



KOLEHIYO NG LUNGSOD NG LIPA

Marawoy, Lipa City, Batangas

PatRicRice and Farm Feeds Store Sales and Inventory Management System

A Research Proposal

Presented to the Faculty of the

College of Computer Studies

Kolehiyo ng Lungsod ng Lipa

In Partial Fulfillment of the Requirements for

DC 103

By:

BSCS 2D

Frulla, Sandra P.

Lindo, Mark Joseph B.

Martija, Althea M.

May 2025

Second Semester

S.Y. 2024 – 2025

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APPROVAL SHEET

This study, entitled "PatRicRice and Farm Feeds Store Sales and Inventory Management System", was prepared by Sandra P. Frulla, Mark Joseph B. Lindo, and Althea M. Martija in partial fulfillment of the requirements for the subject System Analysis and Design, and is hereby recommended for acceptance and approval for oral examination.

EXADELIO T. LAZO, MIT

S.A.D. Adviser

Approved by the committee on oral examination:

PEDRO B. KATIGBAK, MBA, MaeD, LPT

Panelist I

BOBET R. LANTO, LPT

Panelist II

Accepted and approved in partial fulfillment of the subject System Analysis and Design.

ANGELO FREDERICK A. TOH, MIT

Dean, College of Computer Studies

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ABSTRACT

Title: PatRic Rice and Farm Feeds Store Sales and Inventory Management System

Researchers: Sandra P. Frulla

Mark Joseph B. Lindo

Althea M. Martija

Panelist: Pedro B. Katigbak, MBA, MAed, LPT

Bobet R. Lanto, LPT

Name of Institution: Kolehiyo ng Lungsod ng Lipa

Address: B. Morada Avenue, Barangay Marawoy-Dagatan, Lipa City Batangas

Degree: Bachelor of Science in Computer Science

Year Completed: 2024-2025

Number of pages: 84

Subject Adviser: Mr. Exadelio Lazo

Summary:

This study focuses on creating a simple yet powerful sales and inventory management system for PatRicRice and Farm Feeds Store in Lipa City, Batangas. The store had been relying on manual processes to track inventory and record sales, which often led to errors, stock shortages, and delays in reporting. To solve these problems, the researchers developed an offline, admin-only digital system that automates sales recording, updates inventory in real time, and generates easy-to-understand reports.

The system was built using familiar tools like HTML, CSS, JavaScript, PHP, and MySQL, and tested in a local environment using XAMPP. It includes helpful features such as low-stock alerts, printable receipts, transaction logs, and the ability to export reports as Excel or PDF files. It's also designed to be user-friendly for non-technical users,

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with a clean layout and quick access to important functions.

The development followed the Agile method, allowing room for feedback and adjustments throughout the process. After a series of tests, the system proved to be fast, reliable, and effective in improving how the store manages its day-to-day operations. While it's designed for offline use on a single device, it's a big step forward for small businesses looking to modernize. This project shows that even with limited resources, digital tools can make store operations smoother, more accurate, and easier to manage reports as Excel or PDF files. It's also designed to be user-friendly for non-technical users, with a clean layout and quick access to important functions.





ACKNOWLEDGEMENT

We would like to express our deepest gratitude to all the individuals who supported and guided us throughout the completion of this research project.

To Mr. Exadelio T. Lazo, our dedicated adviser, we thank you for your patience, guidance, and encouragement. Your support pushed us to stay focused and keep improving during the accomplishment of this study.

To Mr. Bobet R. Lanto, thank you for the help and support you gave to us. Your input made a meaningful difference in what we accomplished.

To Mr. Angelo Frederick A. Toh, our college dean, thank you for fostering an environment that inspires learning and for your support throughout our academic journey.

To all our instructors, we are grateful for the lessons you've taught us, both inside and outside the classroom.

To our classmates and friends, thank you for being there when things got stressful, for the laughs, the advice, and the reminders that we weren't alone.

To our families, we couldn't have done this without your love, patience, and sacrifices. Your belief in us gave us the strength to keep going.

We also extend our appreciation to Google and other online resources, which greatly supported us in gathering information and deepening our understanding throughout the course of our research.

We would also like to acknowledge the assistance of ChatGPT by OpenAI, which proved to be a helpful tool in organizing our ideas, suggesting content examples, and helping us express our thoughts more clearly throughout the course of this study





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And most importantly, to Almighty God, thank you for being our constant source of strength, clarity, and hope.

This research is not just the result of our work, it's a reflection of the support, care, and kindness we've received from all of you.

Sandra P. Frulla

Mark Joseph B. Lindo

Althea M. Martija

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DEDICATION

This project development study is wholeheartedly dedicated to:

Our Parents,

who instilled in us the value of hard work and served as our constant source of strength and inspiration.

Our Brothers and Sisters,

whose support and guidance have always encouraged us to persevere.

Our Friends,

who brought joy and comfort during challenging moments and reminded us to keep moving forward.

Our Instructors,

for their unwavering support, knowledge, and dedication in shaping us into better individuals.

All those who believed in us,

for their encouragement, love, and support throughout this journey.

And most importantly, to our Almighty God,

for His unending grace, blessings, and guidance that made this endeavor possible

Sandra P. Frulla

Mark Joseph B. Lindo

Althea M. Martija





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CHAPTER I

Introduction

The **PatRicRice and Farm Feeds Store Sales and Inventory Management System (SIMS)** is a digital solution developed to simplify and automate the store's sales and inventory processes. It helps track stock levels, record transactions, manage inventory and improve overall efficiency in managing rice and farm feed products.

1.1 Project Context

PatRicRice and Farm Feeds Store has served as a reliable source of rice, animal feeds, and agricultural products for local farmers and consumers in its area. Since its establishment, the store has operated primarily using manual processes for tracking inventory, recording sales, and managing supplier and customer data. Over the years, this method has led to several inefficiencies, including delays in stock monitoring, human error in record-keeping, and challenges in generating accurate reports. With the increasing demand for faster and more reliable service, it became clear that a digital solution was needed to streamline operations and support the store's continued growth.

The continued use of manual systems at PatRicRice and Farm Feeds Store has led to various issues, including inaccurate stock tracking, overstocking, stockouts, and product expiration. Manual sales recording is time-consuming and prone to errors, resulting in unreliable reports. The lack of real-time data also hinders timely decision-making. These problems emphasize the need for an automated system to improve accuracy and efficiency in managing inventory and sales.

The main objective of this study is to develop a Sales and Inventory Management System (SIMS) for PatRicRice and Farm Feeds Store. The system will automate inventory and sales processes, provide real-time stock data, generate low-stock alerts and automated reports, and include security features like user login and authenticated access. This aims to enhance accuracy, efficiency, and overall business operations.





The expected outcome of this project is a fully functional Sales and Inventory Management System that improves the store's efficiency and decision-making. It will provide accurate inventory records, faster sales processing, and reliable reports. This will enhance inventory control, customer service, and overall business performance, helping the store modernize operations and stay competitive.

1.2 Statement of the Problem

This study aims to develop a sales and inventory management system for PatRicRice and Farm Feeds Store to improve inventory tracking and sales monitoring. The current manual process causes errors, stock issues, and record delays. To address these challenges, the study seeks to design an automated system that enhances efficiency and accuracy, guided by the following issues:.

- **Inaccurate Inventory Tracking:** The manual system often results in inconsistencies between actual stock and recorded figures, leading to overstocking, stockouts, and lost sales opportunities.
- **Time-Consuming Processes:** The current system requires significant time for inventory counts, transaction recording, and report preparation, reducing overall productivity.
- **Limited Reporting and Insights:** The manual preparation of reports makes it difficult to analyze sales trends, monitor performance, or generate timely business insights. This hampers strategic planning and quick decision-making.

1.3 Objectives of the Study

To implement an efficient inventory and sales management system that ensures accurate stock tracking, provides real-time visibility of both inventory and sales data, and streamlines related processes to enhance productivity, optimize decision-making, and drive business growth.





- To implement an accurate and efficient inventory management system that ensures real-time tracking of stock levels, minimizes discrepancies between physical and recorded inventory, and helps prevent overstocking, stockouts, and potential loss of sales. To generate accurate and detailed reports on sales, revenue, and stock movements for better business planning.
- To implement an optimized system that significantly reduces the time spent on inventory counts, transaction recording, and report preparation. This system will ensure faster, more accurate processes, reduce manual effort, and enhance overall productivity.
- To generate automated and customizable reports on sales, inventory, and performance metrics to support data-driven decision-making and enhance business planning capabilities.

1.4 Scope and Limitations

This study primarily focuses on developing a sales and inventory management system for PatRicrice and farm feeds store located in San Salvador, Lipa City, Batangas. Specifically, the system aims to replace manual processes with an automated solution to enhance sales tracking, inventory management, and overall business efficiency. It is designed for admin use only, ensuring that only the store owner has access to manage inventory, record sales, and generate reports. To achieve this, the system will include several essential features, such as activity logging to monitor system actions, sales logging to record transaction details, and real-time inventory adjustments to automatically update stock levels after each sale.

Additionally, it will generate customizable sales reports, allowing the store owner to analyze business performance and make more informed decisions. Furthermore, the system will operate offline, ensuring that business operations continue smoothly even without an internet connection. Other key features include stock alerts to notify the owner when product quantities are low, search and filter options for quick access to products and sales records, and quick product search and entry to streamline transactions. In





addition, the system allows for instant product addition from the sales entry, enabling the owner to efficiently update the inventory.

This study will primarily involve the store owner as the main user, while also considering input from staff, regular customers, and suppliers to assess the system's effectiveness. Ultimately, by implementing this system, the study seeks to minimize errors, prevent stock shortages and overstocking, and improve overall store management, making sales and inventory processes more efficient, accurate, and reliable.

Despite these advantages, the study has some limitations. First, the system is designed exclusively for admin use, meaning it does not support multiple user accounts or employee logins. Additionally, while the system functions offline, it does not include cloud-based storage or remote access, restricting its use to a single device. Furthermore, the study focuses solely on sales and inventory management, excluding other business aspects such as accounting, payroll, or customer relationship management. Lastly, the system's effectiveness will be evaluated primarily based on the store owner's feedback, with limited input from staff, customers, and suppliers.

1.5 Significance of the Study

The presented research is significant in improving the efficiency of inventory management and sales tracking for agricultural supply business. This system benefits the store and business workflow by ensuring accurate stock monitoring, reducing human errors, and automating sales transactions. By integrating real-time inventory updates, the study highlights how digital solutions can streamline store operations and enhance business decision-making.

For store owner, the system provides an automated tool to track inventory levels and sales transactions in real-time. It minimizes the risk of overstocking or running out of essential products, ensuring smooth business operations. With accurate sales reports, this can make informed decisions, manage finances efficiently, and improve profitability. This also reduces the reliance on manual record-keeping, saving time and effort.





For staff and employees, they benefit from the system's simplified sales and inventory processes, making daily tasks more manageable. Although, staffs not directly engaged with the system, the automated and systematic system minimizes workload, allowing staff to focus on providing better service.

For customers, it offers experience improved service due to the system's ability to maintain accurate stock levels and ensure product availability. By preventing shortages, customers can always find the products they need without delays. Faster transaction processing enhances customer satisfaction, creating a more reliable and efficient shopping experience.

For Future Researchers, this study serves as a foundation for future researchers exploring digital solutions for sales and inventory management system. It provides insights into the effectiveness of automation in business operations and offers a model that can be improved or adapted for other industries. Future studies may expand on this research by integrating advanced features such as artificial intelligence, predictive analytics, or cloud-based storage to further enhance business efficiency.

1.6 Feasibility

1.6.1 Technical Feasibility

Based on our comprehensive analysis, implementing sales and inventory management system, including essential tools such as inventory manager, record sales, and generating reports, are indeed technically feasible within the current framework.

1.6.2 Operational Feasibility

Operationally, sales and inventory management system promise seamless integration into existing workflows with minimal disruption. Their implementation is expected to enhance productivity by automating repetitive tasks, allowing personnel to focus on strategic initiatives and value-added activities. Moreover, the scalability of these tools ensures adaptability to future growth and technological advancements.





1.6.3 Economic Feasibility

Cost Analysis – As a student-led research project, the development will incur no labor cost. Estimated expenses include software licensing, which is none (using community editions and open-source tools); hardware, with one thermal receipt printer required (₱1,500–₱4,000); hardware upgrades, which are not required (existing PC and home network already available); training and documentation, with minimal printing costs (under ₱1,000); and a contingency allowance of ₱2,000–₱3,000 for unforeseen minor purchases or software needs.

Benefit Analysis – Expected benefits include real-time tracking of inventory levels for improved stock control; prevention of overstocking or stockouts through timely alerts; streamlined integration between sales transactions and inventory updates; and faster transaction processing and reduced manual effort in record-keeping.

Cost-Benefit Comparison- The setup cost remains minimal, requiring only a one-time expense for a thermal printer and minor documentation materials. In contrast, the system offers substantial operational improvements, including accurate sales tracking, automatic inventory updates, and simplified reporting. By reducing manual work and stock-related losses, the system promotes faster workflows and better business oversight. Given the small financial outlay, the long-term gains in efficiency and control clearly outweigh the initial costs.

Risk Assessment- Financial risk is extremely low due to the system's offline nature and low-cost implementation. The primary concern is user resistance, especially if user is not familiar with digital systems or do not perceive an immediate benefit. This can be addressed by making the system easy to use and showing how it directly improves daily store operations. Since the system operates entirely offline, it also avoids security issues and downtime associated with internet dependency.





Recommendations

It is recommended to proceed with the project, with a focus on designing the interface to be intuitive and user-friendly, especially for non-technical users; prioritizing only essential sales and inventory features to maintain clarity and avoid clutter; and preparing a simple printed guide for users and promoting regular data backups using USB or external drives.





DEFINITIONS OF TERMS

PatRic Rice and Farm Feeds Store Sales and Inventory Management System

Activity Logging – The process of recording user and system actions within an application for security, auditing, and troubleshooting purposes.

Audit Log – A chronological record of system activities, typically used for monitoring, compliance, and forensic analysis.

Authorization – The process of granting an authenticated user permission to access specific resources or perform certain actions within a system.

Automated Solution – A technology-driven process that performs tasks with minimal human intervention, enhancing efficiency and consistency.

Backup – A copy of data stored separately from the original, used to restore information in case of data loss, corruption, or system failure.

Bug – An error or defect in software that causes it to produce incorrect or unexpected results or to behave in unintended ways.

CPU (Central Processing Unit) – The main component of a computer that performs instructions defined by software, often referred to as the "brain" of the computer.

Customizable Sales Reports – Analytical reports that can be adjusted or filtered by specific criteria such as time period, product category, or user.

Dashboard – A user interface that visually displays key performance indicators (KPIs), metrics, and system alerts in a consolidated view.

Encryption – The process of converting data into a coded format to prevent unauthorized access and ensure data confidentiality.





Injection Attack – A security vulnerability where an attacker inserts malicious code (commonly SQL or script) into a system to manipulate its behavior or access sensitive data.

Inventory Management System – A software solution used to monitor, manage, and optimize inventory levels, product sales, ordering, and supply chain operations.

Inventory – The total amount of goods and materials held in stock by a business for the purpose of resale or use in production.

Low-stock Alerts – System-generated notifications that inform users when the inventory level of a product falls below a predefined threshold.

Module – A self-contained component within a software system that performs a specific function, such as billing, inventory, or reporting.

Overstocking – The accumulation of excess inventory beyond the current demand, which may lead to increased holding costs or product obsolescence.

Password Reset – A system feature that allows users to securely update their password in case it is forgotten or compromised.

Penetration Testing – A controlled and authorized attempt to evaluate the security of a system by simulating an external or internal attack.

