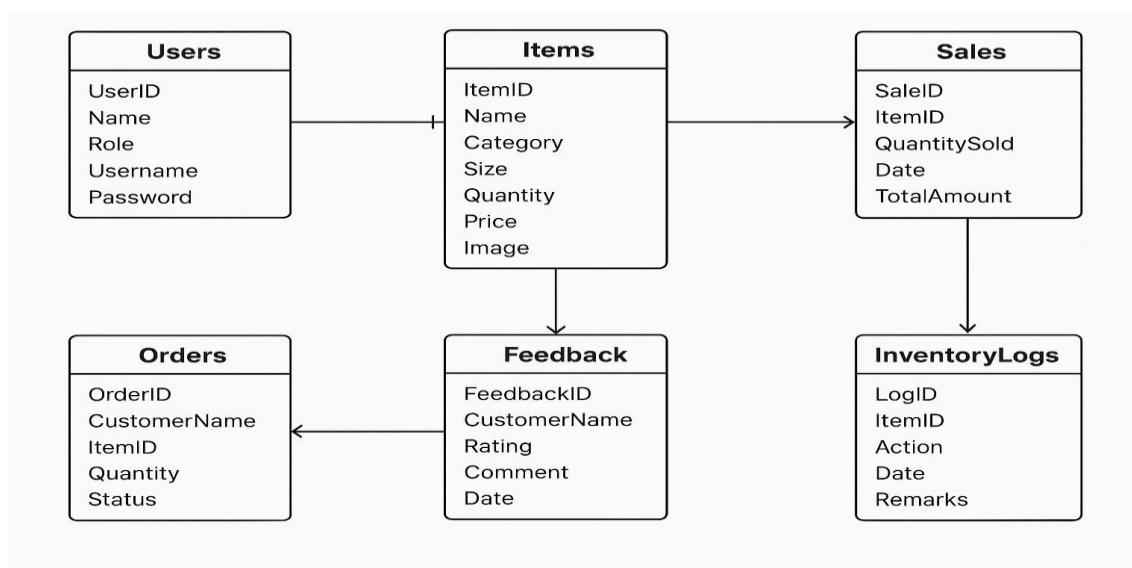
CHAPTER 3: PROJECT / SYSTEM DEVELOPMENT

DESIGN / LAYOUT

System Flowchart



ER Diagram



Screenshots or Code Snippets

Admin Dashboard HTML/CSS

The screenshot shows a code editor with the file `dashboard.php` open. The code is a PHP script with embedded CSS and HTML. It includes a sidebar menu with links to various dashboard pages like Dashboard Overview, Inventory Management, Point of Sale (POS), Transaction History, Order Tracking, Customer Insights, and Marketing. The code uses Bootstrap icons and spans to structure the menu items.

```
index.php dashboard.php
htdocs > dashboard.php
131  <div class="sidebar" id="sidebar" onmouseenter="expandSidebar()" onmouseleave="collapseSidebar()>
132  |   
133  |   <a href="dashboard.php">
134  |   |   <i class="fas fa-chart-pie"></i>
135  |   |   <span class="label"> Dashboard Overview</span>
136  |   </a>
137  |   <a href="inventory.php">
138  |   |   <i class="fas fa-boxes"></i>
139  |   |   <span class="label"> Inventory Management</span>
140  |   </a>
141  |   <a href="pos.php">
142  |   |   <i class="fas fa-cash-register"></i>
143  |   |   <span class="label"> Point of Sale (POS)</span>
144  |   </a>
145  |   <a href="transactions.php">
146  |   |   <i class="fas fa-receipt"></i>
147  |   |   <span class="label"> Transaction History</span>
148  |   </a>
149  |   <a href="orders.php">
150  |   |   <i class="fas fa-truck-loading"></i>
151  |   |   <span class="label"> Order Tracking</span>
152  |   </a>
153  |   <a href="customers.php">
154  |   |   <i class="fas fa-users"></i>
155  |   |   <span class="label"> Customer Insights</span>
156  |   </a>
157  |   <a href="marketing.php">
158  |   |   <i class="fas fa-bullhorn"></i>
159  |   </a>
```

Inventory Management PHP+SQL

The screenshot shows a terminal window with two tabs open: 'index.php' and 'inventory.php'. The 'inventory.php' tab is active and displays the following PHP code:

```
index.php inventory.php
htdocs > inventory.php >
41
42
43
44 // Input validation
45 if (empty($product_name) || $category_id <= 0 || $price <= 0 || $stock < 0) {
46     echo "<div class='error-message'>Please fill all fields correctly.</div>";
47 } else {
48     // Check if the selected category exists
49     $category_check_sql = "SELECT category_id FROM categories WHERE category_id = ?";
50     $category_check_stmt = $conn->prepare(query: $category_check_sql);
51     if ($category_check_stmt === false) {
52         die('Prepare failed: ' . htmlspecialchars(string: $conn->error));
53     }
54
55     $category_check_stmt->bind_param(types: "i", var: &$category_id);
56     $category_check_stmt->execute();
57     $category_check_result = $category_check_stmt->get_result();
58
59     if ($category_check_result->num_rows > 0) {
60         // Category exists, insert the product
61         $insert_product_sql = "INSERT INTO products (product_name, category_id, price, stock)
62                             VALUES (?, ?, ?, ?)";
63         $insert_stmt = $conn->prepare(query: $insert_product_sql);
64         if ($insert_stmt === false) {
65             die('Prepare failed: ' . htmlspecialchars(string: $conn->error));
66         }
67
68         $insert_stmt->bind_param(types: "siid", var: &$product_name, vars: &$category_id, $price, $stock);
69         if ($insert_stmt->execute()) {
70             echo "<script>alert('Product added successfully!'); window.location.href='inventory.php';</script>";
71         } else {
72             echo "<div class='error-message'>Failed to add product: " . htmlspecialchars(string: $insert_stmt->error) . "</div>";
73         }
74     }
75 }
76
77
78
79
80
81
82
```

3.2 PROJECT / SYSTEM REQUIREMENTS

Lahat ng ginamit para mabuo yung system

3.2.1 Policy and Regulations Requirements

- Data Privacy Act of 2012 (R.A. 10173)

Protects customer information collected during transactions, logins, or feedback. User data must be stored securely and not shared without consent.

