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Inventory and Sales Management System for Tanglaw Clothing

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The **management of Tanglaw Clothing** for their vision and commitment to this project.

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To **Lord Jesus Christ** for the blessings from the heavens above.

To **Ma'am Mikee** for being our inspiration to finish this project.

DEDICATION

This Inventory and Sales Management System is dedicated to the employees of Tanglaw Clothing. Your hard work and dedication have made this project possible. We hope that this system will help you to be more efficient and productive, and that it will help you to achieve your business goals.

Sincerely,

The Project Team

ABSTRACT

In today's highly competitive company environment, effective inventory and sales management is essential to success. This research project aims to develop an efficient inventory and sales management system for Tanglaw Clothing. The system will automate inventory management procedures, track inventory levels and sales data in real time, and give reporting and analytics capabilities.

The system will be built with Java Swing and a MySQL database. It will be divided into three major modules: inventory management, sales management, and reports. The solution is expected to improve inventory management, increase sales revenue, boost profitability, and improve supply chain decision-making. It will also result in a more enjoyable shopping experience for customers.

Tanglaw Clothing and other small firms will benefit from the research since it will provide them a better grasp of inventory and sales management strategies. It will also help future researchers who are interested in this area.

Title: Inventory and Sales Management System for Tanglaw Clothing

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Chapter I

BACKGROUND OF THE PROJECT

Introduction

Background of the Project

Inventory and sales management systems are essential parts of contemporary businesses because they make it possible to track sales and inventory levels effectively. These systems give companies real-time information on stock levels, sales trends, and consumer behavior, empowering them to make wise choices about marketing, pricing, and restocking.

A business can become more productive in a number of ways by using a software-based sales and inventory management system. First of all, it can automate a lot of the manual procedures involved in inventory and sales management, saving time and effort. Additionally, it can give businesses immediate access to information about inventory levels, sales patterns, and customer behavior, empowering them to make data-driven choices that will enhance their overall performance.

According to Aberdeen Group, using sales and inventory management software can lead to a 20% improvement in order processing time and a 19% reduction in inventory holding costs. It can also help reduce stock outs by 10% and increase sales (Aberdeen Group, 2016).

Objectives

General Objectives

To optimize inventory and sales management processes through the development and implementation of a comprehensive system for Tanglaw clothing, aimed at enhancing system efficiency.

Specific Objectives

1. To automate inventory management processes, including stock tracking, ordering, and replenishment.
2. To enable real-time tracking of inventory levels and sales data to help clothing shops make informed business decisions.
3. To reduce the time and effort required to manage inventory and sales processes by providing a user-friendly interface and automating routine tasks.
4. To provide reporting and analytics capabilities to help clothing shops identify areas for improvement and optimize their operations.
5. To enhance customer satisfaction by ensuring that the right products are in stock and available for purchase.

Significance of the Study

Tanglaw Clothing's inventory and sales management system is essential to several entities involved in the business's operations. This section emphasizes the study's significance and advantages for these entities.

Entrepreneurs and business owners: The study is extremely important for Tanglaw Clothing's business owners or entrepreneurs. Implementing an inventory and sales management system will give them precise insights on the company's inventory, sales. This knowledge will allow for educated decision-making and strategic planning, which will drive the company's success. Business leaders may make data-driven choices about procurement, manufacturing, pricing, and marketing strategies if they have a full perspective of inventory levels, sales performance, and demand patterns.

Employees: Tanglaw Clothing staff, particularly those involved in inventory management, and sales, will find the research useful. Implementing an advanced system will save effort and speed up processes, giving staff a greater opportunity to focus on value-added tasks. Staff will benefit from an integrated system for managing inventories, tracking sales, and making projections, increasing their efficiency and productivity. Employees may devote more time and effort to customer service, sales analysis, and other essential areas that promote corporate success by employing technology to automate typical processes.

Sales and Marketing Teams:

Tanglaw Clothing's sales and marketing teams rely heavily on the inventory and sales management system. They will gain significant insights into sales success, consumer preferences, and demand patterns from the system. Depending on this data, the teams will be able to adjust marketing tactics, determine target markets, and optimize offerings depending on client demand.

Customers: While Tanglaw Clothing is a small company, the study's implementation of an inventory and sales management system will benefit its customers as well. Customer satisfaction will be improved by ensuring product availability, decreasing stockouts, and increasing order fulfillment. Customers will benefit from a more simplified and efficient purchase procedure, as well as faster delivery and less delays.

Future Researchers: The study on the inventory and sales management system for Tanglaw Clothing holds significance for future researchers in the field. It provides a valuable case study for small businesses seeking to enhance their inventory and sales management processes. Future researchers can draw insights from the study's methodology, implementation strategies, and findings to further explore and refine the concepts of inventory management, and sales tracking, in the context of small businesses.

Scope and Delimitation

Scope

The scope of the proposed system is to develop and implement an inventory and sales management system for Tanglaw Clothing. The system will automate inventory management processes, including stock tracking, ordering, and replenishment. The system will also provide real-time tracking of inventory levels and sales data, as well as reporting and analytics capabilities.

Delimitation

The proposed system has the following delimitations:

- The system will be developed and implemented for Tanglaw Clothing only.
- The system will not include the development of a website or online store.
- The system will not include the development of a mobile application.
- The system will not include the development of any hardware components.
- The system will not include any marketing or advertising functions.
- The system will not include any financial management or accounting functions

Operational Definition of Terms

Inventory management: The process of tracking and managing the flow of goods or materials into, through, and out of a business.

Sales tracking: The process of tracking sales transactions, including the date, time, quantity, and price of each sales

Stock outs: An event in which a company runs out of a specific product entirely and is unable to fill orders from customers.

Customer Satisfaction: The level of contentment an end user feels with a good or service; frequently evaluated via questionnaires and other forms of feedback.

Demand Patterns: The patterns in consumer demand that have been seen over time for particular goods or services, impacted by things like promotions, market shifts, and seasonality.

User-friendly Interface: A software or system design that is intuitive and easy for users to navigate and interact with, often featuring clear labels, logical layouts, and helpful instructions.

Technical Definition of Terms

System development life cycle (SDLC): A process for developing software systems that includes the following phases: requirements, design, development, testing, deployment, and maintenance.

Real-time Tracking: The ability to instantly get insight into the present status of operations by tracking and gathering data on inventory levels, sales transactions, or other business processes as they happen.

Optimization: The process of adjusting a system or procedure to get the greatest efficiency or result possible; frequently involves figuring out where improvements may be made, putting those changes into action, and monitoring the outcome.

Analytics: Involves gathering, analyzing, and interpreting data to find trends, patterns, and insights that can guide choices and enhance corporate results.

CHAPTER II

REVIEW OF RELATED LITERATURE, STUDIES AND SYSTEMS

LOCAL LITERATURE

An article by Ansi Informations Systems PH (2021) named “Understanding the Importance of Having an Efficient Inventory Management System”. They discuss Inventory management is a persistent challenge for businesses dealing with physical products and materials. However, entrepreneurs often overlook its potential to optimize business gains. An efficient inventory management system offers several benefits that can enhance a business's operations. Firstly, it reduces one of the biggest operating expenses by helping businesses spend wisely on supplies and storage. By maximizing available space and resources, businesses can lower costs and avoid product shortages. Secondly, an accurate inventory management system enables companies to account for their stock more effectively. Traditional manual methods are time-consuming and prone to errors. Streamlined systems, such as cloud-based platforms, provide real-time tracking across multiple facilities, saving time, labor, and reducing human error. Thirdly, an improved inventory management system enhances order fulfillment and customer satisfaction. By managing inventory-related data and anticipating problems, businesses can avoid issues like product shortages or shipping delays, ensuring happier customers and fostering loyalty. Lastly, a robust inventory management system aids decision-making in the supply chain. It helps determine optimal ordering quantities, storage timelines and enables businesses to gain insights

into supplier relationships. Quicker and more informed decisions lead to a more efficient supply chain and improved business performance. Mastering inventory management opens up possibilities for business growth, such as expanding product lines or exploring new sales channels. Investing in a better inventory management system can yield long-term rewards and contribute to increased profits.

Manila Bulletin published an article authored by Luna, E. (2021) discussing the importance of POS system in retail business. Running a retail business requires efficiency and the right tools, with a key tool being the point-of-sale (POS) system. The POS system, which stands for "point of sale," refers to the place and time where customers make payments for products or services. While traditional cash registers served as the POS terminals, advancements in technology have led to more sophisticated systems that process data and provide valuable information to business owners. In the Philippines, many retail companies have embraced POS systems to adapt to modern times and meet the growing demands of their businesses. The advantages of implementing a POS system in a retail business include optimizing the checkout process, integrating new payment channels, enabling efficient inventory management, acquiring accurate data for business strategies, and allowing remote access to business inventory. These benefits enhance the shopping experience, attract tech-savvy customers, streamline operations, and improve decision-making. By adopting a reliable POS system, retail businesses can navigate the challenges of managing growth and drive their companies towards a successful future (Luna, 2021).

The study entitled “Providing Inventory Management Services for Small and Medium Enterprises in Calamba, Laguna” by Sanico et. al in 2023 emphasizes the importance of regular business evaluation, particularly in terms of inventory management. Small and medium enterprises (SMEs) need to track their stocks effectively, ensuring they have the right amount of products available when customers require them and avoiding losses due to excessive stock. The study discusses on how inventory management services can assist SMEs in enhancing their inventory practices, efficiency, and productivity. The research is conducted at Sunbird School, Office Supplies, and Gift Shop, which faced challenges in inventory management, such as overordering and accumulation of damaged unsold items. The study proposes offering inventory audit and consulting services to SMEs in the school supplies, office supplies, and gift shop sectors.

The article written by Liwanag Jr. et al in 2020 entitled, Order Management with Point of Sale focuses on order management with a point-of-sale (POS) system in restaurants. It outlines the process starting from a customer's arrival at the POS counter to the payment and receipt of their order. The research highlights the effectiveness of the agile scrum method in ensuring consistent and accurate results aligned with the product owner's expectations. The study emphasizes the interconnectedness of the POS system with order evaluation, kitchen operations, inventory management, and food costing. The system evaluates and generates orders, while the kitchen prepares and tracks the status of each order based on ingredient availability. If there are inventory shortages, the kitchen requests items from inventory management, and if necessary,

inventory management requests supplies from the warehousing department. It also includes the analysis of food and beverage costing, determining the expenses associated with the goods and ingredients used. This information is then displayed on the menu in the POS system. Furthermore, the study covers restaurant analytics, which provides printed reports and displays data through a dashboard. This includes insights on the most sold item, total revenue, total POS IDs, inventory data, food costing, and kitchen waste.

A study entitled, Analysis and Design of Sales and Inventory Management System for Yochang General Merchandise (Acosta et al., 2020) focuses on the development of a Sales and Inventory Management System to enhance business processes and operations at Yochang General Merchandise. The existing manual system used by the company for inventory calculation and sales computation is found to be inefficient and time-consuming, especially as the business grows. The proposed system aims to address these issues by automating the tracking of sales and inventory levels. The study adopts a rapid application development (RAD) methodology, which allows for quick adjustments and revisions based on user feedback. The research team designs process and data models to facilitate efficient monitoring of stocks, stock-ups, and inventories. The proposed system is user-friendly, accommodating individuals with limited IT experience. It replaces the existing manual recording system, reducing the time required for calculations and data storage. The Sales and Inventory System developed for the company offers maximum efficiency and time-saving benefits. It can handle transactions, maintain and clear the database, and generate calculated reports.

Implementing this system within the organization is expected to reduce data entry time and provide readily accessible reports significantly.

LOCAL STUDY

In the study “Developing a Point-of-Sale Inventory Management System for Lord's Grace General Merchandising using PHP and MySQL. “by Antonio et al., (2019) focuses on creating a point-of-sale (POS) inventory management system for Lord's Grace General Merchandising using PHP and MySQL. The proposed POS Inventory Management System would be able to check and monitor for sales and income as well as stock availability with the use of a search function, it could also reduce inventory within the database in the event of a sale by using a barcode scanner, it could also generate sales forecasts reports, inventory turnover reports and would be able to issue purchase orders upon the “Auto-Management” System that is incorporated within the algorithms of the system.