Product – A tangible good or item offered by a business for sale, usually tracked with attributes like name, SKU, quantity, and price.

Real-time Data – Information that is delivered immediately after collection, enabling immediate visibility and decision-making without delay.

Reports – Structured presentations of data, often used for analysis, decision-making, and tracking business performance.





Resource Usage – The consumption of computing resources such as CPU, memory, and storage by applications or processes.

Role-based Access – A security mechanism that restricts system access based on user roles and responsibilities, ensuring users can only access information relevant to their role.

Sales Processing – The series of steps involved in completing a sale transaction, including order entry, payment processing, and issuing receipts.

Scalability – The capability of a system to handle increased load or growth without compromising performance or stability.

Security Patch – A software update that fixes vulnerabilities or bugs that may be exploited by attackers to compromise system security.

Session Management – The handling of user interactions during a logged-in period, including tracking active sessions and controlling session expiration.

Stockouts – A condition in which demand for an item cannot be fulfilled due to insufficient inventory.

System Administrator – A technical professional responsible for maintaining, configuring, and ensuring the reliable operation of computer systems, especially servers and network infrastructure

Transaction Record – A detailed log of each operation related to inventory or sales, including purchases, returns, restocks, and adjustments.





CHAPTER II

Review of Related Literature and studies

This chapter provides a review of existing studies, theories, and findings relevant to the topic, which further establish the foundation of the research and identify gaps. By analyzing previous works, the chapter identifies significant findings, emerging trends, and gaps that this study aims to address.

2.1 Related Literature

According to *TranZact [2024]*, In the fast-paced business era, managing inventories has become very complex, particularly for farm supply businesses such as rice and farm feed stores. With a huge number of products to track, an effective system is paramount. Manual bookkeeping is usually prone to mistakes and inefficiency, leading to stock mismanagement and loss of revenues. TranZact highlights the benefit of a cloud-based inventory management system that provides real-time tracking, reordering, and integrated operations. These capabilities are especially important for businesses that manage a wide variety of agricultural products. These remarks are particularly relevant to PatRicRice and Farm Feeds Store, which has relied on manual processes for inventory tracking, sales recording, and managing supplier and customer data. This has resulted in inefficiencies such as stock discrepancies, delayed reporting, and decision-making errors. Inspired by the processes outlined in TranZact's system, the proposed Inventory Management System for PatRicseeks to automate such processes, provide real-time stock status, and generate automated alerts and reports. With such capabilities, the system is expected to enhance operating accuracy, customer service, and the store's growth and competitiveness in a rapidly digital market.

TranZact. 2022. *Best Inventory Management Software in 2024*. Retrieved (December 22, 2022), from <https://letstranzact.com/blogs/best-inventory-management-software>.





According to *Amir Idlan Azmi [2022]*, emphasized the great advantages of having a digital Sales and Inventory System in Maperow Store, which eliminated common issues with manual data management, such as inefficiency, data loss, and human error. The same issues exist in PatRicRice and Farm Feeds Store, where outdated manual procedures have led to incorrect inventories tracking, delayed reporting, and ineffective stock management. By embracing a digital inventory system employing Azmi's approach, PatRicaims to enhance operational effectiveness, minimize errors, and provide timely, data- driven information leading to business development.

Pooja Badgujar [2020], argues that for agricultural supply industry retailers, such as rice and farm feed stores, implementing real-time inventory management systems is essential to stay competitive and effectively meet customer demands. Without real-time tracking, these businesses risk overstocking, stockouts, and missed sales opportunities. This aligns with the challenges faced by PatRicRice and Farm Feeds Store, which still relies on manual inventory processes. These outdated methods lead to inefficiencies like inaccurate stock tracking and delayed decision-making. To address these issues, the proposed Sales and Inventory Management System for PatRicintegrates real-time monitoring and automated reporting, offering a solution that overcomes the limitations of manual systems. By leveraging cloud-based technologies, IoT sensors, and data analytics, this system will provide the store with real-time visibility, allowing it to manage inventory more accurately, respond to changing demand faster, and ultimately improve customer service. This proposed system aligns with industry best practices that emphasize the need for efficient, data-driven inventory management to maintain operational efficiency and ensure long-term growth in a competitive market.

Pooja Badgujar. 2020. *Real-Time Inventory Management in Retail. Journal of Technological Innovations*. 1, 4 (Dec. 2020). DOI: <https://doi.org/10.93153/nm26a950>





PN Jasmitha, Shivaani Prashanth, D Anish, and J Manikandan [2023], emphasize the importance of implementing an effective inventory management system to better align stock levels with actual demand and reduce the operational burden associated with manual tracking. Their study also underscores the critical need for inventory protection mechanisms to mitigate the risk of theft, which can result in substantial financial losses. Their proposal of a real-time stock inventory management system aligns directly with the objectives of the PatRicRice and Farm Feeds Store Sales and Inventory Management System, where the absence of an automated inventory system has led to inefficiencies in stock monitoring and increased vulnerability to human error and potential loss—further validating the need for a secure and automated solution tailored to the store’s operational needs.

PN Jasmitha, Shivaani Prashanth, D Anish, and J Manikandan. 2023. *Design and Evaluation of a Real-Time Stock Inventory Management System*. In Proceedings of 2023 IEEE 5th International Conference on Cybernetics, Cognition and Machine Learning Applications. DOI: [10.1109/ICCCMLA58983.2023.10346665](https://doi.org/10.1109/ICCCMLA58983.2023.10346665).

Glenda Marie B. Napa [2023], states that inventory management is a critical component of business operations, particularly in agricultural supply businesses such as rice and farm feed stores. She highlights that effective inventory control is essential for preventing financial losses, storage problems, and the risks associated with overstocking and stockouts. In keeping with these issues, the PatRicRice and Farm Feeds Store Sales and Inventory Management System aims to eliminate issues such as overstocking, understocking, and wasted of warehouse space. By automatically tracking inventory and combining sales data in real-time, the system assists agricultural retailers in demand forecasting, stock level optimization, and ensuring that production needs and storage capacity are effectively managed—eventually leading to improved operational efficiency and customer satisfaction.

Glenda Marie B. Napa. 2023. *Inventory Management System of Seasonal Raw Materials of Feeds at San Jose Batangas through Integer Linear Programming and VBA*. In Proceedings of the 13th International Conference on Industrial Engineering and Operations Management, Manila, Philippines, (March 7–9,





2023). IEOM Society International. Retrieved from <https://ieomsociety.org/proceedings/2023manila/628.pdf>.

Muhammad Hasif bin Rosli [2021], This project aims at creating a desktop-based application referred to as the IT Asset Management System (ITAMS) that will help manage inventory systems in an effective manner using technology. Likewise, farm supply companies such as rice and farm animal feed stores suffer from conventional manual record-keeping, which generally results in mistakes, mismanagement of stock, and inefficiency. The PatRicRice and Farm Feeds Store Sales and Inventory Management System solves an equivalent problem by computerizing the process of tracking sales and inventory. Like ITAMS, it keeps inventory information, manages stock, and creates reports from sales, but this is specifically designed for use in the agricultural sector. By combining sales transactions with inventory updates in real time, PatRic's system provides efficient stock tracking, prevents shortages or overstocking, and eliminates human errors, saving businesses from revenue loss and making them more efficient. Both systems rely on automation and real-time data to ensure seamless business operations.

Muhammad Hasif bin Rosli. 2021. *Development of IT Asset Management System Application*. Open University Malaysia. Retrieved from <https://library.oum.edu.my/repository/1491/>

Ma. Gracia Kim Brela, Arianna Coleen Ochua, Anthonette Gabriel, Geldof Resuello [2024], This research identifies the primary challenges and technological interventions reshaping sales and inventory management within niche retail industries such as hardware, paints, and glass shops, while also aligning with the needs of agricultural supply businesses including rice and farm feed retailers. The study emphasizes the necessity for micro and small-scale enterprises in the Philippines to adopt modern systems to enhance operational efficiency and sustainability. In a similar context, PatRicRice and Farm Feeds Store experiences comparable operational inefficiencies due to manual processes, thereby underscoring the relevance and urgency of implementing a digital inventory management system to support its growth and competitiveness.





Ma. Gracia Kim Brela, Arianna Coleen Ochua, Anthonette Gabriel, and Geldof Resuello. 2024. *Determining User Requirements for a Tailored Web-Based Inventory and Sales Management System in Micro-Small Construction Supply Stores Using Design Thinking*. In Proceedings of the 2024 The 6th World Symposium on Software Engineering (WSSE '24), 144-153. Association for Computing Machinery, New York, NY, United States. <https://doi.org/10.1145/3698062.3698082>.

Audra Bianca [2025], emphasizes the strategic value of automated sales and inventory monitoring systems in improving operational efficiency, as they enable businesses to collect real-time data, make informed decisions on procurement, production, and logistics, and maintain optimal stock levels. This perspective closely aligns with the operational challenges faced by PatRicRice and Farm Feeds Store, where the continued reliance on manual processes has hindered timely decision-making and accurate inventory control—highlighting the critical need for a digital solution to support efficient resource management and scalability.

Audra Bianca. 2025. *Sales & Inventory Monitoring Systems*. Small Business Chronicle. Retrieved from <https://smallbusiness.chron.com/sales-inventory-monitoring-systems-18660.html>.

Kimmy Matillano [2019], emphasizes the key advantages of transitioning from manual to automated sales and inventory systems, specifically, recognizing improved accuracy in transactions, time, and data security. This view is especially relevant to the issue in PatRicRice and Farm Feeds Store, where the application of manual sales and inventory processes has resulted in inefficiencies in the form of human mistakes, imprecise stock monitoring, and time lag in decision-making.

Kimmy Matillano. 2019. Chapter 2 | Related Literature | *Sales and Inventory System*. IT Source Code. Retrieved from <https://itsourcecode.com/fyp/chapter-2-related-literature-sales-and-inventory-system/>.

The study by **Punam Khobragade, Roshni Selokar, and Rina Maraskolhe [2018]** emphasizes the importance of an Inventory Management System (IMS) for hardware stores, where the store owner maintains the purchase and sales records. Customers are also disappointed when inventory is poorly maintained. slower sales and a large amount of money locked up in warehouses. This undertaking avoids manual delays, human error,





paperwork, and expedite the procedure. A system for managing inventory will have the capacity to monitor sales and stock levels, indicates a retailer when to place a new purchase and how much to buy. Windows is the Inventory Management System. program created for Windows' operating systems that centered on inventory management and produces the different necessary reports. Similarly, PatRicRice and Farm Feeds Store is currently dealing with similar issues, including manual tracking of inventory, which leads to inaccurate stock records and delays in transactions. By automating inventory monitoring, generating low-stock alerts, and producing detailed reports, this system will improve the efficiency and accuracy of PatRic's operations, ultimately enhancing both customer satisfaction and business performance, just as the IMS did for the hardware store.

Punam Khobragade, Roshni Selokar, and Rina Maraskolhe. 2018. *Research paper on Inventory Management System. International Research Journal of Engineering and Technology (IRJET)*, 5(4), 2155–2157. Retrieved from <https://www.academia.edu/download/56800407/IRJET-V5I448.pdf>.

2.2 Review of Related Studies

The study by **Malak, Juma, and Al-Yaqoobi [2024]** focuses on the challenges that small and medium-sized enterprises (SMEs) face in managing their inventory. Many SMEs still rely on manual methods, which are often slow, inaccurate, and lead to problems like stock shortages, overstocking, and high storage costs. These issues can reduce profits and make it harder to satisfy customers. To solve this, the researchers introduced an automated inventory management system powered by technologies like artificial intelligence (AI), machine learning, and the Internet of Things (IoT). This system helps businesses track their inventory in real time, predict demand more accurately, and make smarter decisions about when and how much to restock. The study was conducted using a case study approach, where the team interviewed staff, observed daily inventory tasks, and compared inventory and sales data before and after the system was used. The results showed that the automated system improved inventory accuracy, reduced costs, and made supply chain operations more efficient. However, the researchers





also noted that setting up the system was complex and required external IT experts, staff training, and time to adapt. Overall, the study suggests that while implementing an automated inventory system can be challenging, it offers significant benefits for SMEs aiming to improve their inventory management and overall performance. Similarly, the proposed Inventory Management System for PatRicRice and Farm Feeds Store aims to solve problems such as inaccurate stock tracking, occurrences of stock depletion, and errors in reporting through the automation of inventory and sales processes. Thus, both systems are designed to enhance operational efficiency, reduce human error, and enable data-driven decision-making, thus updating inventory management processes and improving overall business performance.

Malak, Juma, and Al-Yaqoobi. 2024. *Implementing an automated inventory management system for small and medium-sized enterprises*. Global Scientific Journal, 12(6), 588–595. https://www.globalscientificjournal.com/researchpaper/IMPLEMENTING_AN_AUTOMATED_INVENTORY_MANAGEMENT_SYSTEM_FOR_SMALL_AND_MEDIUM_SIZED_ENTERPRISES.pdf...

Puppala Sridhar, C.R. Vishnu, and R. Sridharan [2021], emphasized the necessity of adopting efficient inventory control systems in the retail sector to respond to uncertainty and fluctuating consumer demand. By using Arena simulation software, their research demonstrated how optimizing inventory policies can significantly reduce inventory levels and lost sales. Similarly, the proposed Inventory Management System for PatRicRice and Farm Feeds Store incorporates these principles by implementing an automated, centralized system designed to ensure accurate stock tracking, minimize excess inventory and stockouts, and enable real-time reporting. These features are crucial for maintaining optimal inventory levels, enhancing operational efficiency, and ensuring timely, demand-driven decision-making. Therefore, the proposed Inventory Management System for PatRicRice and Farm Feeds Store adopts such tenets by introducing a centralized, automated platform that ensures accurate stock tracking, minimizes excess inventory and stockouts, and supports real-time reporting, which are features essential for improving operational efficiency and maintaining optimal inventory levels in a demand-driven retail setting.





Puppala Sridhar, C.R. Vishnu, and R. Sridharan. 2021. *Simulation of inventory management systems in retail stores: A case study*. Materials Today: Proceedings, 47(15), 5130–5134. DOI: <https://doi.org/10.1016/j.matpr.2021.05.651>

Dianne Acosta, Maria Lavelle Alquizar, CJ Alexes Junio, Dyrien Cris Talara, and Mark Van Buladaco [2020] conducted a study to address the operational inefficiencies faced by Yochang General Merchandise, which relied on a manual system to manage sales and inventory. This led to problems like inaccurate stock tracking, expired items, and slow service. To address this, they developed a user-friendly, offline-capable Sales and Inventory Management System (SIMS) using Visual Basic and Microsoft Access. The system automates sales, tracks inventory in real time, generates reports, issues receipts, and alerts staff about low stock levels. The project used RAD and Phased Development methodologies, ensuring continuous feedback and adaptability. It was deemed technically, economically, and organizationally feasible, offering long-term benefits like improved efficiency, customer satisfaction, and decision-making. PatRicRice and Farm Feeds Store has long struggled with the limitations of manual processes. In both cases, businesses dealt with inaccurate stock tracking, delayed sales processing, and difficulty producing reliable reports—issues that slowed down operations and affected customer service. Inspired by their solution, which was a user-friendly and offline-capable Sales and Inventory Management System, we recognized the need for a similar approach tailored to the store’s needs. By developing a system that automates inventory and sales, provides real-time data, and includes secure access features, we aim to bring PatRicinto a more efficient and modern workflow.