- Consumer Act of the Philippines (R.A. 7394)

Requires transparency in product pricing, condition (e.g., secondhand), and return/refund policies.

- E-Commerce Act of 2000 (R.A. 8792)

If the system includes online selling or live-selling integration, it must comply with secure electronic transactions and digital signatures.

3.2.2 Security Requirements

- **Secure Login:**

Encrypted passwords (e.g., using hash), input validation, and session handling, order stock limits, invalid value.

- **Backups:**

Daily database backups stored securely.

Types of Information and How We Manage Them

We classify all data into three categories:

- **Private Information**

This includes customer details, employee records, sales reports, and inventory data. Only authorized team members can access this information, and it is protected with strong passwords and encryption.

- **Internal Use Only**

This includes staff messages, system settings, and activity logs. These are meant for internal use only and are not shared outside the organization.

- **Public Information**

This includes promotional content, store updates, or materials for public viewing. Such information can only be shared with approval from the system administrator.

2. Core Security Practices

To protect the system, we follow these important security measures:

- Any external service providers (such as payment gateways or live-selling partners) must sign a **Data Privacy Agreement**.
 - All staff or developers handling sensitive system data must:
 - Pass a **background check**
 - Sign a **Non-Disclosure Agreement (NDA)**
 - Complete **basic security training**
 - **Security audits** will be conducted every 3 months to check for any issues.
 - We use **AES-256 encryption** to protect data during storage and transfer.
 - All users must log in using **Multi-Factor Authentication (MFA)**. Access rights are based on their role using **Role-Based Access Control (RBAC)**.
-

3. Sharing of Information

- Private data, such as customer records, can only be shared with **approval from the System Security Manager**.
 - Customer data may only be shared with **customer consent**, such as for promotions or service improvements.
 - Every data-sharing activity will be **recorded and documented** for tracking purposes.
-

4. Security Monitoring

- The system's activities will be monitored through a **centralized tracking tool**.
 - A designated **Security Officer** will review activity logs weekly to detect any suspicious behavior.
 - Any time private or sensitive data is accessed, it will be **automatically recorded**.
-

5. Reporting Security Issues

If any team member notices or suspects a security issue, they must report it immediately to the **Security Response Team**.

The response process includes:

- Containing the issue as quickly as possible
 - Investigating what caused it
 - Notifying affected individuals (if necessary)
 - Creating a full incident report and follow-up
-

6. User Responsibilities and Rules

All users of the Kleish Collection system must follow these guidelines:

- Complete **mandatory security training** before using the system
 - Use only their **assigned login credentials** (no sharing of accounts)
 - Access the system only on **approved and secure devices**
 - Sign a **User Access and Responsibility Agreement**
 - If a user leaves the company or changes roles, their access will be **removed immediately**
 - User access permissions will be **reviewed every two years**
-

3.2.3 Training Requirements

Admin and Staff Training:

- How to add/edit/delete inventory
- How to view sales, generate reports
- How to manage online orders and update order statuses

Manual or Digital Guide:

- Includes screenshots, how-to steps, and common errors

Customer Interface Orientation:

- If customers access order status or feedback, a brief visual guide may be provided
-

3.2.4 Reporting Requirements

Daily Sales Report

- Date, Item Sold, Quantity, Total
- Sorted by Category or Item

Inventory Status Report

- Items low on stock (highlighted)

Popular Items Report

- Based on sales volume over time

Customer Feedback Summary

- Ratings, most common comments

3.3 Test Specifications and Procedures

To ensure the Kleish Collection system runs smoothly, accurately, and efficiently, especially for handling sales, inventory, and customer transactions, thorough testing is essential. This includes checking how features work, how well they connect with other tools, and whether users find them easy to use.

Below are the main areas we'll focus on during testing, along with sample test cases and the expected results:

Functional Testing

Test whether each feature works as intended.

Test Case ID	Description	Test Steps	Expected Result
TC-UK-001	Add New Ukay Item	Login → Inventory → Add Item form → Save	Item added and shown in inventory list
TC-UK-002	Update Item Details	Login → Inventory → Edit button → Save	Changes reflected
TC-UK-003	Record New Sale	Login → POS → Add to cart → Confirm Sale	Sale saved inventory updated
TC-UK-004	View Customer Feedback	Login → Feedback module	Feedback displayed with stars and comments

Integration Testing

Ensure smooth interaction between modules and external systems.

Test Case ID	Description	Test Steps	Expected Result
TC-UK-005	Inventory and Sales Sync	Sell an item from POS	Inventory reduces accordingly
TC-UK-006	Order Status Update	Admin changes order to "Delivered"	Customer side reflects updated status

Performance Testing

Check system performance under load.

Test Case ID	Description	Test Steps	Expected Result
TC-UK-007	Handle Bulk Upload	Upload 100 new ukay items in one go	System processes without crash or data loss

User Acceptance Testing (UAT)

Performed by end users to validate real-world functionality.

Test Case ID	Description	Test Steps	Expected Result
TC-UK-008	Staff checks sales report	Staff login → Reports → View Sales	All correct and updated
TC-UK-009	Customer leaves feedback	Open form → Rate → Submit	Feedback saved and visible to admin