In another study by Baylen (2020), The study aimed to determine the effectiveness of the inventory management system which caused the decrease in profit of the randomly selected small-sized restaurants in the four districts of Quezon province, to provide suggestions and solutions to the problems that they encounter in their day-to-day operations. In result and conclusion, The inventory management methods commonly used by these restaurants are FIFO (First In First Out) and JIT (just-in-time). FIFO is used for general inventory management, while JIT is employed for

ordering supplies only when needed, especially for special menu items. Some supplies for these special items may not be regularly stocked due to their infrequent usage. Secondly, the problems encountered in inventory management include chefs dictating purchases, resulting in overstocked inventory; purchasing large volumes of meat/fish and vegetables in advance; unreasonable food prices; lack of inventory counting in the dining area; and significant vegetable spoilage. These problems have various impacts on inventory management, such as affecting cash flow due to overstocked inventory, distorting the restaurant's financial position, leading to unreasonable food prices, decreasing profitability due to unaccounted inventory levels in the dining area, and significant vegetable spoilage. Finally, the majority of small-sized restaurant owners personally handle inventory management using the FIFO method. Daily physical inventory counts are conducted for specific items like canned goods, bottled water, soft drinks, and canned juice to minimize theft and anomalies. Other inventory counts are typically done on a weekly basis.

The study by Mendoza et al., (2019) discusses Point of Sale System as an enterprise solution primarily based on software used to track sales activity and inventory simultaneously, benefiting both manufacturers and retailers. It allows for efficient transaction entry, updating essential customer details, purchased products, prices, and dates. The system facilitates speedy customer service and provides easier and faster monitoring of data, making it a valuable asset to the entire process. Compared to manual methods, the computer-based Inventory Point of Sale System offers faster and more reliable checking and reviewing of company transactions, minimizing errors and

providing easy accessibility. Management can make timely and informed decisions using the system's inventory features. Digital records offer quicker access to information, eliminating the need for physical documents and separate files. Based on the findings of the study, it was concluded that the system helps ensure stock availability and quantity monitoring, prevents understocking, and generates daily, monthly, and yearly reports. Additionally, the system integrates a barcode scanner into the point of sale and inventory modules.

A study was done at Bibingkinitan, a brand that offers mini-sized bibingka and the system is entitled a point-of-sale at Bibingkinitan (Flores et al., 2020). A point-of-sale system is a crucial tool for businesses like Bibingkinitan, which helps customers make payments for goods and services. The current manual transactions are slow and unreliable, relying on the team's ability to accurately calculate sales transactions, which can lead to mistakes and errors. A point-of-sale system can help Bibingkinitan streamline these transactions by automatically listing product names and storing them in inventory records. The system's development life cycle was used as a guide, with seven processes: seeking a client, creating plans and timelines, analyzing collected data, and developing an automated system. The system includes a reporting feature that provides an overview of sales activities, analyzing sales funnel steps, and sales executives' performance. The auto-calculate feature allows clients to obtain temporary results without using formulas and calculators, and the security feature prevents unauthorized intrusion and access. These features enhance the business transaction and process, benefiting staff, cashiers, employees, customers, and the owner. The point-of-sale

system can improve the business transaction and processes for Bibingkinitan, benefiting the staff, customers, and owners.

In the study by Sison et al titled "A PROBLEM ORIENTED APPROACH TO IMPLEMENTING AN INVENTORY AND POINT-OF-SALE SYSTEM FOR COMPANY KCP", the researchers proposed a software design to address the problems of human errors, slow transaction time, and data redundancy in the school cafeteria operation. The implementation of the system was done using the Agile methodology, which allowed for adjustments to the client's demands. The system was evaluated by the client and received high scores for usability, dependability, security, efficiency, and acceptability. The major findings of the study showed that the prototype was effective in addressing the problems of the old POS system and that the client supported the relevance of the design. The limitations of the study include the small sample size and the lack of long-term evaluation of the system's effectiveness.

FOREIGN LITERATURE

Business News Daily made an article authored by Dublino J. (2023, Feb. 22) titled "POS Inventory Management", she discusses Inventory management as crucial for small and midsize businesses, especially retailers and restaurants. Retailers deal with a wide range of products, each with unique characteristics, and maintaining stock availability is vital. Restaurants face similar challenges as their inventory includes ingredients required for specific dishes. Inventory management ensures that all necessary items are in stock, preventing disappointments and customer dissatisfaction.

Various techniques are used to optimize inventory levels, such as perpetual inventory management, demand forecasting, just-in-time inventory management, safety stock inventory, and reorder point formulas. Implementing a point-of-sale (POS) system with inventory management functionality can significantly simplify the process. POS systems combine hardware and software for payment processing and inventory control, making it easier to track sales, adjust inventory levels automatically, generate reports, monitor stock availability, manage multiple locations or channels remotely, and apply inventory management techniques effectively. This automation reduces manual effort, minimizes errors, provides valuable insights through reports, offers quick visibility into stock levels, and facilitates dynamic inventory management, maximizing sales and minimizing costs.

The article entitled “Point-of-Sale Systems (POS) for Inventory Management and More” authored by Carlson R. (2022, September 20.) discusses five key takeaways about Point-of-Sale Systems (POS) for Inventory Management. A point-of-sale system (POS) facilitates the transfer of payment between customer and business. A POS may be as simple as a cash register, or as complex as a networked computer system that links payments with inventory and more. Modern POS systems involve multiple business operations in addition to payments processing, including inventory management and marketing and promotion. There are a number of viable free or low-cost POS systems available that are suitable for small businesses. Using POS systems for inventory management offers several advantages. Firstly, it automates the process of tracking inventory, benefiting both small and large firms by reducing the costs associated with carrying excess or insufficient inventory. Secondly, POS systems

generate sales and inventory reports automatically, providing valuable insights into business performance at any given time. Moreover, implementing a POS system can increase business profitability by lowering inventory carrying and ordering costs. Additionally, POS systems enable remote management, particularly beneficial for businesses with multiple locations, as owners or managers can track inventory and minimize the risk of theft. Furthermore, POS systems facilitate dynamic inventory management, allowing business owners to adopt just-in-time inventory management or perpetual inventory systems. Lastly, POS systems support no-contact transactions, which have become increasingly important in the current and future business landscape (Carlson, 2022).

An article entitled "The Fundamentals of POS and Inventory Management Software" written by Rai S. (2023, March 24) discusses POS and Inventory Management importance. Inventory management plays a crucial role in ensuring that small businesses maintain optimal stock levels, minimizing the risks of excess or insufficient inventory, stock-outs, inaccurate records, and restricted cash flow. At the heart of a retail business, the point of sale (POS) system acts as a central hub, bringing together essential components such as sales, inventory management, payment processing, and customer management. When customers select items in-store or online, the POS system calculates the total price, applies discounts, taxes, and loyalty benefits, and enables various payment options. With the latest POS software, businesses can also leverage mobile POS, contactless payments, e-commerce

integration, and other advanced features to streamline operations and enhance customer experiences.

According to Lal et al.'s study on the effectiveness of POS data in managing the supply chain, Point of Sale (POS) systems serve as key tools in managing retail transactions, including determining payment amounts, recording funds received, completing transactions, and issuing receipts. To achieve this, the right technologies for competitive marketing are crucial. The study focused on selected retail stores in Madhya Pradesh, India, where data was collected through a structured questionnaire. Analysis of the collected data allowed for a comparative evaluation of the retail stores. The study examined the various benefits of POS data and ranked stores based on their effective utilization of POS data in decision-making. Notable advantages of adopting POS data included improved inventory management, increased flexibility in responding to customer demands, and reduced costs and processing times.

According to Shuai Zhang et al., (2021), this review focuses on the topic of spare parts inventory management, particularly in the context of the "right-to-repair" movement and the need for manufacturers to provide sufficient spare parts throughout the lifecycle of their products. The first perspective group focuses on the characteristics of spare parts, products, inventory systems, and supply chains. The supply chain structure of different inventory networks for managing spare parts is analyzed, and the importance of considering reverse logistics, consumer durable goods, inventory network structure and policy, spare parts demand pattern modeling, and big data analytics is

discussed. The second perspective group focuses on the characteristics of research methodologies and topics in the reviewed studies. The literature is classified based on analytics techniques, namely descriptive analytics, predictive analytics, and prescriptive analytics. The review aims to provide a quick guide to the classification schemes in the spare parts inventory management literature and present an overview of spare parts supply chains. It also discusses research gaps and potential future areas of study, including integrating spare parts inventory management with supply chain sustainability concepts and exploring the use of big data analytics in spare parts management. The product life-cycle is also discussed, highlighting the different phases (initial, maturity, and end-of-life) and how the demands for products and spare parts vary throughout these phases. The concept of "life-cycle mismatch" is introduced, indicating that spare parts demand follows product demand but with a time lag. In conclusion, this review provides a comprehensive analysis of the spare parts inventory management literature, offering insights into classification schemes, supply chain structures, research methodologies, and potential research gaps and extensions. It emphasizes the need for further exploration of topics such as reverse logistics, consumer durable goods, big data analytics, and supply chain sustainability in the context of spare parts management.

FOREIGN STUDY

In the study Exploring Inventory Management's Effects on Company's Profitability by Frye M. (2022), a qualitative study was conducted on inventory management's

effects on profitability and what types of tools, techniques, standards, and ideologies are relevant in determining the overall impact on profitability. This study explores these topics in the literal sense of the term and relates them to real-world scenarios to better apply the information found in the research phase. Research on profitability measures such as profits, profit margins, and lowering overall cost will serve as the standard for measuring profitability in the study. They concluded that Proper management of inventory is crucial for the profitability of businesses. The relationship between inventory management and profitability is significant as it directly impacts a company's financial success. Effective utilization of inventory management techniques can have a profound effect on profitability and provide a competitive advantage in a rapidly evolving business landscape. The goal of inventory management is to have the right items available at the right time to meet customer demand while controlling costs and minimizing waste. When implemented correctly, inventory management helps reduce costs, improve profitability, and establish a sustainable competitive advantage. The benefits of implementing an efficient inventory management policy include enhanced inventory tracking, improved operational efficiency, better communication, and increased profitability. Future research in this area could focus on understanding how inventory management has evolved and recovered from the coronavirus pandemic. Additionally, exploring the value of advanced technology, analytics, personalization, and automation can help companies make informed decisions on resource allocation, stakeholder engagement, and data optimization to drive growth and profitability

Roque et al. conducted a case study on Cruven Auto Specialist, an auto repair shop that was facing challenges with inventory management and service scheduling. The company was using an unsecured spreadsheet to store its records, which led to unauthorized data manipulation and inaccuracies in its data. The researchers used Agile Methodology to develop an Inventory and Service Management System that addressed these challenges. The system contained functionalities such as an account database, customer database, inventory database, service request processing, restock processing, and sales invoice processing. The system was designed to improve business operations and customer satisfaction by avoiding errors such as data loss, inaccuracy of data, and unauthorized manipulation of data. The researchers recommended that the users of the system be trained on how to properly use the system to avoid any inaccurate information being stored in the new system.

The researchers successfully implemented the Inventory and Service Management System, which resulted in positive impacts on the company's operations. The system allowed the company to monitor their service and inventory management, which helped them avoid understock, overstock, and depletion in their inventory. The system also allowed the company to process service requests, restock products, and process sales invoices more efficiently. The system improved the company's customer service by allowing them to verify customer profiles more efficiently and avoid losing track of appointments. The researchers concluded that Agile Methodology can be an effective approach to developing systems for businesses looking to improve their inventory and

service management processes. The study provides insights into the challenges faced by auto repair shops and how technology can be used to address these challenges.

In the study by Indumathi et al. They address the issue of missing items, poor inventory management, and database problems in enterprises. This issue is still relevant today, as companies struggle to successfully manage their inventories and sales. The COVID-19 pandemic has also highlighted the importance of having an effective system for inventory management in place, as supply chain disruptions have made it difficult for companies to maintain inventory levels. The researchers propose a Point of Sales and Inventory Management System that can help businesses avoid these issues. The system is designed to coordinate the shops of an enterprise in an internet-based environment. In this study, they conducted a comparative analysis of the system and found that it outperformed the existing standalone systems. The system is highly customizable and can be tailored to fit the specific needs of a business. The authors conclude that the Point of Sales and Inventory Management System is a valuable tool for businesses to manage their inventory and sales effectively, which is especially important in today's uncertain business environment.

The study “Inventory Management System in Mobile-Based Point of Sale” by Rajan, R., & Sulthana, S. (2022) focuses on the development of a mobile-based point of sale (mPOS) system for businesses, particularly in the restaurant industry. The current processes in the restaurant, such as order taking, reservation management, and payment handling, often rely on manual methods, which can be inefficient. The

objective is to create a user-friendly mPOS application that replaces traditional paper-based methods and improves the management of sales and inventory in the store. The project aims to enhance data management, report generation, quality control, and point of sale functionalities. By implementing an automated mPOS system, the company can streamline operations and meet its business requirements effectively. The study is based on a preliminary investigation conducted within the store, and the project scope focuses on database management, report generation, quality control, and the point of sale system.