Dianne Acosta, Maria Lavelle Alquizar, CJ Alexes Junio, Dyrien Cris Talara, and Mark Van Buladaco. 2020. *Analysis and Design of Sales and Inventory Management System for Yochang General Merchandise*. SSRN. Retrieved from <https://ssrn.com/abstract=3643181>

The thesis by ***Sheenah Mae B. Acopiado, Teddy D. Dabodabo, Aithana Rosette L. Gomez, Aithana Rosette L. Gomez [2019]*** focuses on developing a computerized solution for Pharmacia Josefa Drugstore, a small retail business facing challenges due to





manual sales and inventory processes. The manual system led to issues such as inaccurate stock tracking, inefficient sales recording, and difficulties in managing customer transactions, especially since the owner handled all operations without additional staff. To address these problems, the proponents proposed a user-friendly, offline-capable Sales and Inventory Management System (SIMS) developed using Visual Basic 6 and Microsoft Access 2007. The system includes modules for product and employee maintenance, sales transactions, inventory monitoring with critical level alerts, and report generation for inventory and sales. It also features functionalities for handling purchase orders, returns, and acquisitions. The development followed the Agile methodology, emphasizing adaptive planning and continuous improvement. The proposed system aims to enhance operational efficiency, accuracy, and consistency in managing sales and inventory, ultimately improving customer service and business performance. Like the Pharmacia Josefa Drugstore project, our goal is to implement a user-friendly, offline-capable Sales and Inventory Management System that automates these tasks, provides real-time data, and helps manage inventory levels efficiently.

Sheenah Mae B. Acopiado, Teddy D. Dabodabo, Aithana Rosette L. Gomez, Aithana Rosette L. Gomez. 2019. *Sales and Inventory System for Pharmacia Josefa Drugstore. Capstone Project, STI College*. Retrieved from <https://www.studocu.com/ph/document/sti-college/business-analysis/sales-and-inventory-system-thesis-docume/28008068>.

Jonieber A. Dela Victoria, Alexander B. Toting, Kit R. Verano, Charlie S. Ollanas, and Luther N. Smith [2022] focused on common problems faced by small and medium enterprises (SMEs), such as poor stock monitoring, delayed sales tracking, and lack of actionable business data. The group developed a custom system to manage sales, monitor stock levels, and generate essential reports. This tool allowed business owners to make better decisions, avoid overstock or stockouts, and improve customer service and operational transparency. In a similar context, the PatRicRice and Farm Feeds Store encounters analogous challenges associated with manual inventory tracking, inaccuracies in sales recording, and inefficiencies in report generation. To address these issues, the store is in the process of implementing an Inventory Management System aimed at





automating inventory and sales processes, providing real-time stock data, generating automated reports, and incorporating security features, such as user logins and role-based access. It is anticipated that this system will improve operational accuracy, optimize workflow efficiency, and facilitate more informed decision-making.

Dela Victoria, J. A., Toting, A. B., Verano, K. R., Ollanas, C. S., & Smith, L. N. 2022. *Development of Sales and Inventory Management System. Capstone Project, Tagoloan Community College*. Retrieved from <https://www.coursesidekick.com/information-systems/3301916>.

According to ***Charlene Anne Magallanes, Mary Nelva Ortiz, Mariah Nicole Seville, Shinji Luke, Glidden Tejada, Ericka Mae Tuliao, Mak Van Merca Buladaco and Nikko Gerald Eroy [2021]***, Identifies the operational challenges faced by LJGG Motorcycle Parts and Accessories Store due to its manual sales and inventory processes. The manual system led to frequent errors in stock tracking, difficulty identifying low or out-of-stock items, and inefficiencies in sales transactions. Sales were computed manually, which caused delays, inaccuracies in receipts, and poor recordkeeping. Additionally, the lack of reliable data and reporting tools made it hard for management to monitor performance or make informed business decisions. To address these problems, the researchers developed a computerized sales and inventory system that automates inventory updates, monitors stock levels in real-time, and alerts the user when items need restocking. The system also records sales transactions instantly, updates inventory databases accordingly, and generates structured sales and inventory reports on a daily, weekly, or monthly basis. With a user-friendly interface and role-based access, the system enhances operational accuracy, speeds up transaction processing, and supports better decision-making for store management. Both the study by Magallanes et al. (2021) on LJGG Motorcycle Parts and our project for PatRicRice and Farm Feeds Store tackle inefficiencies caused by manual inventory and sales systems. While LJGG faced issues with stock tracking and slow transactions, PatRicexperiences similar challenges with inaccurate inventory and delays. Inspired by LJGG's computerized Sales and Inventory Management System, we aim to implement a similar solution to streamline operations, reduce errors, and improve efficiency at PatRic





Charlene Anne Magallanes, Mary Nelva Ortiz, Mariah Nicole Seville, Shinji Luke, Glidden Tejada, Ericka Mae Tuliao, Mak Van Merca Buladaco and Nikko Gerald Eroy. 2021. *Analysis and Design of a Sales and Inventory Management Information System for a Motorcycle Parts and Accessories Store*. *International Journal of Scientific Research and Engineering Development*, 4(3), 1406–1416. Retrieved from <https://www.researchgate.net/publication/352978619> -

Kenneth Agnas, Anthony Flores, Judy-Ann Mirabete, Kimberly Montes, Denise Tagulao, and Jerwin Tagwa [2024] identified several problems in the inventory practices of Red Camia Supermarket, including inaccurate stock monitoring, expired goods, theft-related losses, and ineffective reporting. Using the System Development Life Cycle (SDLC) methodology, they proposed an inventory management system designed to automate tracking, alert for expiry dates, and generate reliable reports, with the goal of improving operational efficiency and profitability through better data-driven decisions. The PatRicRice and Farm Feeds Store system aims to automate inventory tracking and sales processes, providing real-time data and alerts to improve decision-making and operational efficiency, while also integrating security features like role-based access for better control and data accuracy. Both systems focus on enhancing inventory management and operational efficiency but differ in their specific application and added features.

Kenneth Agnas, Anthony Flores, Judy-Ann Mirabete, Kimberly Montes, Denise Tagulao, and Jerwin Tagwa. 2024. *A research proposal of inventory management system for Red Camia Supermarket*. Ascendens Asia Singapore – Bestlink College of the Philippines Journal of Multidisciplinary Research, 3(1A). Retrieved from <https://ojs.aaresearchindex.com/index.php/aasgbcpjmr/article/view/12705>.

Christian S. Timoteo [2022] explores the common problems encountered in retail pharmacy operations, particularly in tracking inventory and sales accurately. The research highlights inconsistencies that arose from manual processes, which affected the pharmacy's ability to make timely and informed business decisions. To address these issues, Timoteo implemented a Point-of-Sale (POS) system, which enabled real-time monitoring of sales and stock, improved coordination among team members, and allowed the pharmacy to handle unexpected situations more efficiently. This highlights how





automation improves efficiency and reliability, which aligns with the goal of the proposed Inventory Management System for PatRicRice and Farm Feeds Store, aiming to streamline inventory and sales processes, reduce errors, and support timely, data-driven decisions in an agricultural retail setting.

Christian S. Timoteo. 2022. *Managing sales and inventory variances in a community pharmacy*. Master's thesis, De La Salle University, Manila. Retrieved from https://animorepository.dlsu.edu.ph/etdm_manorg/118/.

Joseph Cezar M. Lamanero, Steferd Louise M. Nagales, Chester Terrence L. Ramirez, Al L. Salcedo [2023], This capstone project developed a computerized sales and inventory system tailored for a rice retail store in the Philippines. The system aimed to streamline inventory tracking, reduce manual errors, and enhance overall operational efficiency. It featured modules for real-time stock monitoring, sales processing, and reporting functionalities. In comparison, the PatRicRice and Farm Feeds Store system not only includes these core features but also integrates more advanced functionalities tailored to the specific needs of a multi-product agricultural business. The PatRicsystem includes supplier and customer data management, security measures such as role-based access and user logins, and low-stock alerts and expiration tracking, all of which are critical for managing both perishable and non-perishable agricultural products. These additional features are necessary for improving inventory control and decision-making in an environment where stock variability and product expiration are significant concerns. Therefore, while both systems share foundational functionalities aimed at improving operational efficiency, the PatRicsystem offers a more comprehensive solution designed to address the complex challenges faced by a store handling a diverse range of agricultural products.

Joseph Cezar M. Lamanero, Steferd Louise M. Nagales, Chester Terrence L. Ramirez, Al L. Salcedo. 2023. *Sales and Inventory System for Pamilya Martin Rice Retail Store*. Capstone Project, STI College Fairview. Retrieved from <https://www.coursehero.com/file/238859885/Sales-and-Inventory-System-for-Pamilya-Martin-Rice-Retail-Store/>.





Willord Jay O. Villanueva [2023] addresses challenges faced by a computer retail store in handling sales, returns, and inventory management across branches. Manual tracking methods were inefficient and lacked real-time data. To resolve this, Villanueva developed a web-based inventory system integrated with RFID technology using the Flutter framework. The system allowed for seamless transaction processing, inventory updates, and client return tracking. The use of agile methodology ensured that user feedback was incorporated during development, making the system more intuitive and responsive to business needs. In comparison, the PatRicRice and Farm Feeds Store system is designed to automate inventory and sales management for a store specializing in agricultural products, including rice and animal feeds. While both systems aim to enhance operational efficiency, the PatRicsystem incorporates additional features such as supplier and customer data management, role-based security, and expiration tracking, which are essential for managing perishable items and ensuring accurate inventory control. Although Villanueva's system improves inventory tracking with RFID, the PatRicsystem offers a more specialized solution, tailored to the unique challenges of agricultural product management, providing more comprehensive tools for efficient stock management and decision-making.

Willord Jay O. Villanueva. 2023. *Computer Store Point of Sale and Inventory Management System with RFID Technology using Flutter Framework*. Bachelor's thesis, University of the Philippines Open University. Retrieved from <https://repository.upou.edu.ph/items/a0d885c4-88d0-49c1-8bae-b751d6d4a106>

Organize and Synthesize

The reviewed literature highlights the growing importance of digital sales and inventory systems in addressing persistent challenges in agricultural supply businesses, particularly in small and medium-sized enterprises (SMEs). Common issues such as manual errors, delayed reporting, overstocking, stockouts, and poor stock control are frequently cited as operational hurdles. Studies by TranZact [2024], Amir Idlan Azmi [2022], and Pooja Badgujar [2020] advocate for the adoption of real-time tracking and cloud-based solutions to enhance data accuracy, reduce human error, and support faster





decision-making—critical capabilities for businesses operating in a fast-paced retail environment.

Several other researchers support this direction. **Malak, Juma, and Al-Yaqoobi [2024]**, **Puppala Sridhar, C.R. Vishnu, and R. Sridharan [2021]**, along with **Jonieber A. Dela Victoria et al. [2022]**, have shown that digital inventory and sales systems—often developed with accessible technologies such as Visual Basic, Microsoft Access, or RFID—help businesses avoid stockouts, overordering, and incorrect reporting. These systems are typically designed to be simple, affordable, and practical, especially for businesses with limited technical resources. Their success demonstrates that even low-cost, lightweight solutions can yield significant operational improvements.

In a similar vein, the proposed system for **PatRicRice and Farm Feeds Store** builds on these successful models by offering a tailored digital solution that meets the specific needs of rural retail settings. Designed to be easy to use and cost-effective, the system focuses on improving inventory accuracy, sales monitoring, and operational efficiency while ensuring long-term usability. It includes automated alerts, real-time reporting, and streamlined data management to support better stock control and informed decision-making.

However, while the advantages of automation are well documented, several important gaps remain in the current body of research. One recurring limitation is the lack of attention to user-related challenges, such as employee training, system adoption, and integration into everyday work routines—especially in small, rural businesses. Although studies such as those by **Sheenah Mae B. Acopiado et al. [2019]** and **Charlene Anne Magallanes et al. [2021]** recognize the need for user-friendly design, they often do not elaborate on the process of training staff or supporting their adjustment to new digital tools. This is a critical oversight, as even well-designed systems can fail without proper user support

Another area that is underexplored is the broader impact of digital systems on customer service and business growth. While several studies, including those by **Dianne**





Acosta et al. [2020] and **Joseph Cezar M. Lamanero et al. [2023]**, report operational improvements such as faster transactions and improved stock visibility, they provide limited evidence of how these changes affect customer satisfaction or loyalty.

Additionally, most reviewed studies only briefly mention advanced technologies like artificial intelligence and machine learning, often without detailed analysis. For example, **Malak, Juma, and Al-Yaqoobi [2024]** touch on these tools, but their full potential—such as predictive demand forecasting or real-time decision support—remains largely untapped in rural retail contexts. These capabilities could greatly enhance business performance by enabling more proactive inventory and sales strategies.

Conclusion

The literature and studies reviewed highlight the crucial role of efficient inventory management in maintaining the availability, accuracy, and security of products, especially for small and medium-sized enterprises (SMEs) like agricultural and retail businesses. Studies from both local and international sources show that automated inventory systems can address common problems such as human error, stock discrepancies, and delays in decision-making. These systems offer useful features like real-time stock tracking, low-stock alerts, and expiry notifications. While such systems are commonly used in larger businesses, the principles behind them can easily be adapted to fit smaller operations like PatRicRice and Farm Feeds Store.

This review strengthens the argument for implementing a tailored inventory control system for smaller businesses, showing that the benefits of automation observed in bigger enterprises are just as valuable for smaller stores. By adopting such a system, PatRicRice and Farm Feeds Store would be able to improve efficiency, reduce human errors, and make quicker, more informed decisions. The review emphasizes how practical and relevant this solution is for the specific needs of the store. The insights gathered from these studies will guide the next steps in the development of the inventory management system and shape the approach to its implementation.





CHAPTER III

System Requirements Analysis

This section describes the essential requirements for developing and operating the Sales and Inventory Management System for PatRicRice and Farm Feeds Store. It covers the system's functional and non-functional requirements, user requirements, data requirements, and the recommended technical setup. These specifications provide a solid framework for creating a dependable and efficient system designed to improve stock management, streamline sales processes, and meet the operational needs of the store.

3.1 Functional requirement

The system must perform several essential operations to support business needs. For user authentication, only a single secure admin login is required to ensure exclusive system access. Under inventory management, the system should automatically adjust stock levels with every recorded sale, and allow the administrator to quickly add new products through the sales entry form. Additionally, the system must provide stock alerts whenever inventory falls below a set threshold. In terms of sales management, it should enable product search during sales entry, record all order details, and print receipts. The system must also generate customized sales reports—daily, weekly, and monthly—and maintain a detailed log of each transaction, including product details, quantity, price, date, and total amount. Search and filtering features must allow users to look up products using various parameters like name, unit, expiration date, or manufacturer, and filter sales logs by date, product, or customer.

3.2 Non-functional requirements

To ensure a smooth user experience, the system must meet several non-functional criteria. Under performance requirements, it should load pages and process transactions within 2–3 seconds and scale effectively as data and user demand increase. Basic operations should remain functional offline, with data stored locally. For security, the





system must protect sensitive data through encryption and access control, validate all user inputs to prevent attacks, and keep a log of all admin activities such as add, edit, and delete operations. Reliability is also crucial—the system must handle errors gracefully with clear messages, perform automatic data backups, and maintain consistency between sales and inventory data at all times.

3.3 User Requirements

The system will be exclusive for store administrator. Store admins must be able to maintain a real-time view of inventory levels, generate and analyze sales reports on different timeframes, receive reorder alerts for low stock, update stock levels, monitor product batches, especially expiration dates, and monitor store performance through earnings and sales trend data.

3.4 Data Requirements

The system must manage data across multiple categories. For products, it should store the product name, variation, unit of measurement (kg, bag, sack), quantity, pricing, and reorder level. Inventory transactions should include a transaction ID, date, type of operation, product details, quantity changes, reference numbers, and remarks. For suppliers, the system should track names and the products each supplies. Sales data must include the date, items sold, quantities, total amount, payment received, and change returned. For users, information like name, role (admin), and login credentials must be recorded. Lastly, the system should generate reports on sales performance, stock levels, low stock alerts, and user activity logs.

