Information System Technology Plan for Felcris Supermarket Inc.

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ABSTRACT

This study aims to demonstrate how the proposed system can enhance and optimize the current business operations of Felcris Supermarket Inc., Carmen Branch. According to the research, a well-designed information system can help with a number of current issues, such as poor consumer engagement, a Point of Sales (POS), and an inaccurate inventory management system.

The proposed solution aims to streamline daily operations, improve accuracy, and enhance responsiveness to customer needs. The business can significantly boost operational efficiency and strengthen customer relationships by integrating modern tools such as customer feedback portals, Point of Sales (POS), and a more efficient inventory system.

The researchers recommend this system to help the Carmen branch adapt to evolving customer expectations, digital trends, and internal performance goals. A strategic move to guarantee a more competitive and sustainable future for the company is to embrace ethical and creative technology solutions.

Keywords: Point of Sales (POS), Inventory Management System, Business Intelligence

INTRODUCTION

Background of the Company

Felcris Supermarket Inc., Carmen branch, was established in 2013 as part of the expanding network of Felcris Supermarket branches across Davao del Norte. Located in Carmen, this branch operates 24/7 as a mini-mall, offering convenience and accessibility to residents. The facility features a two-story layout, with the ground floor serving as a full-service supermarket and the second floor dedicated to clothing, school supplies, and general merchandise.

The branch sources its products from a trusted sister company, ensuring a steady supply of goods and much lower prices despite their discounted products and promos. The Supermarket has been experiencing low sales performance due to limited marketing efforts, particularly on Digital and online platforms. In addition, the Supermarket lacks an inventory management system that requires them to manually verify the products during restocking.

Current Routines and Business Processes

Current Routines

Carmen Branch operates 24/7, requiring a consistent and coordinated routine, including cleaning and maintaining the store, checking inventory stocks, and constantly shifting workers to ensure smooth business operations.

The establishment's second floor, which is dedicated to clothing and school supplies, follows similar routines in terms of sales and inventory but operates with minimal system support. They close around 8 pm and open at 8 am.

Table 1: Event tables of Felcris Supermarket Inc.

	Event Table
Time	**Task**
7:30 am – 8:00 am	Time In (Day Shift)
8:00 am - 8:30 am	Opening (Department Store)
8:30 am – 11:30 am	Working Hours
11:30 am – 12:30 pm	Lunch Break
12:30 pm – 5:00 pm	Resume Working Hours
5:30 pm – 6:00 pm	Time out (Day shift)
6:00 pm – 6:30 pm	Closing Time (Department store) Time In (Night Shift)
6:30 pm – 11:30 pm	Working Hours (Night shift)
11:30 pm – 12:30 pm	Break Time (Night shift)
12:30 pm – 5:30 am	Resume Working Hours (Night shift)
5:30 am – 6:30 am	Cleaning, and Setting up Store
6:30 am – 7:30 am	Time out (Night Shift)

Business Process

The business opens 24/7 since it has a convenience store on the first floor and a Department Store above, which closes at 8 pm and opens at 8 am. Since they have two departments, they have separate employees for each area. The convenience store has Day and Night employees who are constantly shifting between hours.

They have a sister company that directly offers them stock deliveries, making their products cheaper. They offer products at discounts and promos for their customers and a loyalty card that serves as a premium for customers. There is also the department store, which offers clothes and supplies at a low price.

Existing Technologies

Felcris Supermarket Inc. integrated an attendance monitoring system to monitor and track employees scheduled shifts and working hours.

Problems Found

Lacks an Inventory Management System

All stock monitoring is done manually, especially during deliveries. Employees have to visually check shelves for sold-out items, which is time-consuming and prone to human error.

Lack of IT Infrastructure

The business relies on traditional methods and outdated technologies that hinder operations, reduce productivity, increase costs, and pose potential security risks.

Goal and Objectives

General Objective

The researchers aim to propose a Retail Management System consisting of three key components, an Inventory Management System for accurate monitoring of stocks and deliveries, a Point-of-Sale System (POS) to track sales and items on shelves to ensure quality goods and fresh items are on display, and a Business Intelligence for customer analytics to further enhance customer relationship. These systems are designed to help businesses operate smoothly and automate their workloads.