The study “Inventory management efficiency analysis: A case study of an SME company” by Islam et al. (2019), this research study focuses on examining the factors that contribute to inventory mismanagement in a Small Medium Enterprise (SME) operating as a market leader in the Heavy Equipment Spare part Industry. Despite its market leadership, the company faces various inventory-related issues, such as slow-moving stocks and delivery delays, which ultimately impact its profitability. The research aims to identify the main factors responsible for these problems using a combination of quantitative and qualitative methods.

Quantitative methods, specifically the Pareto diagram and Inventory Turnover Ratio (ITR), are employed to evaluate sales and inventory management. The ITR is influenced by factors such as spare part quantity, warehouse area utilization, and material amounts. The top five ITR ratings are further examined through observation, interviews, and questionnaires, employing qualitative techniques. Additionally,

qualitative methods are used to assess the company's inventory information systems, procedures, coordination among departments, and human resources.

The findings of the study suggest that the primary factors contributing to inefficient inventory management are the lack of integration in the company's information system and the absence of qualified human resources. The research highlights the significance of well-integrated information systems and the need for skilled personnel in inventory management. These findings provide valuable insights to the industry, emphasizing the importance of information systems and human resources in effective inventory management.

From an academic standpoint, this research enriches the existing inventory management literature by providing empirical evidence of the impact of information systems and human resources on inventory management practices.

The company under study is primarily involved in spare part sales and after-sales services. Despite its overall promising performance, the company faces challenges in effectively managing its inventory. The inventory turnover rate is lower compared to its competitors, and there is a lack of alignment between inventory planning and sales planning. Consequently, the company incurs higher maintenance costs and experiences frequent delivery delays.

By employing a case study method, this research combines both qualitative and quantitative approaches, allowing for a comprehensive and in-depth data collection process.

Based on the findings, the research concludes that the main factors contributing to inefficient inventory management are the lack of integration in the company's

information system and the absence of qualified human resources. An integrated information system is identified as crucial for providing real-time information to management and facilitating better coordination among departments. The implementation of such a system must be supported by competent human resources, which may require training initiatives and strategies for staff retention.

For future studies, it is suggested to examine the optimal inventory quantity and lead time delivery to maximize efficiency and customer satisfaction. These areas of investigation would further contribute to the existing body of knowledge in inventory management.

CHAPTER III

Research Design

This study uses a quantitative approach to collect data from Tanglaw Clothing staff members who handle inventory and sales through a survey questionnaire. This strategy focuses on gathering quantitative data that can be statistically evaluated to provide information on how employees experience the current system, what they've experienced with it, and what they anticipate from the new one.

Data Gathering Techniques

This section discusses the survey questionnaire, which is the main tool used to collect data. Based on staff preferences, the distribution methods (electronic or print format) are mentioned. Multiple-choice questions for particular data, open-ended questions for qualitative input, and closed-ended questions with Likert scale ratings make up the questionnaire framework. The goal is to compile extensive information on employee expectations for the new system as well as the current system.

Ethical Considerations

A crucial part of the research and development process is ethical issues. Respondent confidentiality and anonymity will be guaranteed by the survey's careful adherence to ethical standards and data analysis procedures. Participants will be asked for their informed consent, which will include a detailed explanation of the study's objectives, the use of their data, and their ability to withdraw at any time. Furthermore, an attempt will

be made to represent a wide range of viewpoints inside the business in order to reduce any potential biases in the survey questions. In order to improve inventory and sales management procedures at Tanglaw Clothing, the research team will give careful consideration regarding how effectively to use the data that has been gathered

System Development Methods

The system will be developed using the following SDLC phases:

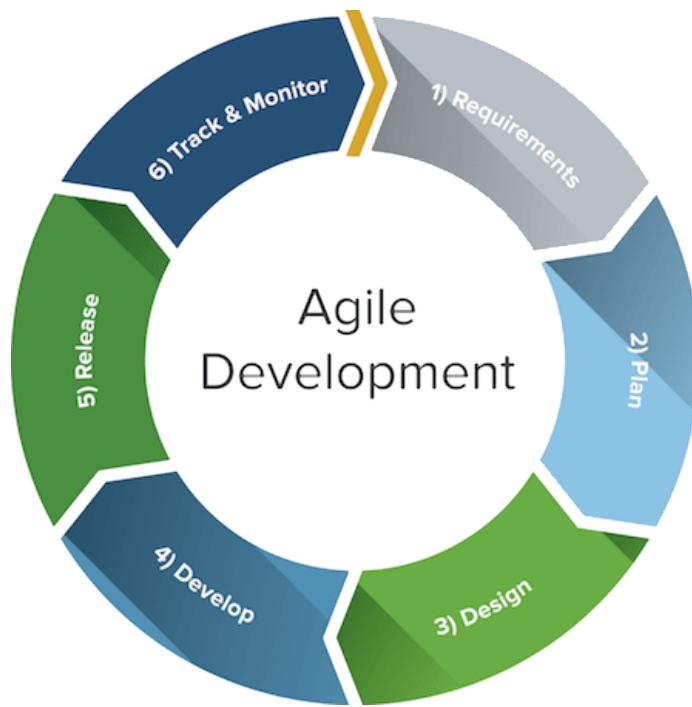


Figure 1: Agile Methodology

Planning

- **Sprint planning:** The team will meet with the client to discuss the requirements for the system. The team will then create a sprint backlog, which is a list of all the tasks that need to be completed in the next sprint.
- **Daily standup:** The team will meet every day to discuss the progress that has been made and to identify any blockers.
- **Sprint review:** At the end of each sprint, the team will demo the work that has been completed to the client. The client will then provide feedback, which the team will use to improve the system in the next sprint.

Development

- **Coding:** The team will code the features that have been identified in the sprint backlog.
- **Testing:** The team will test the code to ensure that it is working as expected.
- **Deployment:** The team will deploy the code to a staging environment so that the client can test it.

Feedback

- **Sprint retrospective:** At the end of each sprint, the team will meet to reflect on the sprint and to identify any areas that need to be improved.
- **Client feedback:** The client will provide feedback on the system after each sprint review.

Iteration

- The team will continue to iterate on the system, adding new features and making improvements based on feedback.

Deployment

- Once the system is complete, it will be deployed to a production environment.
- This is just a general overview of an agile approach to SDLC for Inventory and Sales Management System for Tanglaw Clothing. The specific steps and activities will vary depending on the specific project.

Implementation

The system will be implemented using the following steps:

1. Create a database for the system.
2. Develop the Java Swing GUI.
3. Develop the MySQL database queries.
4. Integrate the Java Swing GUI with the MySQL database.
5. Test the system.
6. Deploy the system to production.
7. Maintain the system.

System Architecture

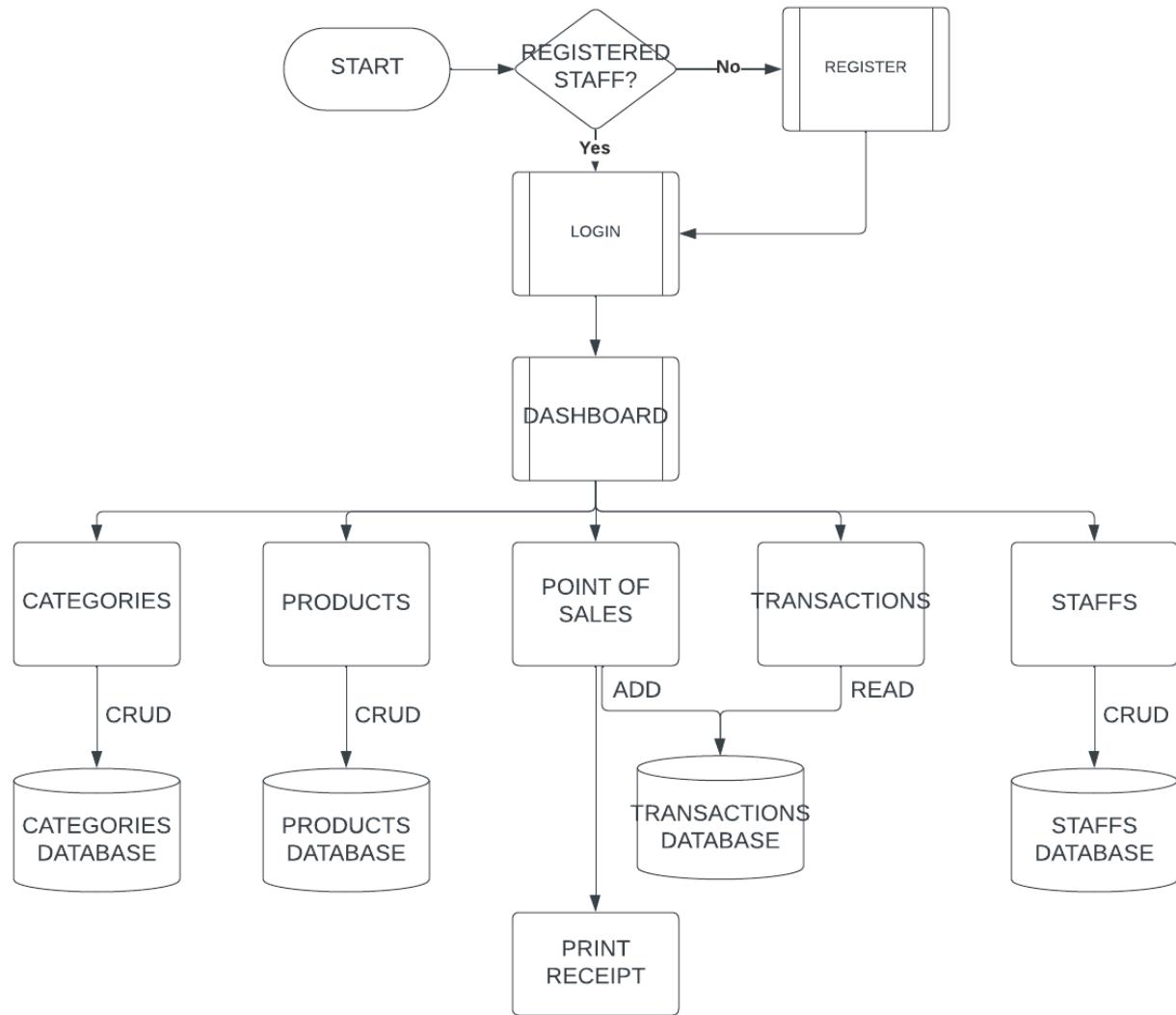


Figure 2. System Architecture of *Tanglaw Clothings' Inventory and Sales Management System*

Use-Case Diagram

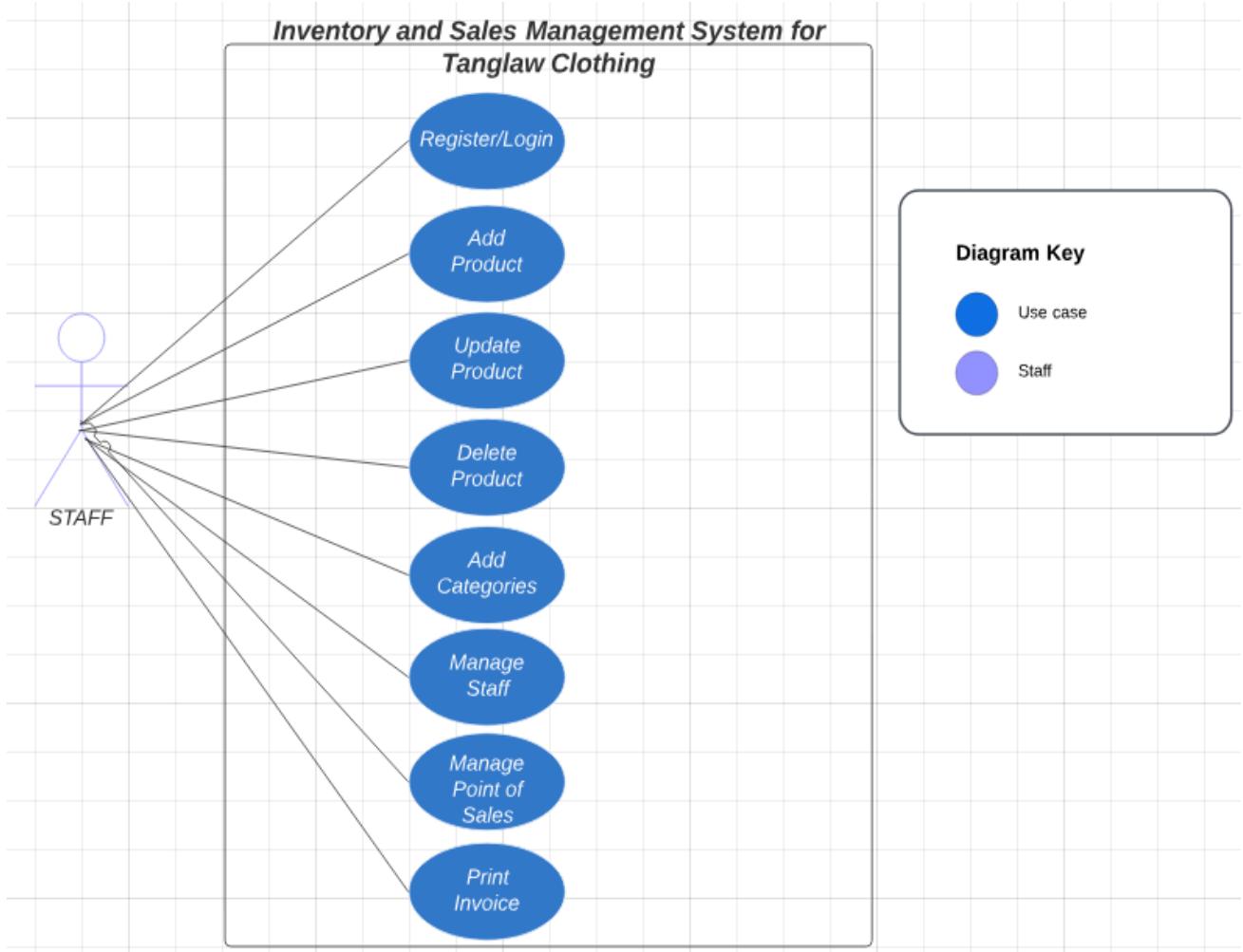


Figure 3. Use-Case Diagram of Tanglaw Clothings' Inventory and Sales Management System

Figure 3 shows the Use-Case diagram of Tanglaw Clothings' Inventory and Sales Management System and it includes the following:

Actors:

Staff: This actor represents employees of Tanglaw Clothing who will interact with the system to manage inventory and sales.