3.5 Hardware and Software Requirements




This section outlines the necessary hardware and software components required to support the efficient operation of the PatRicRice and Farm Feeds Store Sales and



Inventory Management System. These specifications ensure the system runs smoothly, meets performance expectations, and supports all intended functionalities.


3.5.1 Hardware Requirements

Table 3.5.1 Hardware Requirements








HARDWARE	Description
	<p>Processor: Either Intel's i3 or equivalent (recommended i5)</p> <p>RAM: Minimum 4 GB (preferred 8 GB)</p> <p>Storage: SSD with a minimum of 128 GB (faster and more reliable)</p> <p>OS: Windows 10 and 11 or Linux</p>
	<p>Digital Weighing Scale - Does not need to be integrated with the system but must be accurate and dependable.</p>
	<p>Thermal Printer - Ideal for printing receipts because they are fast, cost-effective, low-maintenance, and produce clear prints without needing ink or toner.</p>

3.5.2 Software Requirements

Table 3.5.2 Software Requirements

SOFTWARE	TECHNOLOGY	DESCRIPTION
Operating System		<ul style="list-style-type: none"> Windows 10/11- This is the system where your software will run. It's the platform on which everything is installed.



Database		<ul style="list-style-type: none">• MySQL - This is where all the data are being stored, such as sales records, inventory stock, and customer details.
Backend		<ul style="list-style-type: none">• PHP- PHP is the programming language used to create the server-side logic. It processes requests, manages the database, and sends data to the frontend.
Frontend		<ul style="list-style-type: none">• HTML creates the structure of the webpage.
		<ul style="list-style-type: none">• CSS styles it, focus on design and Users Interface (UI).
		<ul style="list-style-type: none">• JavaScript makes it interactive, handling button clicks or showing data dynamically.•
Web Server		<ul style="list-style-type: none">• Used for local development and testing. XAMPP includes Apache, MySQL, and PHP in one package.
Development Tools		<ul style="list-style-type: none">• Visual Studio Code - The tool used to write the code for the system.



CHAPTER IV

System Design

A thorough visual depiction of our system's architecture, procedures, and data flow can be found in this chapter. We demonstrate the essential elements, connections, and interactions that propel functionality via meticulously planned diagrams. Readers will acquire a deeper comprehension of the system's design, effectiveness, and operating logic by examining these images. Every diagram acts as a blueprint, directing development and optimisation activities to guarantee smooth performance and integration.

4.1 System Architecture

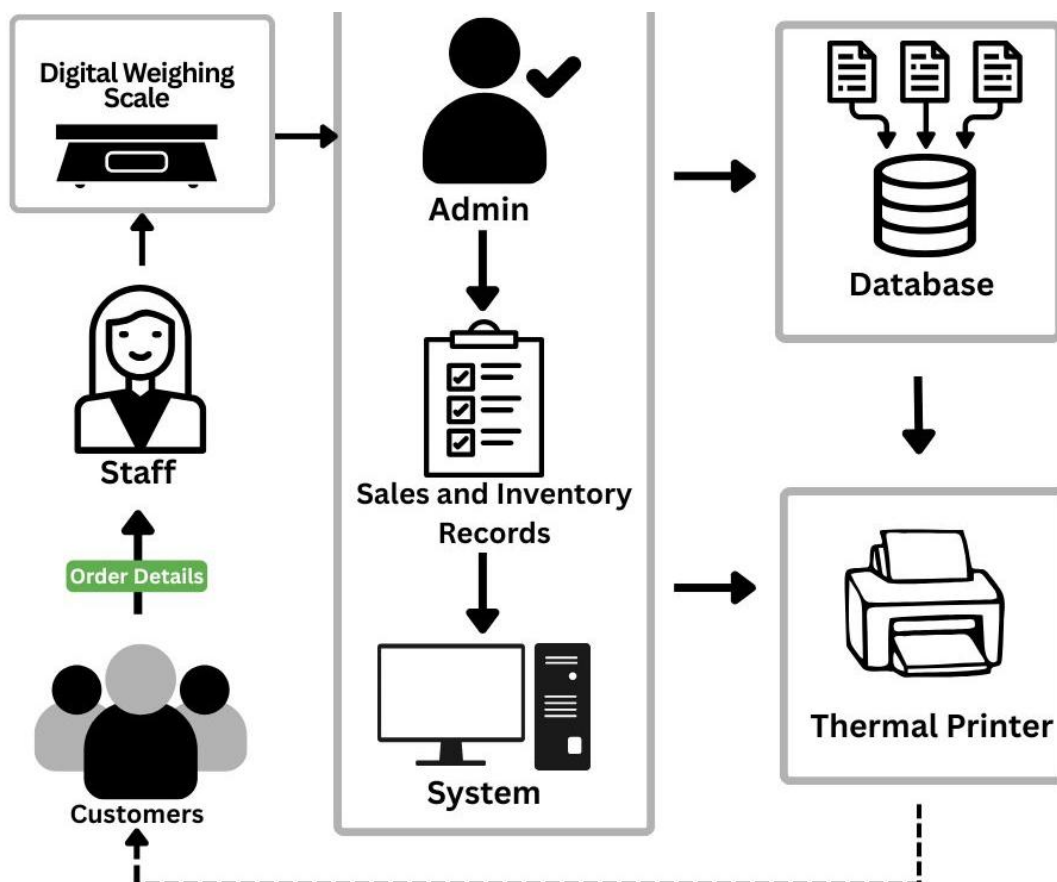


Figure 4.1.1 System Architecture

Figure 4.1.1 shows the system architecture of the proposed system, it starts with the Customer requesting their orders to the Staff. The Admin then uses the system through a computer interface to record sales, along with other features such as log in, monitor stock and inventory, and generate reports for sale and inventory. The system is connected to a local database that stores all essential data such as product details, sales records, inventory levels, and user activity logs. It also integrates with devices like a digital weighing scale and thermal printer for accurate weighing and receipt printing.

4.2 Data Flow Diagram

4.2.1 Existing DFD Level 0

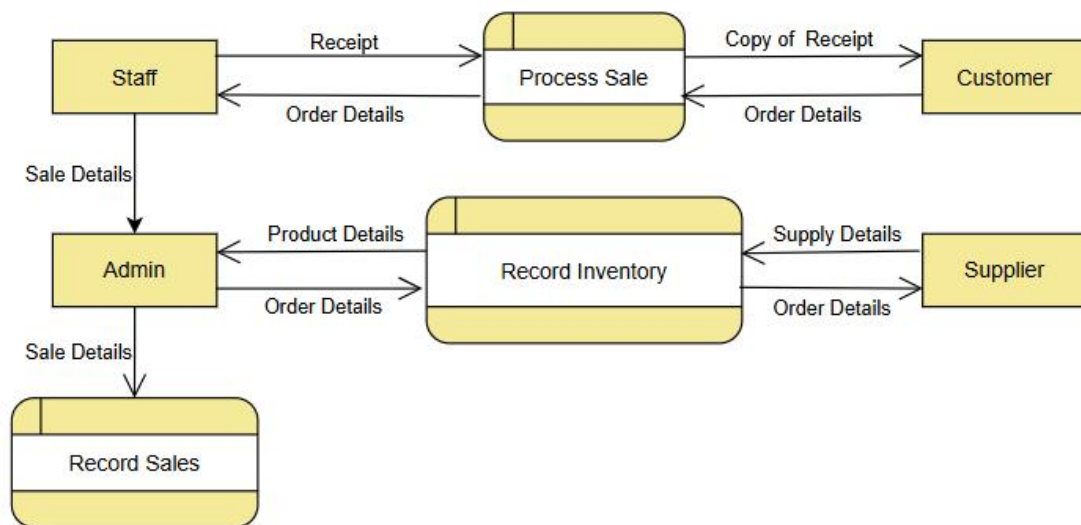


Figure 4.2.1 Existing Data Flow Diagrams (DFD)

Figure 4.2.1 shown above illustrates the data flow in the existing manual sales and inventory management system used by PatRicrice and farm feed store. In this system, the admin—who is also the store owner—handles all operations manually. The process begins when a customer provides their order details, which are received and recorded by the admin. A handwritten receipt is then issued to the customers.

The admin documents sales manually and keeps physical copies of order receipts and supplier invoices for reference. When stock runs low, the admin sends an order request to the supplier, who then delivers the required items. Upon delivery, the admin logs the incoming stock and updates the inventory manually. An inventory update report is also maintained to keep track of current stock levels. This setup, while straightforward and cost-effective for small-scale operations, heavily depends on handwritten records, making it susceptible to delays, inaccuracies, and data loss.

4.2.2 Proposed DFD Level 0

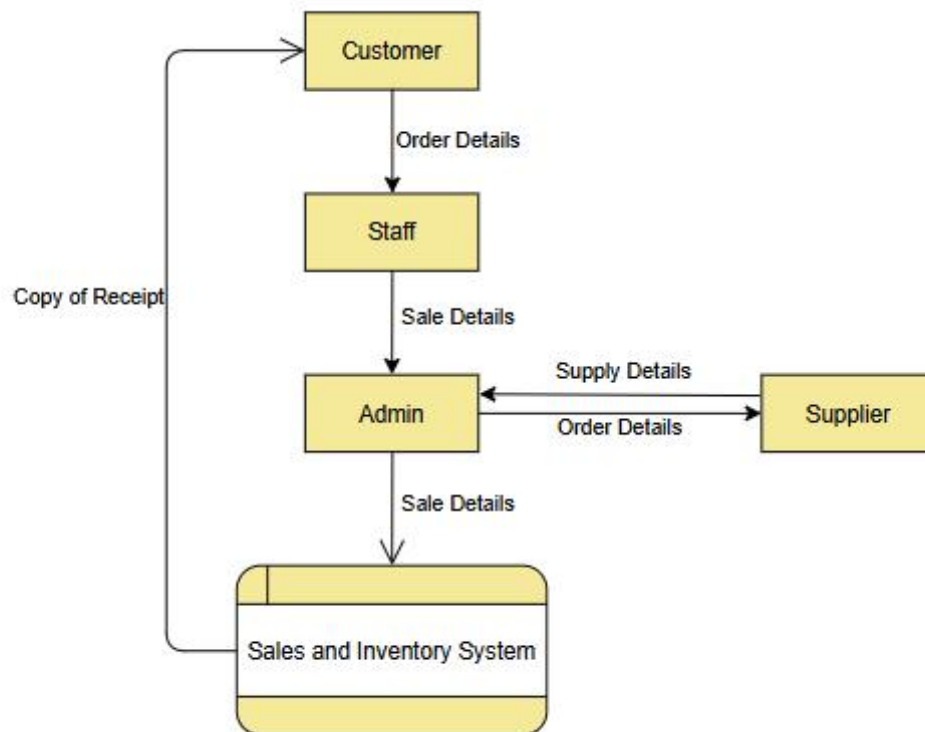


Figure 4.2.2 Proposed Data Flow Diagrams (DFD)

Figure 4.2.2 In this system, only the admin uses the system directly. When a customer wants to buy something, the admin enters the order into the system. The system then gives a receipt and the correct change to the customer. The admin also updates the inventory whenever items are sold or new stock arrives. If a supplier delivers products,

the admin adds that information into the system as well. The system can create reports about sales and current stock, which the admin can view anytime. Admin manage the system, hile customers and suppliers do not directly engage with the system.

4.3 Entity-Relationship Diagram (ERD)

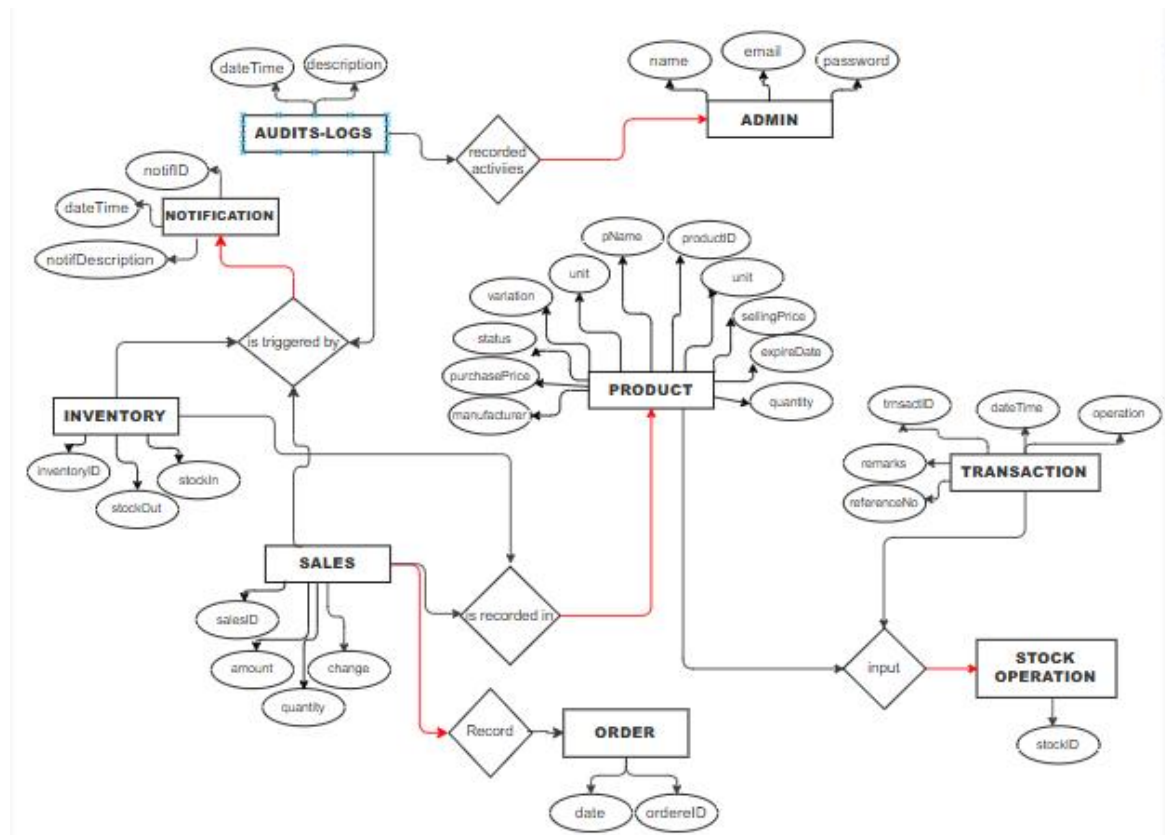


Figure 4.3 Entity-Relationship Diagram (ERD)

Figure 4.3. The Sales and Inventory Management System begins with the admin, who can log in and perform system operations. These activities are recorded in the Audits-Logs entity, which tracks actions such as logins, product updates, and sales entries. When significant events occur, like stock-outs, new inventory entries, or sales, they trigger notifications, which are timestamped and described to keep the admin informed.

The product entity is central to the system, holding key details such as price, quantity, variation, and expiration date. When a customer places an order, it is recorded in the Order table, and each item within the order is logged as a separate Sale entry, which specifies the quantity, amount, and change involved. These sales entries are linked to the corresponding products and reduce the inventory levels accordingly. Inventory transaction report tracking is handled through Transactions, which document inventory movement with timestamps and operation. Throughout the process, triggered notifications and audit logs ensure full traceability and real-time monitoring by the admin. This architecture supports efficient, transparent store management while maintaining accurate inventory and sales data.