Use Cases:

Register/Login: Through allowing staff members to register and log in, this use case guarantees user authentication and safe access.

Add Product: Staff have the ability to add new products to the inventory, along with important details like the product's name, description, price, and quantity.

Update Product: Staff can update stock levels and maintain correctness through adjusting the information that exists about the products.

Delete Product: Staff can remove products from the inventory, managing discontinued items or items that are no longer in stock.

Add Categories: Staff can create product categories to organize inventory and facilitate search and navigation within the system.

Manage Staff: This use case involves functionalities for admins or managers to add, update, or remove staff accounts.

Manage Point of Sales: Staff can use this functionality to process sales transactions, record customer purchases, and generate receipts or invoices.

Print Invoice: Staff can generate printed invoices for sales transactions, providing customers with physical documentation or records.

Activity Diagram

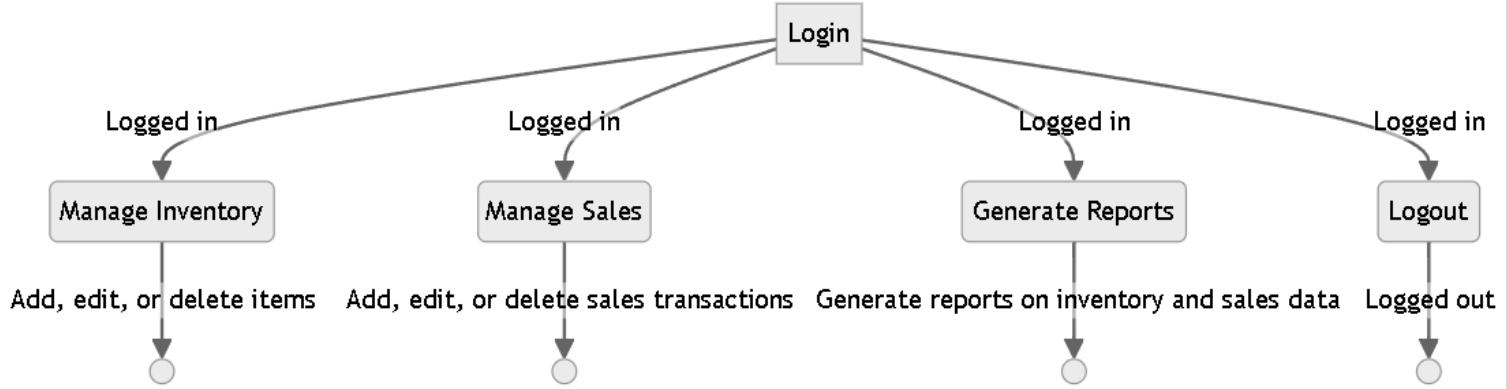


Figure 4. Activity Diagram of Tanglaw Clothings' Inventory and Sales Management System

This diagram shows the system's behavioral aspect in terms of responding to its users. The diagram illustrates the interactions between the system and the company owner and employees. It also shows the detailed parts and interactions that should happen when you develop the system. The diagram includes the following activities:

Login: The user logs in to the system.

Manage Inventory: The user can add, edit, or delete items from the inventory.

Manage Sales: The user can add, edit, or delete sales transactions.

Generate Reports: The user can generate reports on inventory and sales data.

Logout: The user logs out of the system.

This diagram can be used as a blueprint design to foresee the needed functions of a working inventory and sales management system. This can help Tanglaw Clothing identify areas for improvement and optimize their operations.

Work Breakdown Structure

General Project Information

PROJECT NAME	PROJECT MANAGER	PROJECT SPONSOR
Inventory and Sales Management System for Tanglaw Clothing	Patrick Pangilinan	Tanglaw Clothing
EMAIL	PHONE	ORGANIZATIONAL UNIT
patrickfpangilinan@gmail.com	09053489028	Tanglaw Inventory and Sales Management Team
GREEN BELTS ASSIGNED	EXPECTED START DATE	EXPECTED COMPLETION DATE
Matthew Gallardo, Carryl Nebrida (Project Management)	5/20/2023	7/19/2023
BLACK BELTS ASSIGNED	EXPECTED SAVINGS	ESTIMATED COSTS
Danniel Martinez (Director of Operations)		P 2,250,000

Project Overview

PROBLEM OR ISSUE	Tanglaw Clothing is a small clothing retailer that is experiencing problems with inventory management and sales tracking. The company is currently using a manual system, which is inefficient and time-consuming.
PURPOSE OF PROJECT	The purpose of this project is to develop and implement an inventory and sales management system for Tanglaw Clothing. The system will automate inventory management and sales tracking processes, and it will provide real-time data on inventory levels and sales. This will help the company to improve its inventory management, sales tracking, and decision-making.
BUSINESS CASE	<p>The system will save the company time and money, improve customer satisfaction, and help the company to grow its business.</p> <ul style="list-style-type: none">• Time and money savings: The system will automate inventory management and sales tracking processes, which will free up staff time to focus on other tasks, such as customer service. This will save the company time and money.• Customer satisfaction: The system will ensure that customers can always find the products they want by providing real-time data on inventory levels. This will lead to increased sales and customer loyalty.• Business growth: The system will provide real-time data on inventory levels and sales, which will help the company to make better decisions about marketing, pricing, and inventory management. This will help the company to grow its business.
GOALS / METRICS	<ul style="list-style-type: none">• Automate inventory management and sales tracking processes.• Provide real-time data on inventory levels and sales.• Improve inventory management.• Improve sales tracking.• Improve decision-making.
EXPECTED DELIVERABLES	<ul style="list-style-type: none">• A functional inventory and sales management system.

Project Scope

WITHIN SCOPE	<ul style="list-style-type: none">• Inventory management• Sales tracking• Reporting
OUTSIDE OF SCOPE	<ul style="list-style-type: none">• Website development• Mobile app development• Hardware development• Marketing and advertising• Financial management and accounting

Resources

PROJECT TEAM	Patrick Pangilinan - Project Manager Matthew Gallardo - Software Developer	
SUPPORT RESOURCES	Project Management, IT Team, Inventory Managers and Staff, Finance Department	
SPECIAL NEEDS	Software Development Expertise, Quality Assurance and Testing Team, Software Support, Quality Assurance and Testing Team, Security Specialists	

Benefits & Customers

PROCESS OWNER	Patrick Pangilinan - Project Manager
KEY STAKEHOLDER S	Tanglaw Clothing, Tanglaw Clothing employees, Customers
FINAL CUSTOMER	Tanglaw Clothing
EXPECTED BENEFITS	<ul style="list-style-type: none">• Improved inventory management:• Increased sales revenue• Improved profitability• Improved customer satisfaction

Swim Lane Diagram

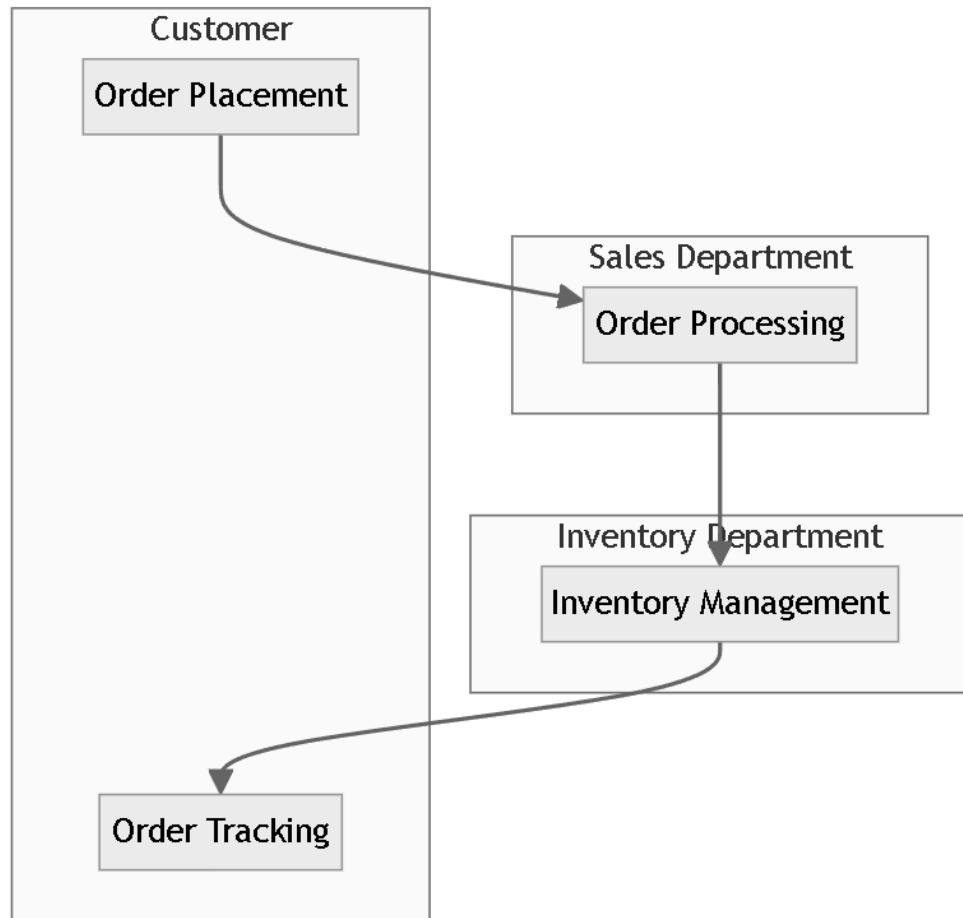


Figure 5. Swim Lane Diagram of Tanglaw Clothings' Inventory and Sales Management System

This diagram shows the process flow of an inventory and sales management system without the shipping department. It is a visual representation of the steps involved in the system's operation. The diagram includes the following swim lanes:

Customer: Represents the customer who places an order.

Sales Department: Represents the department responsible for processing the order.

Inventory Department: Represents the department responsible for managing the inventory.

The diagram includes the following activities:

Order Placement: The customer places an order.