4.4 UML Diagrams

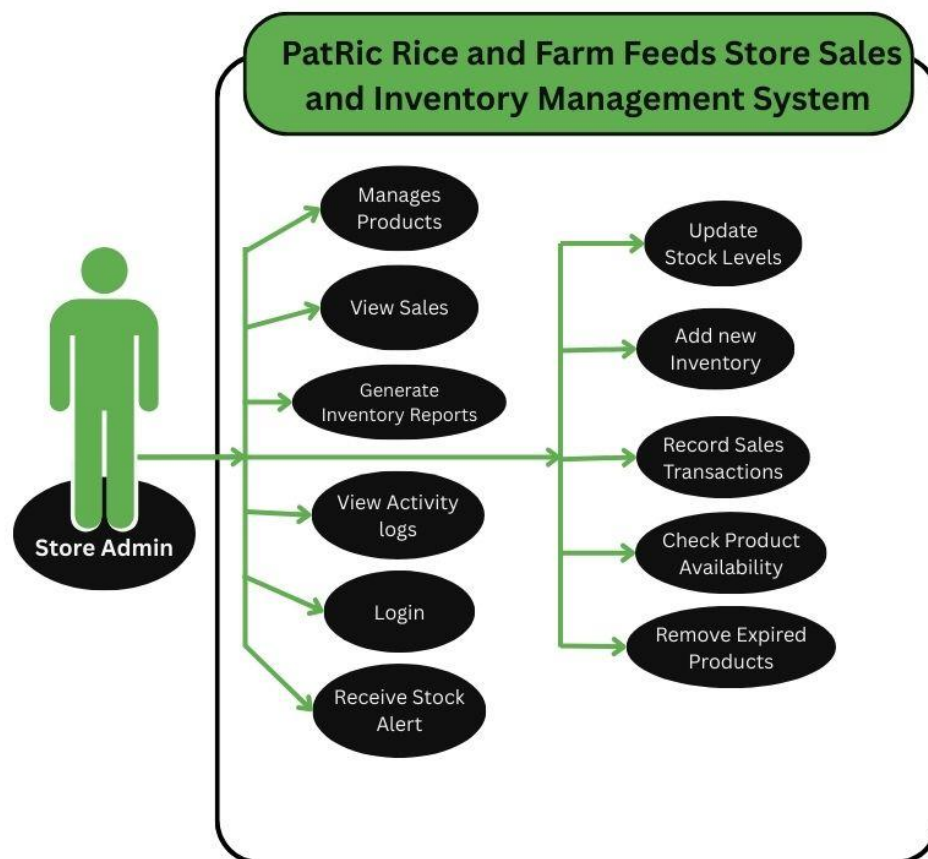


Figure 4.4.1 UML Diagrams

Figure 4.4.1 shows the Unified Modeling Language (UML) specifically Use case diagram, it illustrates the interactions between the Admin and the Sales and Inventory Management System. The Admin is the sole system user and performs all critical operations within the system. Starting from logging in to access key functions such as managing products, recording sales, generating reports, and viewing activity logs. Product management includes updating stock levels and adding new inventory. The system also supports real-time features like stock alerts and removing expired products. Overall, the diagram highlights the admin's central role in handling all sales and inventory operations within the system.

4.5 User Interface Design

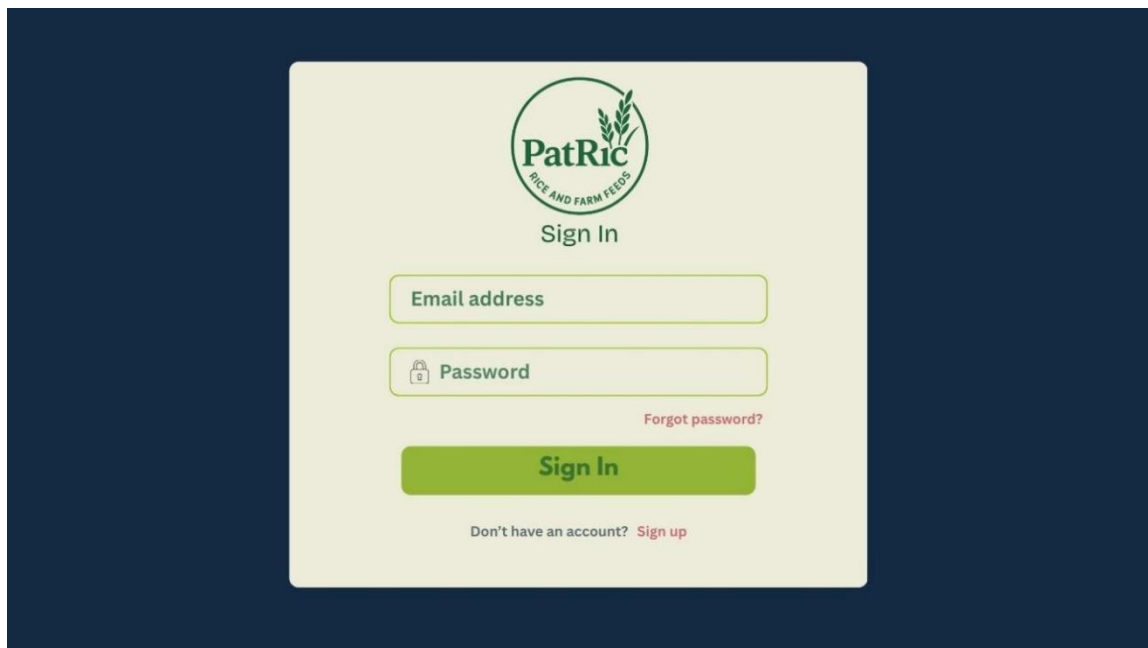


Figure 4.5.1 Sign In Page

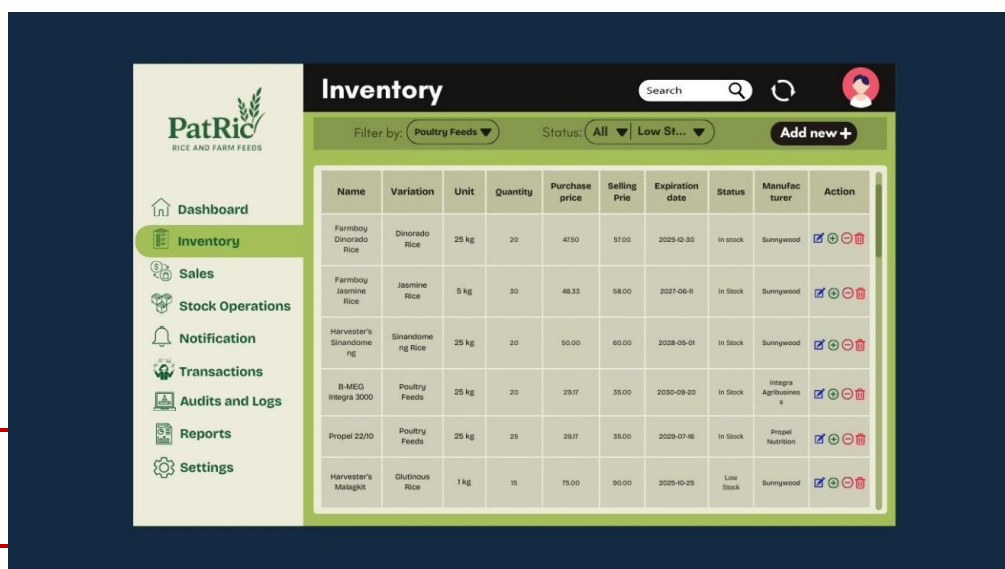
Figure 4.5.1 above is what the user will see when opening the system. The login interface for PatRic rice and farm feed store, with their logo on the system for more personalized design. This system is designed to verify user credentials—specifically email and password—before granting access, making sure only the admin can enter the system. User is required to input valid credentials to sign in. The system also includes

functionality for password recovery and new user registration, supporting account maintenance.



Figure 4.5.2 Dashboard

Figure 4.5.2 above shows the main dashboard page of the system. This provides a quick overview of business operations. It includes access to key modules such as inventory, sales, stock operations, and reports. It displays summarized data like total daily sales, low stock alerts, top-selling products, and visual reports for sales trends and inventory status. Users can also perform key actions such as making a sale, adding a new item, and recording transactions, directed to other pages (Figure 4.5.4 Sales, Figure 4.5.6 Stock Operations).



The inventory page displays a table of items with the following columns: Name, Variation, Unit, Quantity, Purchase price, Selling Price, Expiration date, Status, Manufacturer, and Action. The table is filtered by 'Poultry Feeds' and shows items like Farmboy Dinorado Rice, Farmboy Jasmine Rice, Harvester's Sinandome ng Rice, 9-MEG Integra 3000, Propel 2270, and Harvester's Malagkit.

Name	Variation	Unit	Quantity	Purchase price	Selling Price	Expiration date	Status	Manufacturer	Action
Farmboy Dinorado Rice	Dinorado Rice	25 kg	20	47.50	57.00	2025-12-30	In Stock	Sunwood	[Icons]
Farmboy Jasmine Rice	Jasmine Rice	5 kg	30	48.33	58.00	2027-08-8	In Stock	Sunwood	[Icons]
Harvester's Sinandome ng Rice	Sinandome ng Rice	25 kg	20	50.00	60.00	2028-05-01	In Stock	Sunwood	[Icons]
9-MEG Integra 3000	Poultry Feeds	25 kg	20	29.97	35.00	2030-09-20	In Stock	Integra Agribusiness	[Icons]
Propel 2270	Poultry Feeds	25 kg	25	29.97	35.00	2029-07-16	In Stock	Propel Nutrition	[Icons]
Harvester's Malagkit	Glutinous Rice	1 kg	10	75.00	90.00	2029-10-25	Low Stock	Sunwood	[Icons]

Figure 4.5.3 Inventory Page

Figure 4.5.3 shows that this part of the system allows users to view, filter, and manage product inventory. It displays key product details such as item name, variation, unit size, quantity, purchase/selling price, expiration date, stock status, and manufacturer. Admin can also search for specific items, filter by category or stock status, and perform actions like editing, restocking, or deleting products.



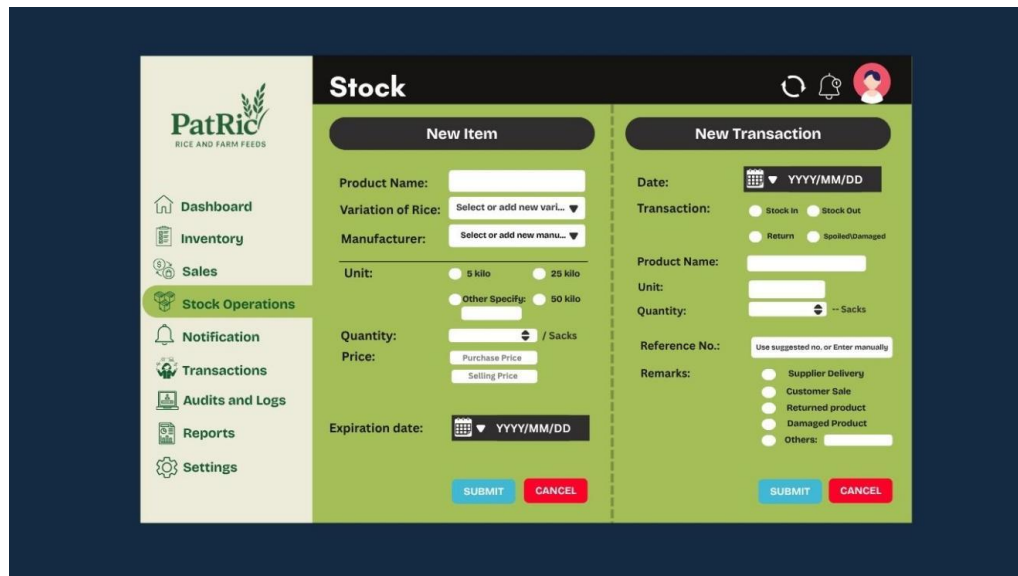
Figure 4.5.4 Sales

Figure 4.5.4 above shows a user-friendly sales system that makes it easy to process orders. Users can filter products by category—like rice, feeds, or all items—or use the search bar to quickly find what they need. Once products are selected, admin can add the quantity for each, and the system automatically calculates the total. On the right side, there's a mock receipt that updates in real time, showing all the order details, including the total payment and the change due. This simple and efficient setup helps admin manage sales quickly and accurately.



Figure 4.5.5 Sales Report

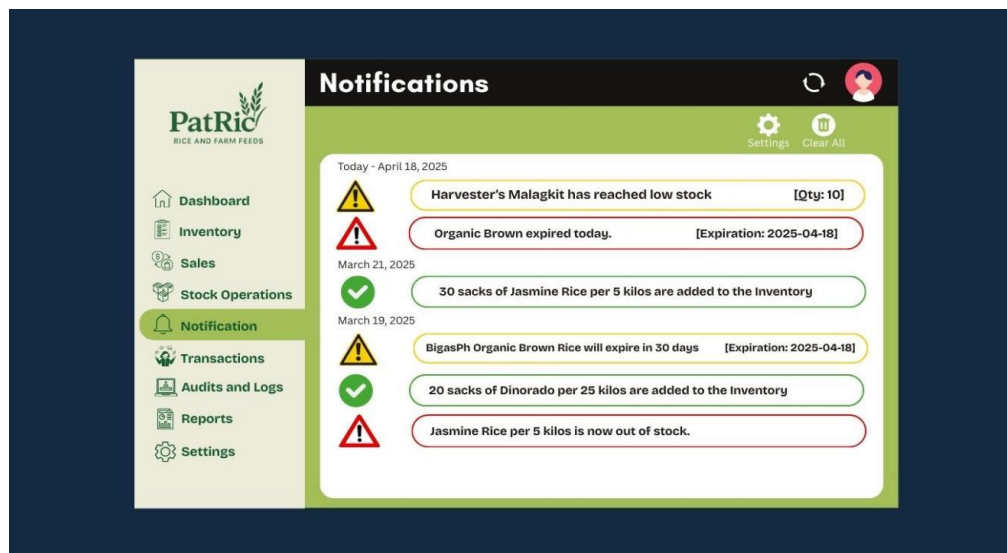
Figure 4.5.5 above highlights the structured layout and key functionalities of the system, designed to streamline transaction tracking and financial analysis. The interface presents a clear overview of sales performance, with visual representation such as graphs, percentages, and categorized reports. A calendar feature helps admin track sales data by specific dates, ensuring accurate record-keeping. The page also integrates year-to-date and monthly sales summaries, providing instant insights into business progress. At the bottom, comparative bar graphs illustrate trends over time, enabling users to evaluate growth patterns and adjust strategies accordingly. The intuitive design prioritizes automation, data accuracy, and accessibility, ensuring that businesses can make informed decisions with minimal manual intervention.



The screenshot displays the 'Stock' management interface of the PatRic system. On the left is a sidebar menu with options: Dashboard, Inventory, Sales, Stock Operations (highlighted), Notification, Transactions, Audits and Logs, Reports, and Settings. The main area is divided into two columns: 'New Item' and 'New Transaction'. The 'New Item' form includes fields for Product Name, Variation of Rice, Manufacturer, Unit (5 kilo, 25 kilo, 50 kilo), Quantity, Price (Purchase/Selling), and Expiration date. The 'New Transaction' form includes Date, Transaction type (Stock in, Stock Out, Return, Spoiled/Damaged), Product Name, Unit, Quantity, Reference No., and Remarks (Supplier Delivery, Customer Sale, Returned product, Damaged Product, Others). Both forms have 'SUBMIT' and 'CANCEL' buttons.

Figure 4.5.6 Stock Operations

Figure 4.5.6 illustrates the stock management page, designed to streamline inventory management and update, and transactions. The layout is divided into two key sections: New item, which allows users to input product details such as name, unit, quantity, price, and expiration date; and New transaction, where stock movements like additions, sales, returns, and damages are recorded. This structured design ensures efficient inventory control, real-time updates, and seamless transaction tracking, optimizing overall management for the business.