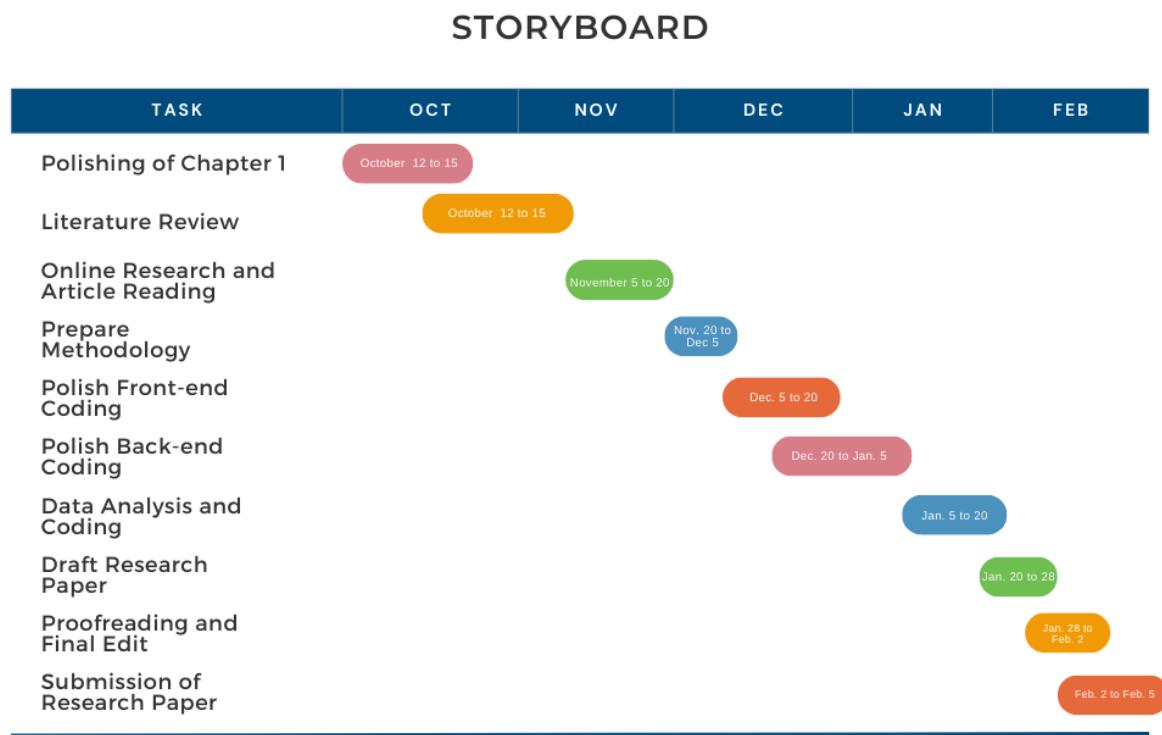
Order Processing: The sales department processes the order and checks the inventory.

Inventory Management: The inventory department updates the inventory.

Order Tracking: The customer can track the order status.

Storyboard

This study outlines a systematic approach by the researchers to investigate the field of inventory system management. The study spans from October 12, 2023 to February 5, 2024, and uses a variety of research approaches to address the challenges of the inventory management system. The figure below outlines the storyboard of this project as follows:



Polishing of Chapter 1.

Background: The student recognizes the necessity for research on inventory system management.

Problem Statement: The current inventory system's problems necessitate this investigation.

The study's purpose is to establish the research's significance and aims.

Literature Review.

Overview: The researchers delved into existing literature on inventory system management.

Synthesis: The main findings from multiple sources are underlined.

Gap Identification: The researchers find holes in current research and present a reason for investigation.

Methodology.

Research Design: An explanation of the chosen research design and methods.

Data Collection: Details on how the researchers intend to gather relevant data.

Data Analysis: A description of the proposed data analysis procedures.

Front-end Coding.

Description: The student works on the front-end of the inventory system.

User Interface Design: Considerations and judgments regarding user interface aspects.

Aligning with aims: Ensure that the front-end coding is in line with the project's aims.

Back-end Coding.

Development Process: A description of the back-end coding step.

Technical enhancements: The researchers focus on improving technical features and functionality.

Integration: The process of ensuring by the researchers that the back-end and front-end work together seamlessly.

Data Analysis.

Coding for Data Analysis: This section describes the coding technique used to analyze acquired data.

Visual Representation: Designing charts and graphs to effectively convey data.

Interpretation: Discussing how data should be interpreted in relation to research topics.

Research Paper Draft.

Structuring the Paper: The researchers start writing the research paper in a logical order.

Sectional Breakdown: Outline the introduction, methodology, results, and discussion.

Citations: Properly citing sources and incorporating references into your article.

Proofreading and Final Edit.

Careful Review: The student carefully reviews the document for flaws and clarity.

Grammar and Style: Ensure that the paper follows correct grammar and academic writing style.

Last Revisions or Edits: Making last tweaks to ensure a polished and coherent document.

Conclusion and Submission.

Recap of Findings: A summary of the study's principal findings.

Implications: Discussing how the study affects inventory system management.

Submission: The researchers submit the research paper, which marks the end of the project.

Test Plan for Tanglaw Inventory and Sales Management System

Overview: This outlines the testing approach and activities for the Tanglaw Inventory and Sales Management System.

Purpose: Ensure the reliability, functionality, and performance of the system to meet the specified requirements.

Objectives: Validate the effectiveness of inventory management, sales operations, and reporting functionalities.

Features to be Tested:

Inventory Management Module

Sales Management Module

Reports Module

Features not to be Tested:

Third-party integrations (if any) are out of scope for this testing phase.

Test Approach:**Testing Levels:**

Unit Testing: Verify individual components.

Integration Testing: Validate interactions between modules.

System Testing: Assess end-to-end functionality.

Testing Types:

Functional Testing: Validate features meet specifications.

Performance Testing: Evaluate system responsiveness.

Usability Testing: Assess user interface and experience.

Security Testing: Ensure data protection and access control.

Resources:**Roles:**

Testing Team: Nebrida Carryl Cassandra , Pangilinan, Patrick

Development Team: Gallardo, Matthew , Martinez Dannie

Tools:

Java Swing for UI Testing.

JUnit for Unit Testing.

MySQL Workbench for Database Testing.

Entry Criteria:

Code freeze achieved.

Database schema finalized.

Test environments set up.

Exit Criteria:

All high-priority and critical defects resolved.

Test coverage of essential functionalities.

Performance benchmarks met.

Test Environment:**Software:**

Java Swing Framework.

MySQL Database.

Hardware:

Ensure Java and MySQL versions compatibility.

Test Data:

Create test datasets for various scenarios:

New product entry.

Sales transactions with different payment methods.

Data with varied quantities for inventory.

Test Cases:

Develop detailed test cases for each module, covering both positive and negative scenarios.

Test Execution:

Follow the test execution plan and document results.

Log any defects encountered during testing.

Defect Reporting:

Use a standardized format for defect reporting.

Include steps to reproduce, expected and actual results.

Risks and Contingencies:

Identify potential risks related to functionality, performance, and schedule.

Develop contingency plans to mitigate risks.

Approval:

Approval by stakeholders before the start of testing.

Review and Update:

Regularly review and update the test plan as needed.

Incorporate feedback from testing phases.

Deployment Plan for Tanglaw Inventory and Sales Management System

Purpose: To ensure a smooth and successful deployment of the Tanglaw Inventory and Sales Management System, aligned with the testing outcomes and organizational requirements.

Scope: Covers deployment activities from system readiness to user acceptance.

Key Activities:

1. Pre-Deployment:

- Review Test Results: Thoroughly analyze test outcomes to identify any outstanding defects or potential risks.
- Address Defects: Prioritize and resolve any critical or high-priority defects before deployment.
- Prepare Deployment Environment: Configure hardware, software, and network settings according to the system's specifications.
- Data Migration (if applicable): Transfer any existing data to the new system, ensuring accuracy and integrity.
- User Training: Conduct comprehensive training sessions for end-users to familiarize them with the system's features and functionality.
- Back Up Data: Create a complete backup of the existing system to allow for rollback if necessary.

2. Deployment:

- Install System: Install the Tanglaw Inventory and Sales Management System in the designated production environment.

- Configure Settings: Adjust system configurations as needed for the production environment.
- Integration (if applicable): Integrate the system with other relevant systems or services, ensuring seamless data exchange.

3. Post-Deployment:

- Initial User Acceptance Testing: Conduct a brief testing phase with a limited user group to gather initial feedback and identify any immediate issues.
- Monitor Performance: Closely monitor system performance and usage metrics to identify any bottlenecks or areas for optimization.
- Address Issues: Respond promptly to any user issues or reported defects, ensuring timely resolution.
- Collect Feedback: Gather user feedback to continuously improve the system and address any usability concerns.

4. Rollback Plan (if necessary):

- Outline steps to revert to the previous system in case of critical issues during or after deployment.

Timeline:

- November 15, 2023 to February 5, 2024.

Roles and Responsibilities:

- Deployment Team: Leads the deployment process and coordinates activities.

- IT Support: Provides technical assistance during deployment and post-deployment.
- End-Users: Participate in training and provide feedback during the post-deployment phase.
- Management: Approves the deployment plan and provides resources as needed.

Communication Plan:

- Outline strategies for communicating deployment progress, status updates, and any potential issues to stakeholders.

Risk Management:

- Identify potential risks associated with deployment, such as data loss, system downtime, or user resistance.
- Develop contingency plans to mitigate these risks and ensure business continuity.

Success Criteria:

- Successful completion of all deployment activities within the specified timeline.
- Smooth transition to the new system with minimal disruption to business operations.
- High user acceptance and satisfaction with the system's functionality.
- Adherence to organizational policies and security standards.

Approvals:

- Required approvals from relevant stakeholders, such as management, IT department, and end-user representatives.

Review and Updates:

- Schedule regular reviews of the deployment plan to assess progress and make necessary adjustments.
- Incorporate feedback from deployment activities and post-deployment experience to improve future deployments.

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APPENDIX A

INVENTORY AND SALES MANAGEMENT SYSTEM FOR TANGLAW CLOTHING

GANTT CHART

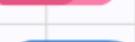
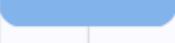
PROCESS	QUARTER 1			QUARTER 2			QUARTER 3			QUARTER 4		
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
Requirement Gathering												
Analysis												
Design and Development Phase												
Testing Phase												
Implementation and Deployment Phase												
Documentation												