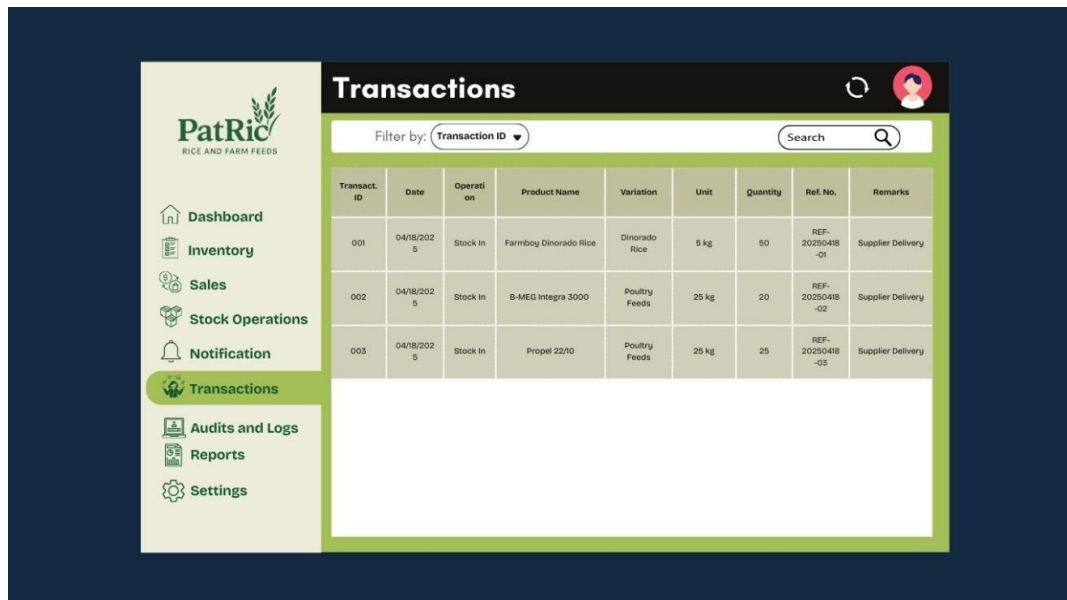
The screenshot shows the 'Notifications' section of the PatRic system. It features a sidebar menu identical to the previous figure. The main area lists notifications with icons and details. The notifications are as follows:

- Today - April 18, 2025**
 - Harvester's Malagkit has reached low stock [Qty: 10] (Warning icon)
 - Organic Brown expired today. [Expiration: 2025-04-18] (Warning icon)
- March 21, 2025**
 - 30 sacks of Jasmine Rice per 5 kilos are added to the inventory (Success icon)
- March 19, 2025**
 - BigasPh Organic Brown Rice will expire in 30 days [Expiration: 2025-04-18] (Warning icon)
 - 20 sacks of Dinorado per 25 kilos are added to the inventory (Success icon)
 - Jasmine Rice per 5 kilos is now out of stock. (Warning icon)

At the top right of the notifications area are 'Settings' and 'Clear All' buttons.

Figure 4.5.7 Notifications

Figure 4.5.7 above showcases the notification, which is designed to keep admin informed about system updates, stock alerts, and critical transactions. The layout is structured for quick visibility, displaying categorized notifications such as low stock warnings, successful transactions, pending approvals, and system updates. Each notification is timestamped, allowing users to track events efficiently. The interface ensures important alerts are easily accessible, helping businesses respond promptly to inventory changes, errors, or urgent actions.



Transact. ID	Date	Operation	Product Name	Variation	Unit	Quantity	Ref. No.	Remarks
001	04/18/2025	Stock In	Farmboy Dinorado Rice	Dinorado Rice	5 kg	50	REF-20250418-01	Supplier Delivery
002	04/18/2025	Stock In	B-MEG Integra 3000	Poultry Feeds	25 kg	20	REF-20250418-02	Supplier Delivery
003	04/18/2025	Stock In	Propel 22/10	Poultry Feeds	25 kg	25	REF-20250418-03	Supplier Delivery

Figure 4.5.8 Transaction Record

Figure 4.5.8 showcases the transaction record, which is designed to record and manage stock movements efficiently. Every transaction entered through "New Transaction" under Stock Operations—including sales, purchases, returns, and damages—is stored and displayed here for tracking and review. The layout ensures organized data entry with fields for item details, quantity, transaction type, and timestamps, helping users maintain accurate inventory records.

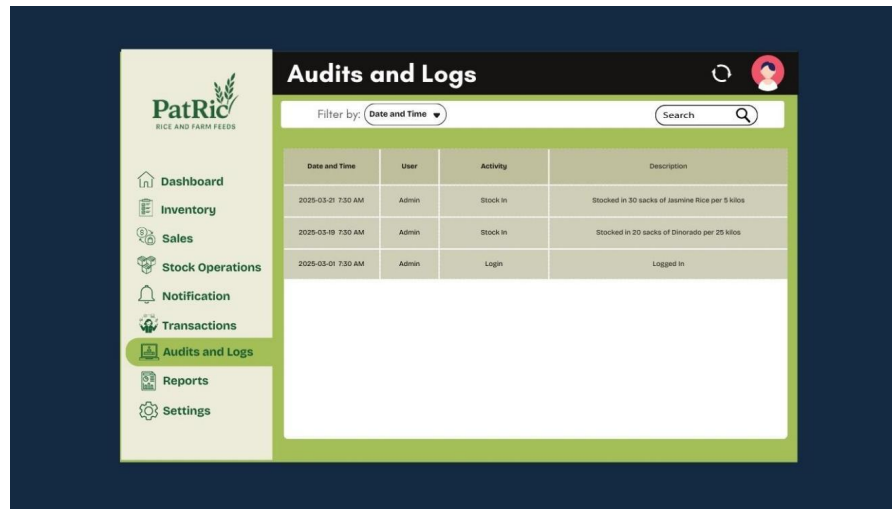


Figure 4.5.9 Audits and Logs

Figure 4.5.9 above shows the page for audits and logs, which helps keep track of user activities for better transparency and accountability. This part of the system allows user—specifically administrator—to filter and search logs for instance, date and time, making it easier to find specific records. Each entry in the log includes key details like when the activity happened, who performed it, what type of action was taken (such as logging in or stocking items), and a brief description. For example, on March 21, 2025, the admin stocked 30 sacks of Jasmine Rice, each weighing 5 kilos. There are also logs showing other stock-in activities and a login record by admin. This feature plays an important role in making sure all important actions are recorded, helping the business stay organized and secure.

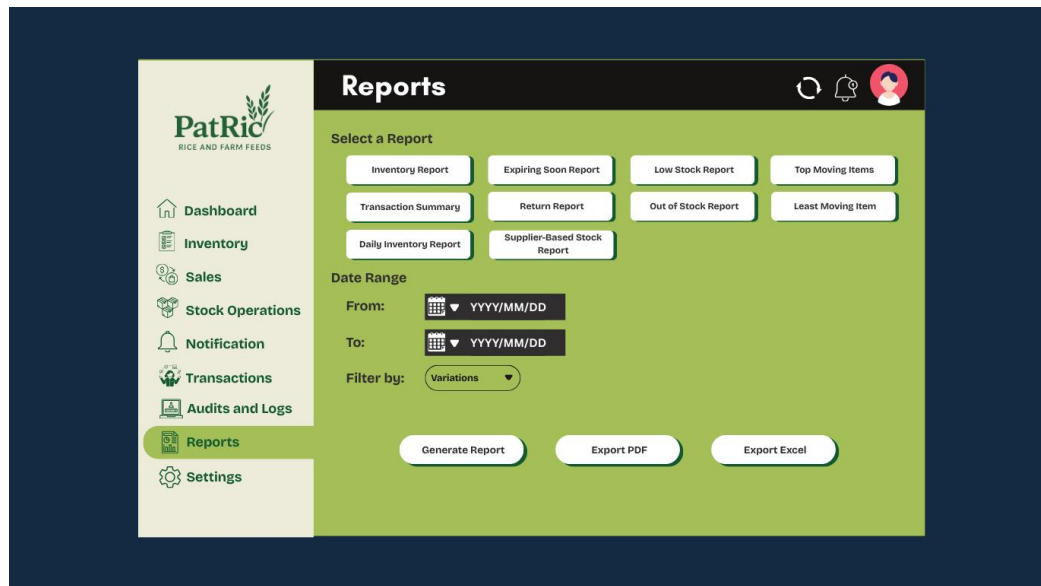


Figure 4.5.10 Reports

Figure 4.5.10 above shows the “Reports” page, where user can easily create and manage different reports. It provides a simple way to choose the type of report you want and set a specific date range using calendar inputs. There's also an option to filter the results, making it easier to narrow down the information you need. After setting everything up, users can either view the report on the system or download it as a PDF or Excel file. This feature helps users quickly access important data and keep records organized for better decision-making.

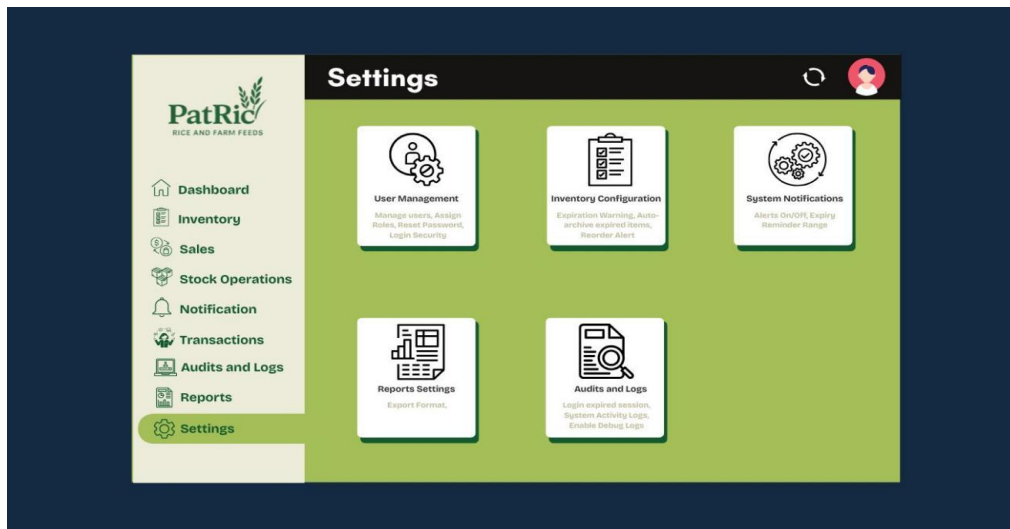


Figure 4.5.11 Settings

Figure 4.5.10 above shows the page for settings, here user can manage and customize key aspects of the platform. The page is organized into five main categories: User Management, which allows for adding users, assigning roles, resetting passwords, and managing login security. Inventory Configuration, where users can set expiration warnings, automatically archive expired items, and set reorder alert. And System Notifications, which gives control over alert settings and expiry reminders. Additionally, Report Settings let users choose how reports are exported, and Audits and Logs provide access to system activity records, session logs, and debug tools. This settings page helps users tailor the system to their specific operational needs, enhancing both flexibility and control.

4.6 Security Design

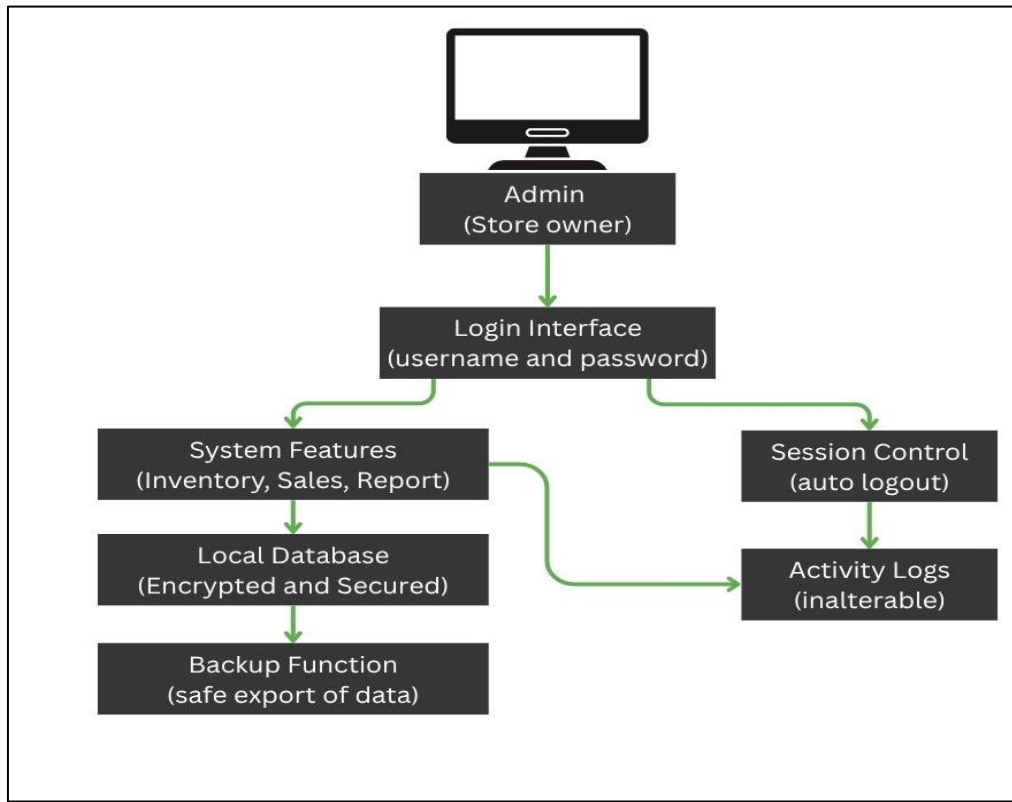


Figure 4.6 Security Design

The security design for the Sales and Inventory Management System implements a structured approach to data protection and access control. At the core of the system is the Admin (Store owner), who has the highest level of access. Security begins at the Login Interface, where user must enter a valid username and password to gain access.

Additionally, Session Control is integrated, featuring an auto-logout function to prevent unauthorized access due to inactivity. The system features include modules for inventory,

sales, and reports, with all data securely stored in an encrypted local database to protect sensitive information. Furthermore, activity logs are maintained for tracking user actions, accessible only to the admin and is inalterable. To safeguard data integrity, the system incorporates a backup function with encrypted export capabilities, ensuring secure



storage and recovery of essential records. This layered security approach enhances system reliability, minimizes risks, and ensures controlled access to critical business data.



CHAPTER V

Methodology and Implementation

This section outlines the methodology used in the development and implementation of the PatRicRice and Farm Feeds Store Sales and Inventory Management System. It highlights the approach taken, the tools, database implementation, system integration and data gathering techniques employed to identify user needs and system requirements, as well as the steps followed throughout the design, development, and deployment phases to ensure the system meets its intended goals.

5.1 Development Approach

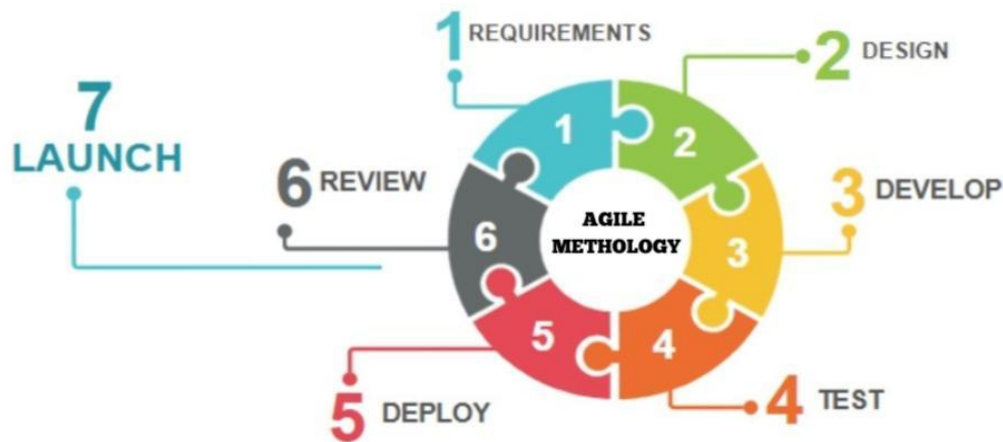


Figure 5.1 Agile Methodology

Figure 5.1 shows the development of the PatRicRice and Farm Feeds Store Sales and Inventory Management System used the Agile methodology. Agile is a flexible and step-by-step approach to software development. It breaks the work into small parts called sprints, where each sprint focuses on building specific features of the system. After each sprint, the progress is reviewed, and changes or improvements can be made based on feedback. This allows the system to improve over time and ensures that it meets the needs of the store.



Agile was chosen for this system because the store was shifting from manual to automated processes, which required close collaboration with the store owner. As the development progressed, it was important to make changes quickly based on the store owner's suggestions and business needs. With Agile, important features like adding products, tracking inventory, and recording sales were developed early and tested right away. This helped ensure that the system was accurate, useful, and aligned with the store's daily operations. Agile also made the project more organized, helped reduce errors, and allowed for continuous improvement until the final system was complete.

5.2 Programming Languages & Tools

The PatRicRice and Feeds Store Inventory Management System was developed using a variety of programming languages and tools suited for building reliable and efficient software. These technologies were selected to support key functions such as inventory tracking, sales processing, and report generation, ensuring the system could meet the store's operational needs. By combining these tools effectively, the developers created a user-friendly and functional system that helps improve daily business processes and store management.

HTML (HyperText Markup Language) structures the content of web pages using elements like headings, paragraphs, tables, and images. CSS (Cascading Style Sheets) styles these elements by adding colors, fonts, spacing, and layout for better visual appeal. JavaScript adds interactivity, enabling features such as form validation, dropdowns, and animations to make the website more dynamic and user-friendly.

For data storage and management, the system uses MySQL, a widely-used relational database management system. MySQL is responsible for securely storing and organizing essential data such as product information, inventory records, sales transactions, and user feedback. It allows for efficient data retrieval and manipulation through SQL queries, which are essential for displaying reports, tracking inventory levels, and analyzing user input.





In terms of development tools and supporting technologies, several key applications are used throughout the project. XAMPP is a free and open-source cross-platform web server solution package that includes Apache, MySQL, PHP, and Perl.

It is used to create a local server environment on the developer's computer, allowing for easy testing and debugging of the web application before deployment. Visual Studio Code is the chosen source-code editor for this project. It provides a user-friendly interface, syntax highlighting, code completion, and integration with version control systems, which helps streamline the coding process.

Bootstrap is used to design responsive, mobile-friendly web pages with pre-designed components and a grid system for a clean interface. Git serves as the version control system, tracking code changes, supporting collaboration, and ensuring a secure, organized development process.

5.3 Database Implementation

The database for the Sales and Inventory Management System is designed to securely store and manage all data related to products, inventory, sales, and users. It is implemented using MySQL, a reliable and widely used relational database management system.

The development process begins with creating a well-structured Entity-Relationship Diagram (ERD) to visualize the database schema. Tables such as Products, Inventory, Sales, and Admin are defined with proper primary and foreign key relationships to maintain data integrity and consistency.

Using XAMPP as a local development environment, the database is created through MySQL Workbench. SQL scripts are used to define table structures, constraints, and relationships.





To ensure effective database management, several key practices are implemented. Data validation is enforced both at the application and database levels to maintain the accuracy and consistency of the stored information. Regular backups are performed to protect against potential data loss caused by system failures or unexpected errors. Access controls are also established to limit unauthorized modifications, especially in sensitive tables such as Admin and Sales, ensuring that only authorized personnel can perform critical actions. Additionally, indexes are applied to frequently accessed fields like productID and saleID to enhance query speed and overall database performance. These measures collectively contribute to a secure, reliable, and efficient database environment. The system updates inventory levels upon each sale and generates alerts for low stock items, keeping the database synchronized with daily operations. In the future, the database can be migrated to a cloud-based server if online or multi-branch access becomes necessary.

5.4 System Integration

This study focuses on the development and integration of a modular sales and inventory management system that operates offline within a local network environment. The integration aims to connect a Point of Sale (POS) module directly to the inventory management system to enable real-time updates of stock levels immediately after each transaction. By automating inventory adjustments, the system minimizes human error and ensures accurate tracking of product availability. Additionally, the system integrates with Excel through PhpSpreadsheet, allowing the export of sales, stock, and audit reports in spreadsheet format for enhanced data analysis., enabling the production of printable, professionally formatted reports. To further support daily operations, the system includes thermal printer integration for issuing customer receipts directly from the POS interface. This multi-system integration enhances business efficiency by streamlining sales processing, inventory control, reporting, and receipt generation in a unified, offline platform tailored for administrative use.



5.5 Data Gathering Techniques

Data gathering is the process of collecting and analyzing information to gain a better understanding of a subject or problem. It is an essential step in research, as it provides the foundation for making informed decisions. Accurate and reliable data helps ensure that conclusions are based on facts rather than assumptions. The method of data collection can vary depending on the type of information needed, but the goal remains the same to gather insights that lead to better outcomes.

Table 5.5.1 Interview Questionnaires

No.	Questionnaires	Yes	No
1.	Has your business been operating for more than five years? <i>(Ang iyong negosyo ba ay tumatakbo nang higit sa limang taon?)</i>		
2.	Do you sell more than five varieties of rice? <i>(Nagbebenta ka ba ng higit sa limang uri ng bigas?)</i>		
3.	Do you offer farm feeds for different types of animals? <i>(Nag-aalok ka ba ng mga feed sa bukid para sa iba't ibang uri ng hayop?)</i>		
4.	Do you stock additional products like fertilizers or farming tools alongside rice and feeds? <i>(Nag-iimbak ka ba ng mga karagdagang produkto tulad ng mga pataba o kagamitan sa pagsasaka kasama ng bigas at mga feed?)</i>		
5.	Do customers prefer buying rice in bulk or smaller quantities? <i>(Mas gusto ba ng mga customer na bumili ng bigas nang maramihan o mas maliit na dami?)</i>		
6.	Do customers return for repeat purchases of specific rice or feed brands? <i>(Bumalik ba ang mga customer para sa paulit-ulit na pagbili ng mga partikular na tatak ng bigas o feed?)</i>		



7.	Are you satisfied with the current size and scope of your shop? <i>(Nasiyahan ka ba sa kasalukuyang laki at saklaw ng iyong tindahan?)</i>		
8.	Do you have plans to expand you business in the near future? <i>(May plano ka bang palawakin ang Iyong negosyo sa malapit na hinaharap?)</i>		
9.	Do your customers include households as well as local producers? <i>(Kasama ba sa iyong mga customer ang mga sambahayan pati na rin ang mga lokal na producer?)</i>		
10.	Do sales fluctuate significantly throughout the year? <i>(Malaki ba ang pagbabago ng mga benta sa buong taon?)</i>		
11.	Are you able to cover all operational costs with the current income? <i>(Nagagawa mo bang masakop ang lahat ng mga gastos sa pagpapatakbo gamit ang kasalukuyang kita?)</i>		
12.	Are there months when inventory is harder to maintain? <i>(Mayroon bang mga buwan kung kailan mas mahirap pangalagaan ang imbentaryo?)</i>		
13.	Do you manually record daily sales transactions? <i>(Manu-mano ka bang nagtatala ng mga transaksyon sa araw-araw na pagbebenta?)</i>		
14.	Have you experienced errors in stock counting or sales records? <i>(Nakaranas ka na ba ng mga error sa pagbibilang ng stock o mga talaan ng benta?)</i>		
15.	Do you maintain a recorder schedule for rice and farm feeds? <i>(Nagpapanatili ka ba ng iskedyul ng recorder para sa bigas at mga feed sa bukid?)</i>		

Table 5.5.2 Survey Questionnaires



No.	Questionnaires	Strongly agree	Agree	Disagree	Strongly Disagree
1.	Our shops tracks inventory manually without using digital system. <i>(Manu-manong sinusubaybayan ng aming mga tindahan ang imbentaryo nang hindi gumagamit ng digital system.)</i>				
2.	Our shop is using digital inventory or application. <i>(Ang aming tindahan ay gumagamit ng digital na imbentaryo o application.)</i>				
3.	Stock levels for each product are updated and in a timely manner using the current system. <i>(Ang mga antas ng stock para sa bawat produkto ay ina-update at sa isang napapanahong paraan gamit ang kasalukuyang sistema.)</i>				
4.	The current system effectively tracks the quantity of each product. <i>(Ang kasalukuyang sistema ay epektibong sinusubaybayan ang dami ng bawat produkto.)</i>				
5.	It is easy to identify which products are selling fast and which are slow-moving with our current method. <i>(Madaling matukoy kung aling mga</i>				





	<i>produkto ang mabilis na nagbebenta at kung alin ang mabagal sa aming kasalukuyang pamamaraan.)</i>				
6.	Managing different product categories is simple with the current setup. <i>(Ang pamamahala sa iba't ibang kategorya ng produkto ay simple sa kasalukuyang setup.)</i>				
7.	Generating sales and inventory reports is time-consuming. <i>(Ang pagbuo ng mga ulat sa benta at imbentaryo ay nakakaubos ng oras.)</i>				
8.	Decision-making for restocking is often based on guesswork rather than data. <i>(Ang paggawa ng desisyon para sa muling pag-stock ay kadalasang batay sa hula sa halip na data.)</i>				
9.	A well-organized inventory list will help in managing product categories effectively. <i>(Ang isang maayos na listahan ng imbentaryo ay makakatulong sa epektibong pamamahala sa mga kategorya ng produkto.)</i>				
10.	A centralized system for inventory and sales would improve overall				





	business productivity. <i>(Ang isang sentralisadong sistema para sa imbentaryo at mga benta ay magpapahusay sa pangkalahatang produktibidad ng negosyo.)</i>				
11.	The shop often experiences out-of-stock issues due to inventory management. <i>(Ang tindahan ay madalas na nakakaranas ng mga isyu sa out-of-stock dahil sa pamamahala ng imbentaryo.)</i>				
12.	The shop needs a system that provides detailed insights on product trends. <i>(Ang tindahan ay nangangailangan ng isang sistema na nagbibigay ng mga detalyadong insight sa mga trend ng produkto.)</i>				
13.	A digital system could automate stock reordering for frequently purchased items. <i>(Maaaring i-automate ng isang digital system ang muling pag-aayos ng stock para sa mga madalas na binibili na item.)</i>				
14.	A new system should provide real-time inventory updates to avoid stock shortages. <i>(Ang isang bagong system ay dapat magbigay ng real-time na mga update sa imbentaryo</i>				



	<i>upang maiwasan ang mga kakulangan sa stock.)</i>				
15	The shop struggles with keeping accurate stock records using the current method. <i>(Nahihirapan ang tindahan sa pagpapanatili ng tumpak na mga talaan ng stock gamit ang kasalukuyang pamamaraan.)</i>				

5.6 Gantt Chart

Table 5.6.1 Gantt Chart for February

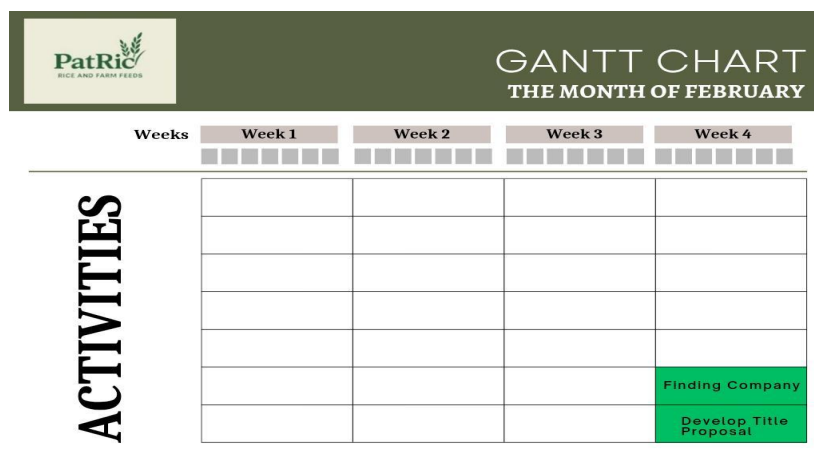


Table 5.6.1 The Gantt chart for the month of February, designed for PatRic Rice and Farm Feeds, visually outlines the project timeline across four weeks. It displays a structured schedule of activities aligned with weekly progress tracking. The chart currently includes two key activities scheduled in Week 4: "Finding Company" and



"Develop Title Proposal." These tasks are highlighted in green, indicating that both are planned to be executed concurrently during the final week of the month. The chart provides a clear visual representation of the project timeline, aiding in the effective planning and monitoring of task completion within the specified period.

Table 5.6.2 Gantt Chart for March

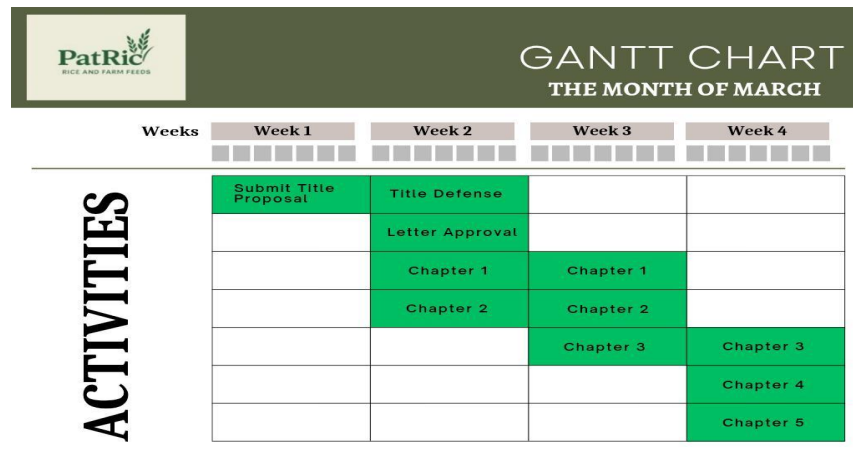


Table 5.6.2 The Gantt chart for the month of March, created by PatRic Rice and Farm Feeds, outlines a timeline of activities spread across four weeks. In Week 1, the task is to submit the title proposal. Week 2 includes multiple activities: the title defense, obtaining letter approval, and the beginning of work on Chapters 1 and 2. Chapter 1 and Chapter 2 continue into Week 3. During Week 3, work on Chapter 3 also begins and extends into Week 4. Finally, in Week 4, work progresses on Chapters 4 and 5. The chart provides a clear visual representation of project milestones and the duration of each task to help manage time and monitor progress efficiently.