Figure 6: Gantt Chart

APPENDIX B

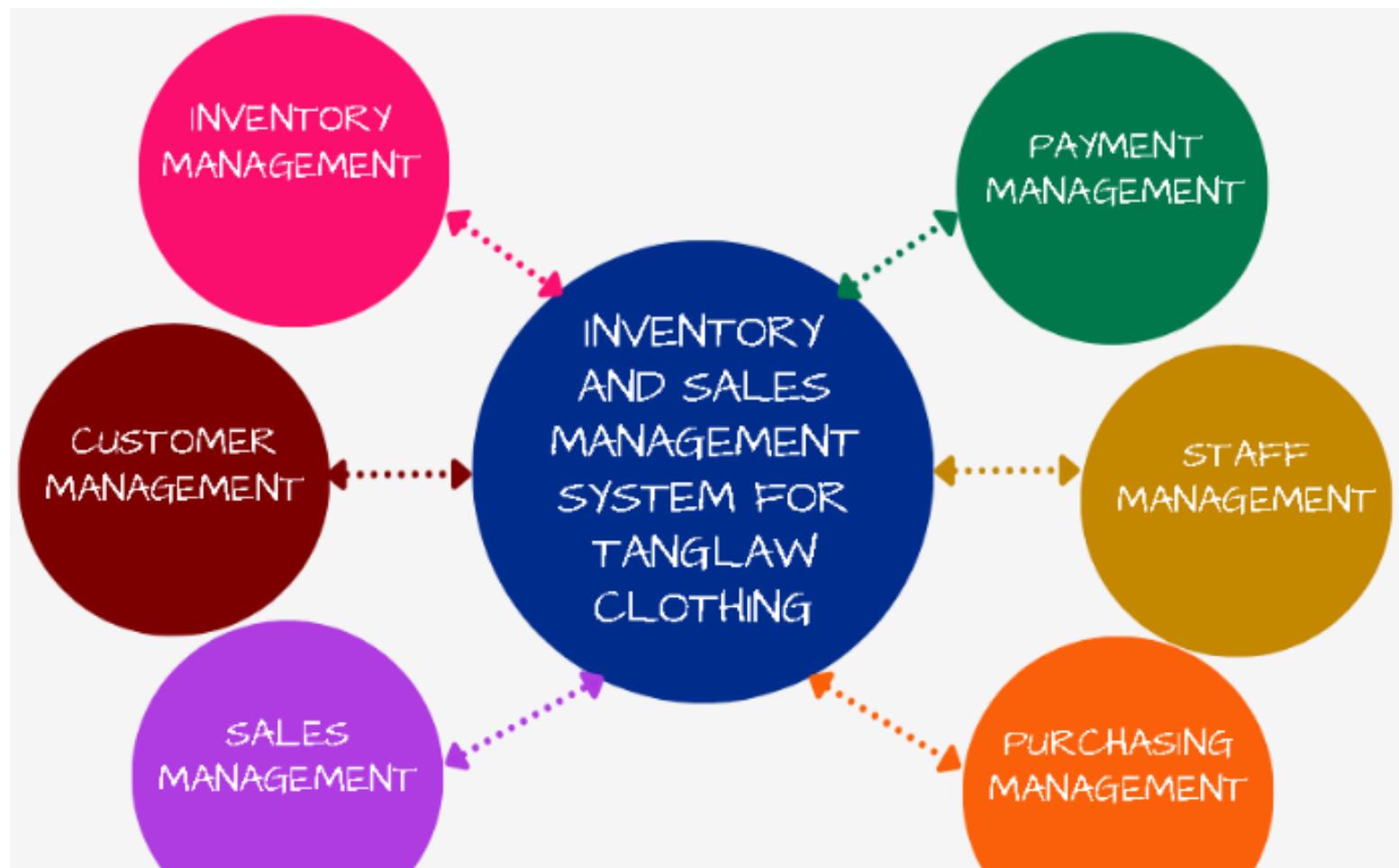


Figure 7: Context Diagram

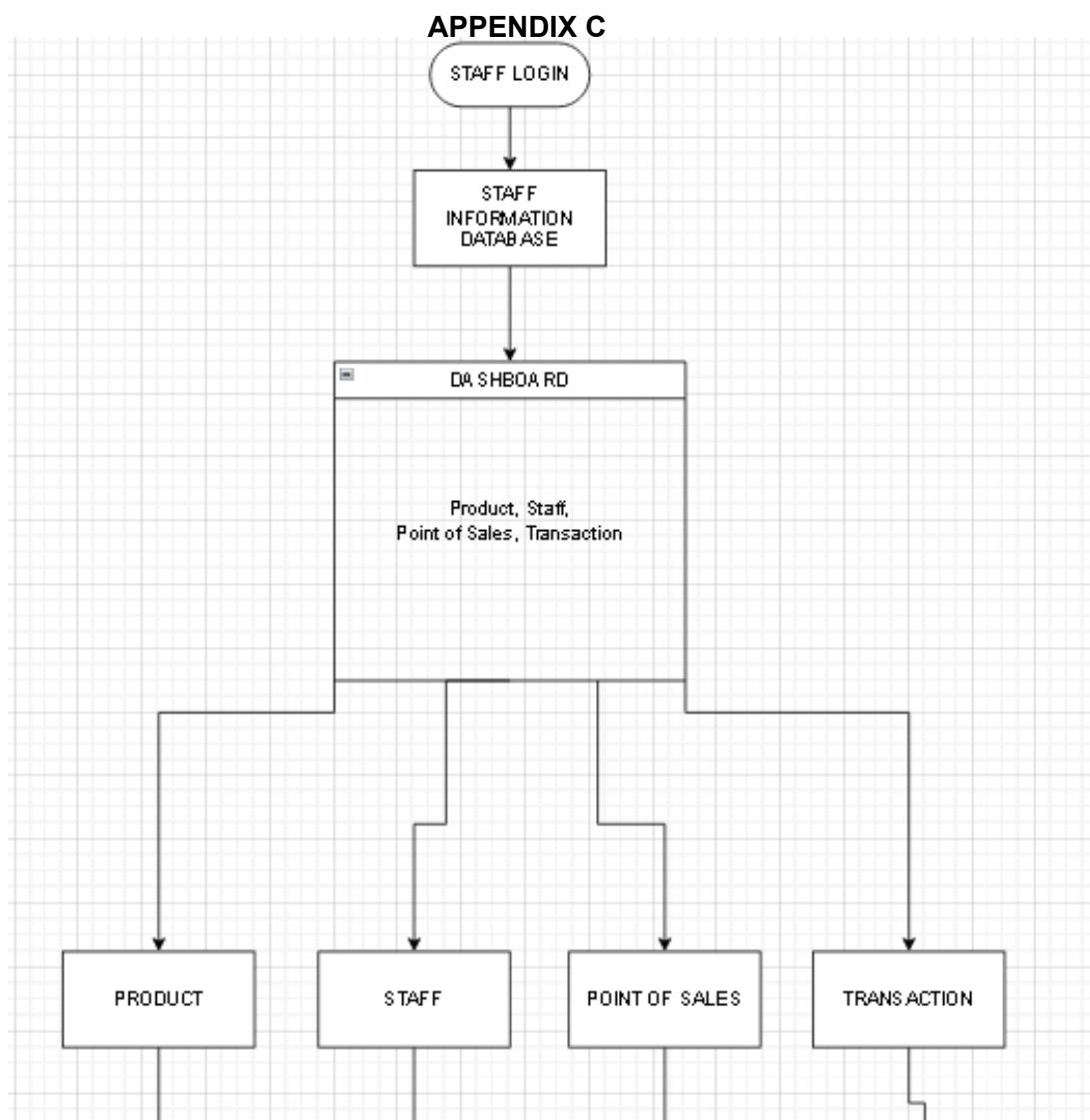


Figure 8: Data flow Diagram

APPENDIX D

Entity-Relationship Diagram

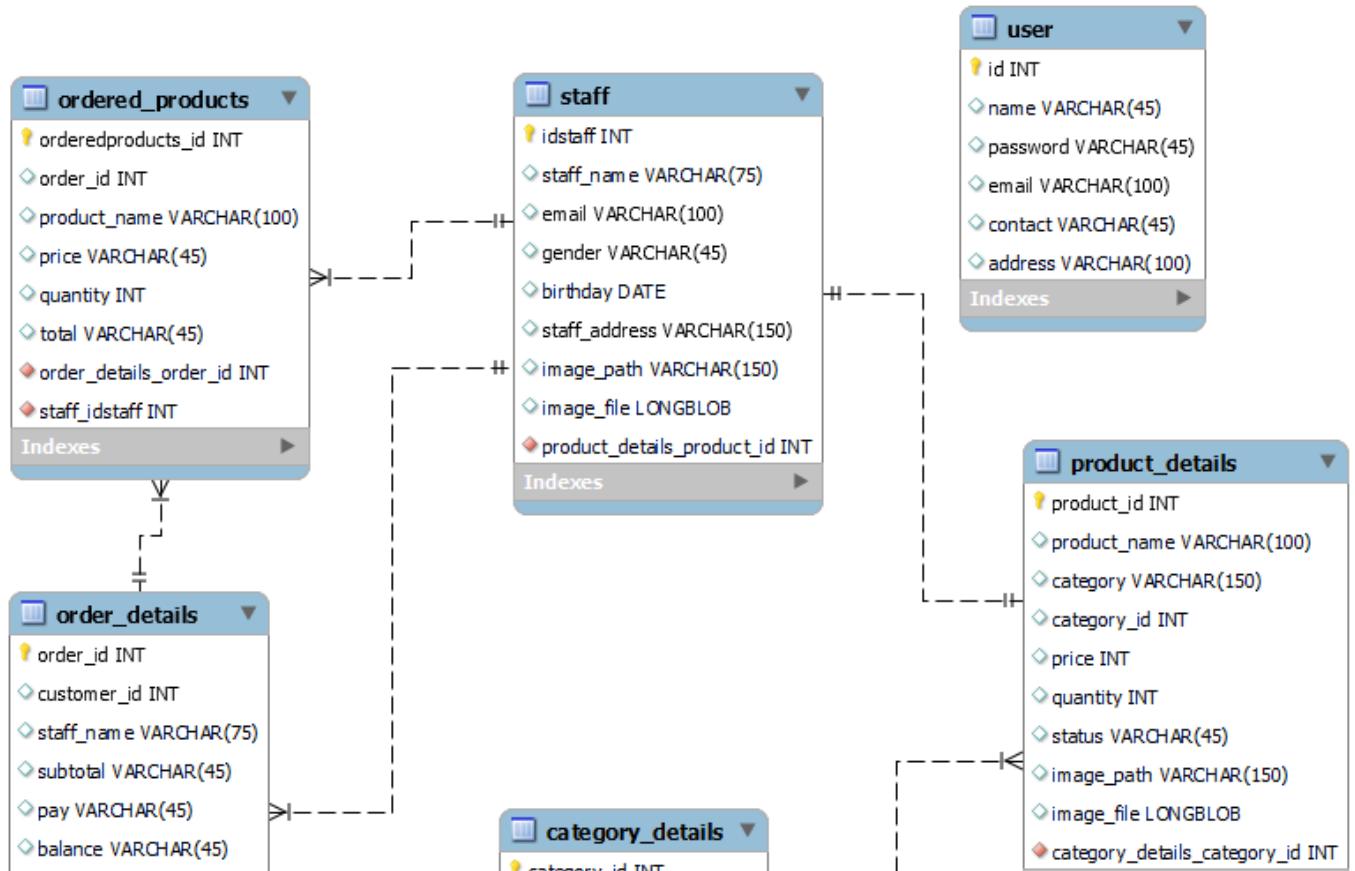


Figure 9: Entity-Relationship Diagram

APPENDIX E

Data Dictionary

Table Name: User

Data Name	Data Aliases	Data Type	Length	Used in
User ID	user_id	int	3	SystemAdmintControl
Username	user_name	varchar	45	SystemAdmintControl
Password	password	varchar	45	SystemAdmintControl
Email	email	varchar	100	SystemAdmintControl
Contact	contact	varchar	45	SystemAdmintControl
Address	address	varchar	100	SystemAdmintControl

Table Name: Staff

Data Name	Data Aliases	Data Type	Length	Used in
Staff ID	staff_id	int	3	SystemAdminController
Staff Name	staff_name	varchar	75	SystemAdminController
Email	email	varchar	100	SystemAdminController
Gender	gender	varchar	45	SystemAdminController
Birthday	birthday	DATE		SystemAdminController
Staff Address	staff_address	varchar	100	SystemAdminController
Image Path	image_path	varchar	150	SystemAdminController
Image File	image_file	LONGBLOB		SystemAdminController

Table Name: Product

Data Name	Data Aliases	Data Type	Length	Used in
Product ID	prod_id	int	3	SystemAdminController
Product Name	prod_name	varchar	100	SystemAdminController
Category	category	varchar	150	SystemAdminController
Category ID	category_id	int	45	SystemAdminController
Price	price	int		SystemAdminController
Quantity	quantity	int		SystemAdminController
Status	status	varchar	45	SystemAdminController
Image Path	image_path	varchar	150	SystemAdminController
Image File	image_file	LONGBLOB		SystemAdminController

Table Name: Category

Data Name	Data Aliases	Data Type	Length	Used in
Category ID	prod_id	int	3	SystemAdminController
Category	prod_name	varchar	45	SystemAdminController
Description	category	varchar	100	SystemAdminController
Status	category_id	int	45	SystemAdminController

Table Name: Order

Data Name	Data Aliases	Data Type	Length	Used in
Order ID	order_id	int	3	SystemAdminController
Customer ID	customer_id	varchar	45	SystemAdminController
Staff Name	staff_name	varchar	100	SystemAdminController
Subtotal	subtotal	int	45	SystemAdminController
Pay	pay	varchar	45	SystemAdminController
Balance	balance	varchar	45	SystemAdminController
Mode of Payment	mop	varchar	50	SystemAdminController
Staff ID	staff_id	int	3	SystemAdminController

Table Name: Ordered Products

Data Name	Data Aliases	Data Type	Length	Used in
Ordered Products ID	orderedproducts_id	int	3	SystemAdminController
Order ID	ordered_id	varchar	45	SystemAdminController
Product Name	product_name	varchar	100	SystemAdminController
Price	price	int	45	SystemAdminController
Quantity	quantity	int	3	SystemAdminController
Total	total	varchar	45	SystemAdminController
Order Details	mop	varchar	45	SystemAdminController
Staff ID	staff_id	int	3	SystemAdminController

APPENDIX F

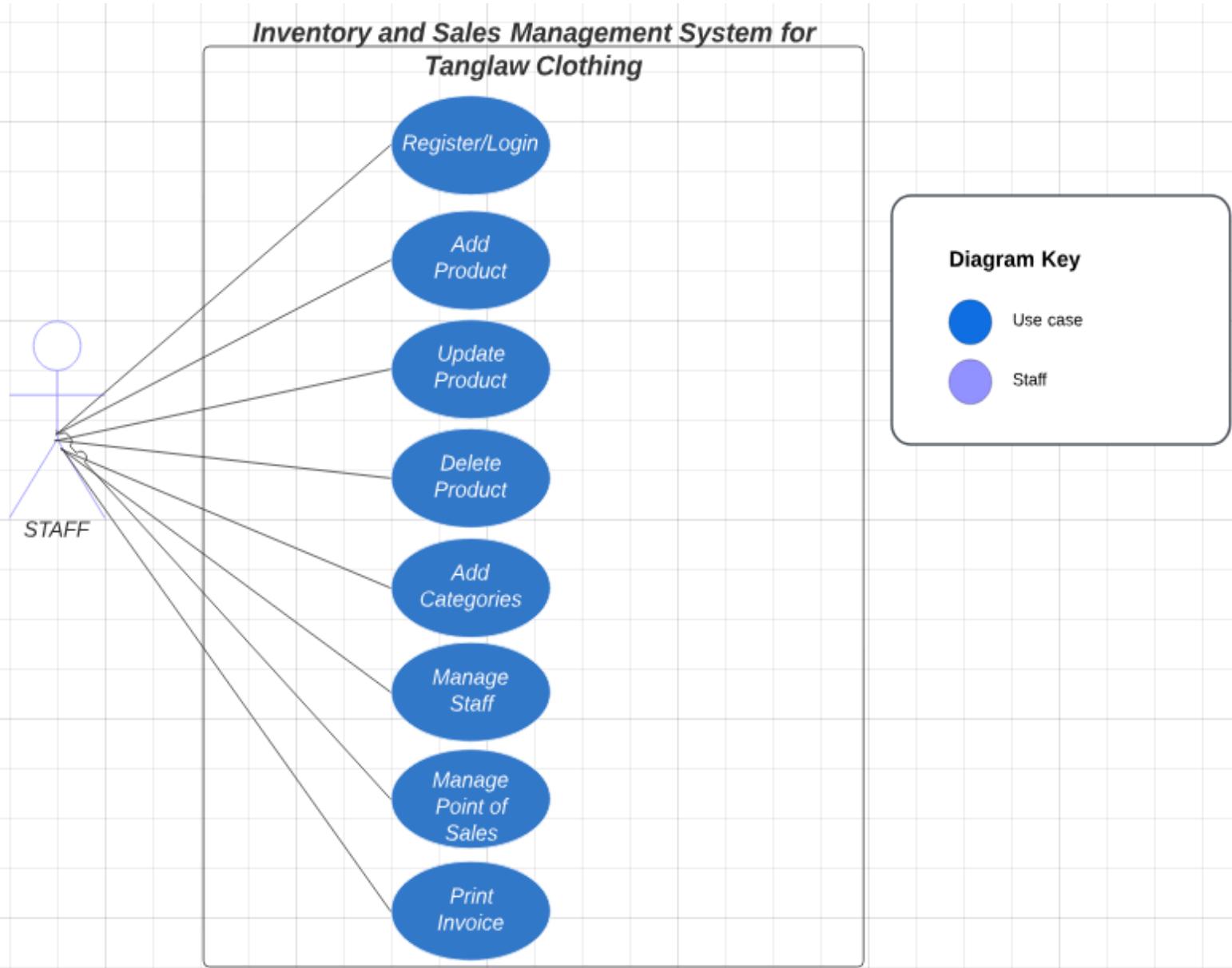


Figure 10: Use Case Diagram

APPENDIX G

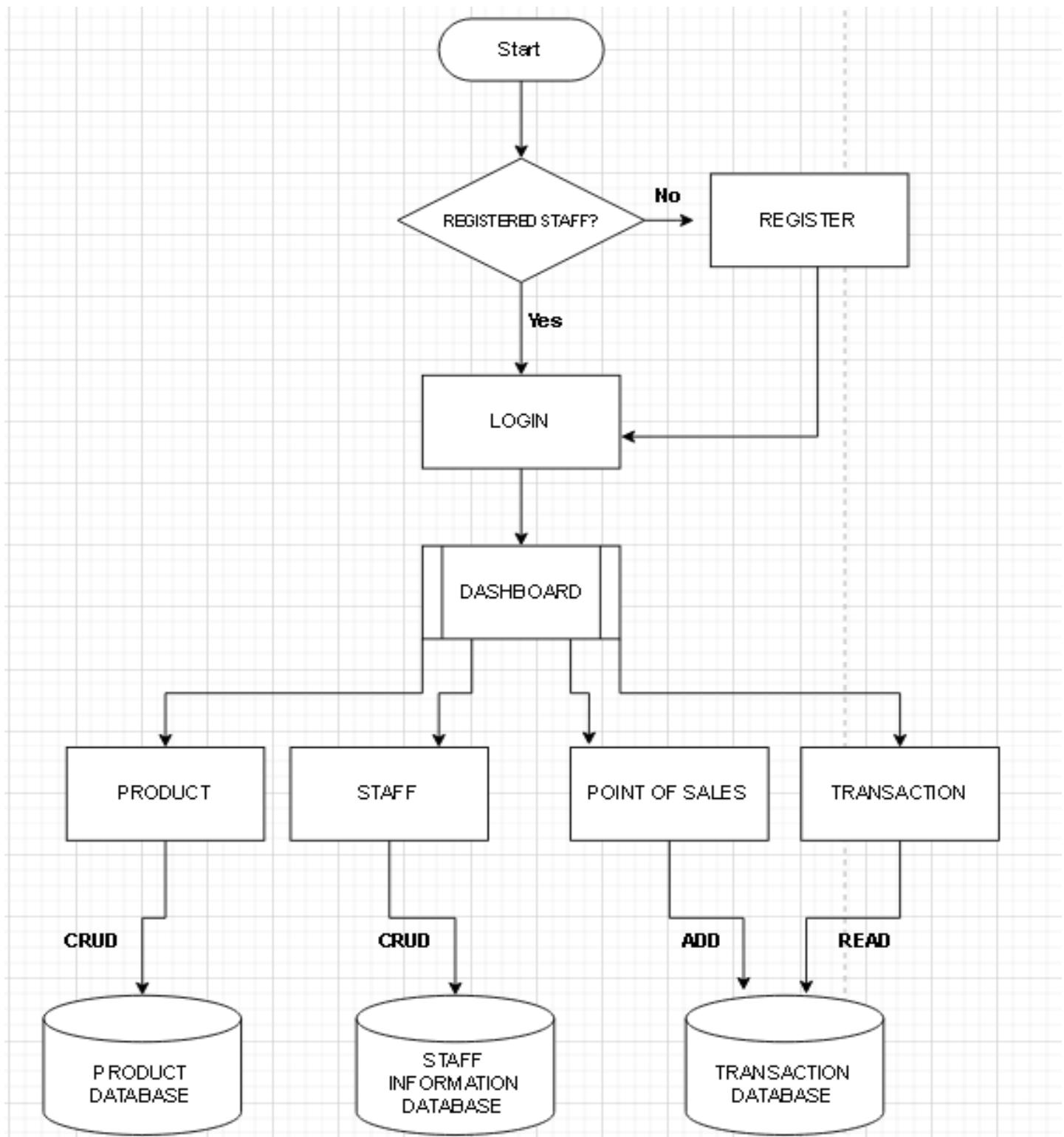


Figure 11: Program Flow Chart

APPENDIX H
Screenshots with Descriptions

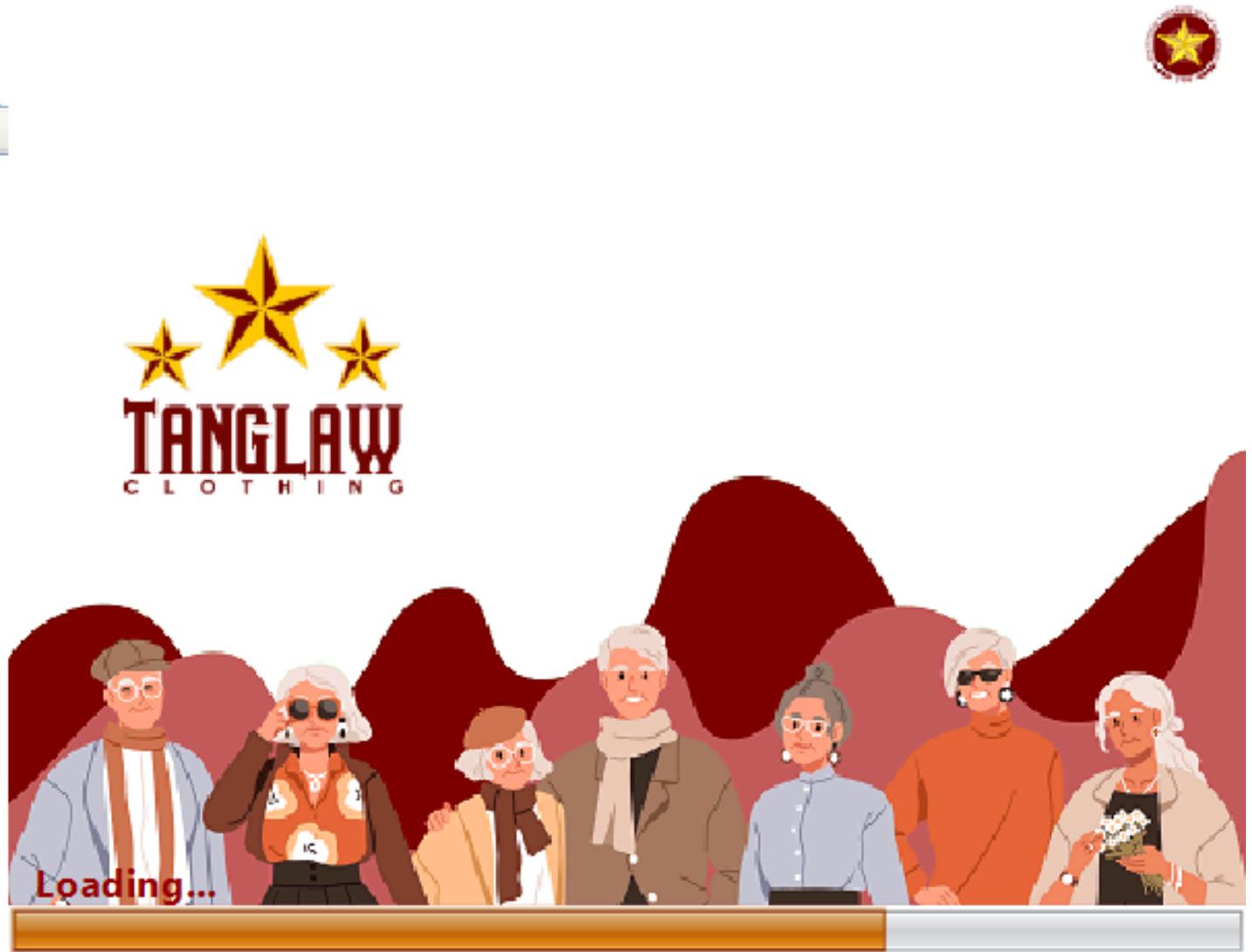


Figure 12. Loading Page



**WELCOME,
ISKOLAR
NG BAYAN!**

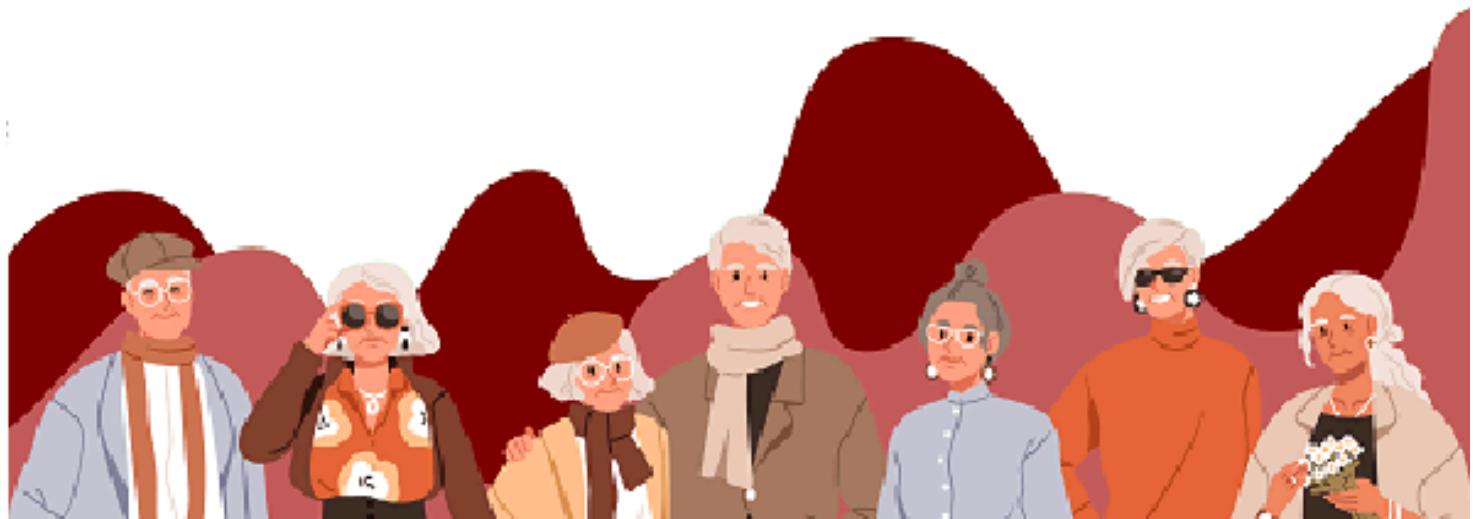


Figure 13. Welcome Page



Welcome back!
Login your account

Username

Password

Don't have an account? [Sign Up](#)

[Login](#)

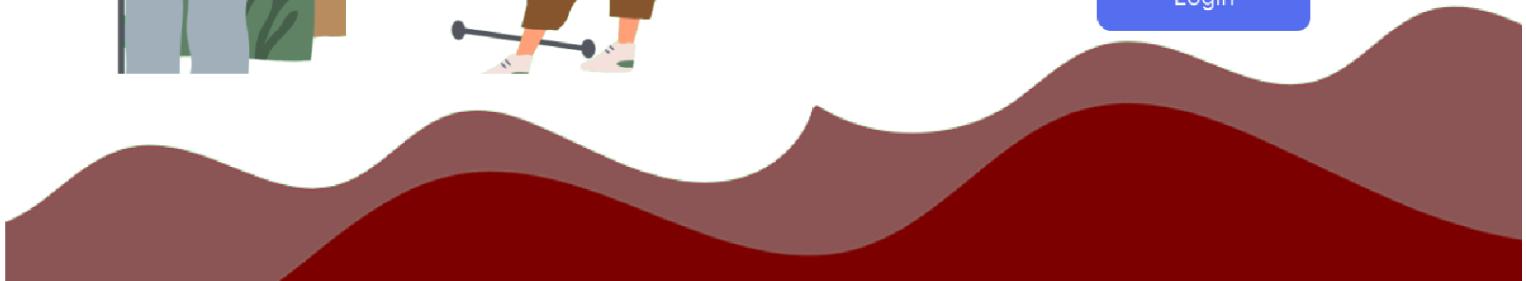


Figure 14. Log-in Page



Figure 15. Sign-up Page

The screenshot shows a dashboard for Tanglaw Clothing. At the top, there is a red header bar with the Polytechnic University of the Philippines logo and a close button (X). Below the header is a dark grey sidebar on the left containing the Tanglaw logo, navigation links, and a log out button.