Table 5.6.3 Gantt Chart for April

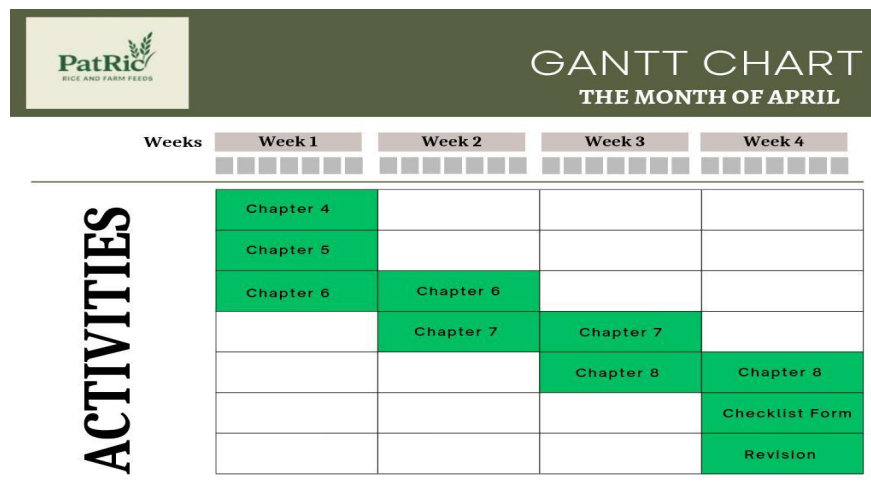


Table 5.6.3 The Gantt chart for the month of April, provided by PatRic Rice and Farm Feeds, details the continuation and completion of project activities. In Week 1, work is scheduled on Chapters 4, 5, and 6. Chapter 6 extends into Week 2, during which work on Chapter 7 also begins. Chapter 7 continues into Week 3. In Weeks 3 and 4, Chapter 8 is tackled, covering the final content sections. Week 4 is also dedicated to finalizing project requirements, including completing the checklist form and conducting revisions. This chart provides a structured timeline to ensure tasks are systematically completed in preparation for final submission.

Table 5.6.3 Gantt Chart for May

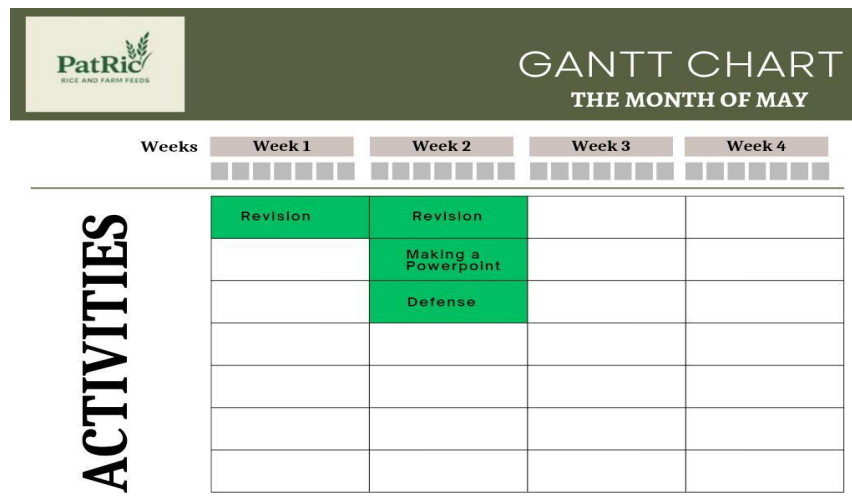


Table 5.6.4 The Gantt chart for the month of May, by PatRic Rice and Farm Feeds, outlines the final stages of the project. In Week 1 and Week 2, revision work continues to polish and finalize the content. During Week 2, efforts also begin on making a PowerPoint presentation to support the final defense. The defense itself is scheduled to



take place in Week 2. Weeks 3 and 4 are left open, possibly for contingency, follow-up tasks, or feedback incorporation. This chart highlights the culmination of the project process, focusing on refinement and presentation.

CHAPTER VI

System Testing

This chapter outlines the testing process for the Patric Rice and Farm Feeds Store Sales and Inventory Management System. It covers the test plan, key test cases, and types of testing such as performance, security, and user acceptance. The goal is to ensure the system works correctly, performs well under load, protects data, and meets user needs. The results confirm the system's readiness for deployment.

6.1 Test Plan

This section outlines the structured plan for testing the Sales and Inventory Management System for PatRicRice and Farm Feeds, developed for the store located in Zone 1 San Salvador, Lipa City, Batangas. The goal of this test plan is to ensure that the system works as expected, is easy to use, and is free of critical errors before it is deployed for real-world use.





The testing will focus on identifying and resolving any errors or issues within the system. The process will also validate that the system meets the needs of the store owner and enhances business efficiency by automating sales and inventory tracking.

Table 6.1 Test Plan

Timeline	Testing Phase	Description
Week 1	Unit Testing	Test individual functions (e.g., inventory, adding a new product, sales processing, reports) to ensure they work correctly.
Week 1	Integration Testing	Ensure that different modules (e.g., sales, inventory, reporting) interact seamlessly without errors.
Week 2	System Testing	Assess the system's overall functionality.
Week 3	Security Testing	Test login security, access control, and data protection
Week 4	Performance Testing	Evaluate speed, reliability, and system load handling.
Week 4	User Acceptance Testing (UAT)	Ensure the system meets the needs and expectations of the store owner.
Week 5	Bug fixing and re-testing	Address and fix any issues found during UAT or previous testing phases.

6.2 Test Cases

The system's testing framework spans several critical modules, each containing specific test cases to validate functionality and performance. The User Login Module includes three essential test cases that ensure the robustness of the authentication process. TC-001 confirms successful login by having a user access the login page, enter a registered email and the correct password, and click "Sign In," with the expectation of being redirected to the dashboard. TC-002 tests the system's response to invalid





credentials by entering incorrect login details and verifying that an appropriate error message, “Invalid email or password,” is displayed. TC-003 assesses the password reset functionality, where a user selects “Forgot password?”, provides a registered email, and expects to receive a reset instruction email.

The Dashboard Module is evaluated through TC-004, which verifies that upon successful login, the user is presented with a dashboard displaying key summaries such as inventory data, sales figures, and system alerts. In the Inventory Management Module, three test cases validate core inventory functions. TC-005 tests the addition of a new product by navigating to the inventory section, selecting “Add New,” entering product details, and saving—expecting the new product to be visible in the inventory list. TC-006 checks the update process for existing product details, ensuring changes such as price or quantity are accurately reflected. TC-007 verifies that deleting a product removes it from inventory records.

The Sales Module focuses on transaction processing through two test cases. TC-008 validates the sale completion process by selecting a product, entering quantity, and generating a receipt via the “Print Receipt” option, with the expectation of recording the transaction successfully. TC-009 assesses the accuracy of change calculation when a cash amount greater than the total is provided. The Stock Operations Module, via TC-010, confirms that product quantities are updated in real time following a sale.

The Notification Module is tested with TC-011, which ensures that the system triggers a low stock alert when inventory levels fall below a predefined threshold, displaying a notification in the alert panel. The Transaction Module includes TC-012, verifying that all completed sales are accurately logged and displayed in the transaction history with correct details. The Reports Module is assessed with TC-013, which tests the generation of comprehensive sales reports based on selected reporting periods, ensuring the inclusion of all relevant data.

Finally, the Settings Module is validated through TC-014, which tests the ability to update user account settings including email, password, inventory configurations,





system notification, reports settings, and audit logs. This test confirms that all user-initiated changes are saved and reflected accurately across the system

6.3 Performance Testing

To implement a performance testing of PatRicRice and Farm Feeds Store Sales and Inventory Management System . The project team went into a front and back testing to ensure that the system's speed, efficiency, and capacity were up to the standards.

Since the system is intended to run offline, testing will be designed to ensure that core functionalities (such as processing sales, updating inventory, and generating reports) respond quickly and reliably. We aim for these operations to complete within 2 to 4 seconds to maintain a smooth user experience. To evaluate efficiency, we plan to examine how the system utilizes local computing resources, including how the PHP backend processes tasks and how well database queries perform. SQL query analysis will be used to detect and resolve any inefficiencies in data handling. For capacity, we will test how the system performs as more inventory records, sales logs, and reports are stored over time.

6.4 Security Testing

Security testing of the system was intended to identify vulnerabilities within the system, data protection threats, and unauthorized access threats applicable to PatRicstore's operations. These vulnerabilities were subsequently tested with automated scanning tools and manual penetration testing for issues in areas like authentication, authorization, and session management.

For PatRicRice and Farm Feed Store's system, security testing was designed to safeguard business-critical data and restrict system access to authorized personnel only (store owner as admin). Even though the application runs in a closed local server environment, it was essential to protect against common vulnerabilities like SQL





injection and unauthorized access. The proposal includes implementing prepared SQL statements, validating all user inputs, and hashing passwords securely with bcrypt. The system uses session-based authentication to manage admin access. A basic threat model was created to map potential risks, and audit logs will be used to monitor administrative actions. These practices are intended to establish a secure, well-controlled environment for managing the store's inventory and sales data.

6.5 User Acceptance Testing (UAT)

User Acceptance Testing (UAT) will be done to check if the proposed Sales and Inventory Management System for PatRicRice and Farm Feed Store fits the actual needs of the store. Since the system is meant to be used only by the store owner, who also acts as the admin, they will be the one to test the system. The testing will involve trying out common tasks that happen during daily operations, like logging in, adding and updating products, recording sales, and generating reports. These tasks will help confirm if the system is easy to use, accurate, and suitable for how the store operates. For instance, the Owner will check if products are saved properly, if the inventory updates correctly, and if reports show the right data.

All test outcomes and user feedback will be reviewed by the development team, and any issues will be addressed before final deployment. This UAT process is essential in confirming that the proposed system will function reliably, improve efficiency, and support the store's transition from manual to automated inventory and sales management.





CHAPTER VII

Deployment and Maintenance

This chapter presents the structured testing approach used to evaluate the PatRicRice and Farm Feeds Store Sales and Inventory Management System, developed for the store located in Zone 1, San Salvador, Lipa City, Batangas. The goal of the testing process is to ensure the system performs reliably, meets user requirements, and operates securely and efficiently before full deployment. It covers the overall test plan, detailed





test cases, and various testing phases including performance, security, and user acceptance testing.

7.1 Deployment Plan

The deployment of Sales and Inventory Management System for PatRicRice and Farm Feeds Store will follow a clear and organized process. It begins with pre-deployment preparation, where the system will undergo a final review to ensure that all major features such as login, inventory, sales, reports, and notifications are fully functional and bug-free. All existing store records, will be backed up to prevent any data loss. The necessary hardware and software, including a computer, database server, and web server, will be installed and set up. Next, the system will be installed and configured. This involves setting up the database, with necessary tables for products, users, sales, and other records, and deploying the application to a local server. Configuration will include setting database connection details, enabling alerts for low stock and email notifications. After setup, the system will be tested in the real store environment. This includes checking if all functions work correctly, confirming secure access for admin user, and running performance tests to make sure the system can handle daily operations smoothly. Following testing, the owner will receive training on how to use the system effectively. A user manual with clear instructions and screenshots will be provided, along with technical support contact details. Once training is complete, the system will go live for daily use. During the first few days, its performance will be monitored closely to resolve any issues quickly. Finally, post-deployment maintenance will include automatic backups, system updates, and ongoing support. This deployment plan ensures a smooth transition to a digital system while keeping store operations efficient and data secure.

7.2 User Training

User training will be dedicated to the store owner, who will be the system administrator. The training will start with an initial orientation session, where the admin will be shown the primary features of the system, such as logging in, handling inventory,





processing sales, creating reports, setting up notifications, and configuring system settings. After the orientation, hands-on training will be conducted to ensure that the admin is able to do all tasks independently. The admin will be taught how to add, update, and remove products from stock, track stock levels, make sales transactions, and offer discounts. Particular emphasis will be placed on creating sales reports, viewing stock movement history, and getting low stock notifications. The admin would also learn advanced system administration, such as setting up and managing user accounts, reviewing activity logs, and executing data backups. A comprehensive user guide will be shared with the admin, including step-by-step steps with images to make it simple to navigate. The guide will include all the system modules, such as login, dashboard, inventory, sales, notifications, reports, and settings. Troubleshooting suggestions will also be included in the guide so the admin can correct common issues by themselves. Practical exercises, including the execution of routine jobs under observation, will also form part of training. This facilitates learning in that it boosts confidence for the admin to be able to use the system effectively. Follow-up assistance after training, during which help or clarification on the system usage will be called for, guarantees the admin fully independent to maintain the system by himself.

7.3 Maintenance Plan

The Sales and Inventory Management System maintenance plan is made to keep the system reliable, secure, and efficient once deployed. The plan will address key areas, such as monitoring of the system, updates, and support.

Monitoring of the system will include checking the performance of the system, including loading speed and response time, frequently but especially during peak usage. The admin will check system logs to determine any odd behavior or errors, guaranteeing inventory and sales information is accurate. Any inconsistencies in data will be looked into right away. System updates will be regularly done to ensure system security and performance. The updates can be security patches to counter new threats, feature updates to improve according to user suggestions, and bug fixes to eliminate any errors or faults





found during system use. The system will be backed up before any significant updates are implemented, and the admin will be intimated beforehand. Automated data backups will be performed daily or weekly based on the volume of transactions for each store. Backups will be done with vital information like inventory, sales history, and user activity logs. In case of data corruption or accidental data loss, the system can easily be restored from the latest backup, maintaining business continuity. The admin will be provided with constant support to fix any problems arising during the usage of the system. Such assistance could be through telephone consultations, distance support, or visits on the premises, based on the kind of issue. There would also be an in-depth user manual that acts as a point of reference to learn quickly basic functions and also solve problems by themselves. With this maintenance program, the Sales and Inventory Management System would always be safe, current, and optimized for use, rendering the store significant benefits in the long term.





CHAPTER VIII

Findings, Conclusions, and Recommendations

This section presents the key findings, conclusions, and recommendations derived from the development and implementation of the Sales and Inventory Management System at Patric Rice and Farm Feeds Store. It highlights the system's impact on operational efficiency, accuracy, and business decision-making, and offers practical suggestions for future improvements and enhancements to support continued growth and sustainability.

8.1 Summary of Findings

The implementation of an accurate and efficient inventory management system at **Patric Rice and Farm Feeds Store** has proven essential in ensuring real-time tracking of stock levels. The system effectively minimizes discrepancies between physical and recorded inventory, preventing common issues such as overstocking, stockouts, and potential loss of sales. With improved accuracy, the system supports seamless inventory monitoring and contributes to maintaining optimal stock levels, ultimately improving customer satisfaction and operational reliability.

Moreover, the optimized system has significantly reduced the time and effort required for daily operations such as inventory counting, transaction logging, and report generation. This improvement in efficiency translates to faster and more reliable processes, reducing manual errors and enhancing staff productivity. The automation of routine tasks has allowed employees to focus on more strategic aspects of the business, thereby increasing overall effectiveness.

The system's ability to generate automated and customizable reports on sales, stock movements, and key performance indicators has empowered management with valuable insights for data-driven decision-making. These comprehensive reports facilitate improved business planning, better resource allocation, and timely identification of trends.





and issues. Overall, the system not only streamlines operations but also serves as a strategic tool for growth and sustainability

Conclusions

In conclusion, the implementation of the inventory management system at Patric Rice and Farm Feeds Store has significantly enhanced operational efficiency, accuracy, and decision-making. By enabling real-time stock tracking, reducing manual workload, and generating detailed reports, the system has addressed key inventory challenges and supported more effective business planning. This transformation not only streamlines daily operations but also positions the store for sustained growth, improved customer service, and long-term success.

8.2 Recommendations

To keep improving the Sales and Inventory Management System for PatRicRice and Farm Feeds Store, we recommend making it mobile-friendly for easy access and secured anytime, anywhere. Also, integration of cloud base to improve data integrity and protection is highly recommended for future researchers. It would also be great to add features that track customer preferences and make security more advance. Lastly, the system should be ready to grow with the business and even connect to online selling platform in the future.





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