Main Content Area:

- Welcome back pat!** Overview
- Key Metrics:**
 - NUMBER OF PRODUCTS: 38
 - NUMBER OF STAFF: 3
- Low Stock Products:**

Product ID	Product	Stock
133	Klasika Iskolar ng ...	2
139	Klasika Mula Sayo ...	3
148	PUP Classic Minimal... istolar ng Bayan KM	3
- Best-selling Products:**

ProductID	ProductName	Total Sales
131	Tanglaw Casual Polo	3289.0
166	Iskolar ng Bayan	436.0
132	Iskolar ng Bayan KM	218.0
- Product Quantity per Category:**

Category	Quantity
Tanglaw Casual	7
Tanglaw Klasika ...	3
Tanglaw Merch	1
Tanglaw Drift C...	3
Tanglaw Klasika ...	5
Tanglaw Drift C...	1
- Total Sales:** 5,935 TOTAL SALES
- Tanglaw Product Sales:** A pie chart showing sales distribution across different product categories.

Figure 16. Home Page



Polytechnic University of the Philippines

X



Category Details

Welcome back! Your progress is really good. Keep it up!

CategoryID	Category	Description	Status
7	Tanglaw Casual		Active
8	Tanglaw Klasika Mini...		Active
9	Tanglaw Klasika Coll...		Active
10	Tanglaw Merch		Active
11	Tanglaw Drifit Collect...		Active
12	Tanglaw Activewear		Active
13	Tanglaw Hoodies		Active
14	Tanglaw Special and...		Active
15	Tanglaw Minimalist ...		Active
16	Tanglaw Streetwear ...		Active
17	Tanglaw Classic Col...		Active

Manage Category

Category:

Description:

Status: Active

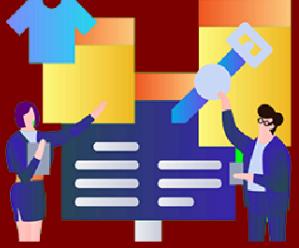


Figure 17. Category Page

The screenshot shows a web application interface for managing products. At the top, there is a red header bar with the university's logo on the left, the text "Polytechnic University of the Philippines" in the center, and a close button "X" on the right.

The main content area has a dark background. On the left, there is a sidebar with several menu items: "Home Page", "Categories", "Products" (which is highlighted in a darker shade), "Orders (Point of Sales)", "Transactions", "Staff", and "Log out".

The central part of the screen is titled "Product Details" and contains a table of product information. The table has columns for Product ID, Product, Category, Category ID, Price, Quantity, and Status. The data in the table is as follows:

Product ID	Product	Category	Category ID	Price	Quantity	Status
131	Tanglaw ...	Tanglaw ...	7	299	12	inStock
132	Iskolar ng ...	Tanglaw ...	8	218	10	inStock
133	Klasika Is...	Tanglaw ...	10	218	2	inStock
134	PUP Clas...	Tanglaw ...	11	218	10	inStock
136	Klasika T...	Tanglaw ...	9	218	9	inStock
137	MPSB KM	Tanglaw ...	8	218	12	inStock
138	Pandayan...	Tanglaw ...	8	218	4	inStock
139	Klasika M...	Tanglaw ...	9	218	3	inStock
140	Tanglaw ...	Tanglaw ...	9	218	10	inStock
141	Klasika P...	Tanglaw ...	9	218	20	inStock
142	Klasika Li...	Tanglaw ...	9	218	13	inStock
143	PUP Clas...	Tanglaw ...	11	218	23	inStock
144	PUP Clas...	Tanglaw ...	11	218	16	inStock
145	Pylon Iska...	Tanglaw ...	12	180	18	inStock
146	Pylon Iska...	Tanglaw ...	7	180	20	inStock
147	PUP Clas...	Tanglaw ...	13	599	10	inStock
148	PUP Clas...	Tanglaw ...	7	599	3	inStock
149	1904 Pullo...	Tanglaw ...	7	599	1	inStock
150	PUP Meta...	Tanglaw ...	14	218	5	inStock
151	PUP Ca...	Tanglaw ...	14	218	5	inStock
152	Taas Ka...	Tanglaw ...	7	218	5	inStock
153	Iskolar Mi...	Tanglaw ...	15	218	20	inStock
154	PUP Clas...	Tanglaw ...	15	218	17	inStock
155	Mula Say...	Tanglaw ...	15	218	12	inStock
156	Sksksksk...	Tanglaw ...	15	218	12	inStock
157	Malayang ...	Tanglaw ...	15	218	15	inStock
158	Tanglaw ...	Tanglaw ...	15	218	19	inStock
159	1904	Tanglaw ...	16	218	22	inStock

Below the table, there is a search bar labeled "Search By:" with a dropdown menu set to "Tanglaw Casual", and buttons for "SEARCH", "RANGE", and "REFRESH".

To the right of the table, there is a form titled "Manage Product" with fields for "ATTACH PHOTO" (with a placeholder image), "Path:", "Product Name:" (with a placeholder image), "Category:" (set to "Tanglaw Casual"), "Price" (with a placeholder image), "Quantity" (with a placeholder image), "Status" (set to "inStock"), and buttons for "ADD", "UPDATE", and "DELETE".

Figure 18. Product Page

Polytechnic University of the Philippines

Point of Sales

Welcome back! Your progress is really good. Keep it up!

Staff ID	Product ID	Product Name	Price	Quantity	Total

Manage Point of Sales

Mode of Payment

Cash on Delivery

Subtotal

Date: 2023-07-24

Pay

Balance

Order Number

Print Invoice

Figure 19. Point of Sales Page

[Home Page](#)[Categories](#)[Products](#)[Orders \(Point of Sales\)](#)[Transactions](#)[Staff](#)

Transaction History

Transa...	Order ID	Custom...	Date	Product...	Product	Price	Quantity	Total
10028	516	1008	2023-07-19	132	Iskolar ng...	218	1	218
10029	516	1008	2023-07-19	143	PUP Classi...	218	1	218
10030	517	1008	2023-07-19	131	Tanglaw ...	299	1	299
10031	518	1008	2023-07-19	131	Tanglaw ...	299	1	299
10032	519	1008	2023-07-19	131	Tanglaw ...	299	1	299
10033	520	1008	2023-07-19	131	Tanglaw ...	299	1	299
10034	521	1008	2023-07-19	131	Tanglaw ...	299	1	299
10035	522	1008	2023-07-19	131	Tanglaw ...	299	1	299
10036	523	1008	2023-07-19	131	Tanglaw ...	299	1	299
10037	524	1009	2023-07-19	145	Pylon Isk...	180	2	360
10038	525	1009	2023-07-19	131	Tanglaw ...	299	1	299
10039	526	1009	2023-07-19	131	Tanglaw ...	299	1	299
10040	527	1009	2023-07-19	131	Tanglaw ...	299	1	299
10041	528	1009	2023-07-19	131	Tanglaw ...	299	5	1495
10042	529	1009	2023-07-21	166	Iskolar ng...	218	1	218
10043	530	1009	2023-07-21	166	Iskolar ng...	218	1	218
10045	532	1009	2023-07-21	150	Iskolar ng...	218	1	218

Figure 20. Transaction Page

The screenshot shows the Staff Details page of a web application. At the top, there is a header bar with the Polytechnic University of the Philippines logo and a close button (X). Below the header, the TANGLAW CLOTHING logo is displayed. On the left side, a sidebar menu lists various options: Home Page, Categories, Products, Orders (Point of Sales), Transactions, Staff, and Log out. The main content area has a brown header titled "Staff Details" with a welcome message: "Welcome back! Your progress is really good. Keep it up!". Below the header is a table showing staff details:

Staff ID	Staff Name	Email Address	Gender	Birthday	Address
1009	Kap	kapitan@kalb...	male	2016-09-13	kalbo city
1008	Patrick Pangilinan	goat@goating...	female	2023-07-01	Goated City
1010	Val Jay Magulay	roblox@gmail...	male	2023-07-21	roblox smile

On the right side, there is a "Manage Staff" form with fields for Staff Name, Email Address, Gender (with radio buttons for Male, Female, Others), Date of Birth (with a date picker showing 13), and Address. There are also buttons for ADD, UPDATE, and DELETE.

Figure 21. Staff Page

APPENDIX I
CURRICULUM VITAE

Matthew Gallardo

2 Canseco St. Brgy. Del Monte

Quezon City, Metro Manila

09663389772

gallardomatthew8@gmail.com



PERSONAL INFORMATION

Date of Birth: September 08, 2001

Place of Birth: Quezon City

Citizenship: Filipino

Gender: Male

Civil Status: Single

Interest: Software Development, Video Games

EDUCATIONAL BACKGROUND

Primary: San Antonio Elementary School

Secondary: Our Lady of Fatima University Valenzuela

Tertiary:

Bachelor: Polytechnic University of the Philippines

Personal Qualification: Knowledgeable in different programming languages like C, Java, Python, and Javascript. He excels in web development specially backend development.

Danniel P. Martinez

#65 Sto Nino St. Brgy. San Jose Antipolo

City, Rizal

09124151285

dandanmartnez16@gmail.com



PERSONAL INFORMATION

Date of Birth: June 4, 2002

Place of Birth: Antipolo City, Rizal

Citizenship: Filipino

Gender: Male

Civil Status: Single

Interest: Website and Application Development, Video Games

EDUCATIONAL BACKGROUND

Primary: Isaias S. Tapales Elementary School

Secondary:

Junior High School: San Jose National High School

Senior High School: Our Lady of Fatima University

Tertiary:

Bachelor: Polytechnic University of the Philippines

Personal Qualification: Knowledgeable in different programming languages like Python, Java, C and language for front-end web development including HTML, CSS and Javascript. He excels in front-end developing which involves creating a visually appealing graphical user interface.

Carryl Cassandra J. Nebrida

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PERSONAL INFORMATION

Date of Birth: September 22, 2002

Place of Birth: Dagupan City, Pangasinan

Citizenship: Filipino

Gender: Female

Civil Status: Single

Interest: Web Development, Web Design, Graphic Design

EDUCATIONAL BACKGROUND

Primary: Libsong Elementary School

Secondary:

Junior High School: Pangasinan National High School

Senior High School: AMA Computer College - Pangasinan Campus

Tertiary:

Bachelor: Polytechnic University of the Philippines

Personal Qualification: Knowledgeable in different programming languages like C, Java, Python, Visual Basic and various tools like Figma and VsCode. With a keen eye for detail, her documentation and UI/UX Design skills are also proven good as she is often the head of every project's interface.

Patrick F. Pangilinan

El Pueblo Condominium Brgy. 630

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PERSONAL INFORMATION

Date of Birth: March 15, 2002

Place of Birth: San Isidro, Nueva Ecija

Citizenship: Filipino

Gender: Male

Civil Status: Single

Interest: Website and Game Development, Trading, Video Games

EDUCATIONAL BACKGROUND

Primary: San Isidro Central School

Secondary: General De Jesus College

Tertiary:

Bachelor: Polytechnic University of the Philippines

Personal Qualification: Knowledgeable in different programming languages like C, Java, Python, and various tools like Figma and VsCode. With a keen eye for detail, he excels in creating comprehensive and well-structured documentation that is both informative and accessible.

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