Specific Objectives

The specific objective of this study is to enhance the business process and routines of the store. The researcher aims to

1. To design and develop an improved inventory management system that ensures accurate stock monitoring, reduces manual checking, and minimizes discrepancies during restocking.

2. To recommend an Information System organize customer information, track interactions and drives sales.
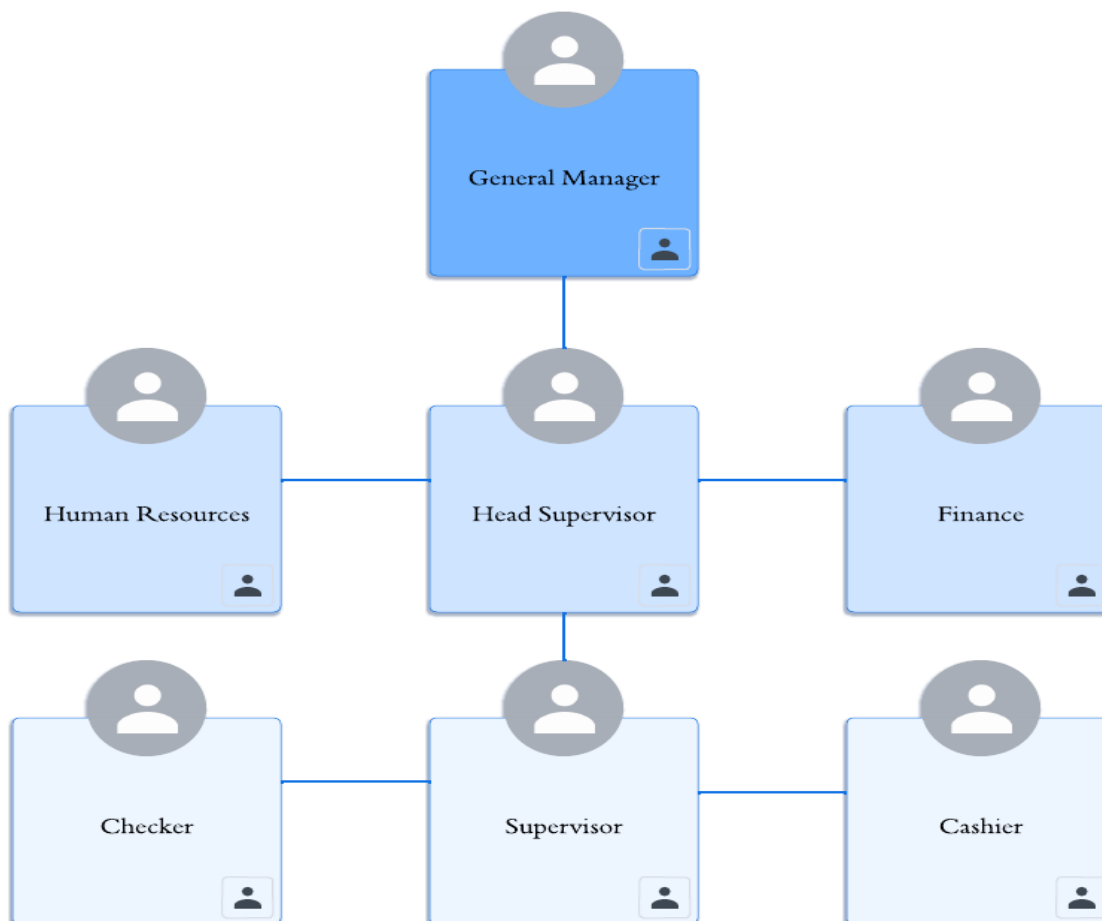
Organizational Structure

Fig 1: Organizational Structure of Felcris Supermarket Inc.

Felcris Supermarket Inc. has a general manager who runs and organizes the firm, followed by the Head Supervisor, who aids the general manager and manages the Supermarket's personnel.
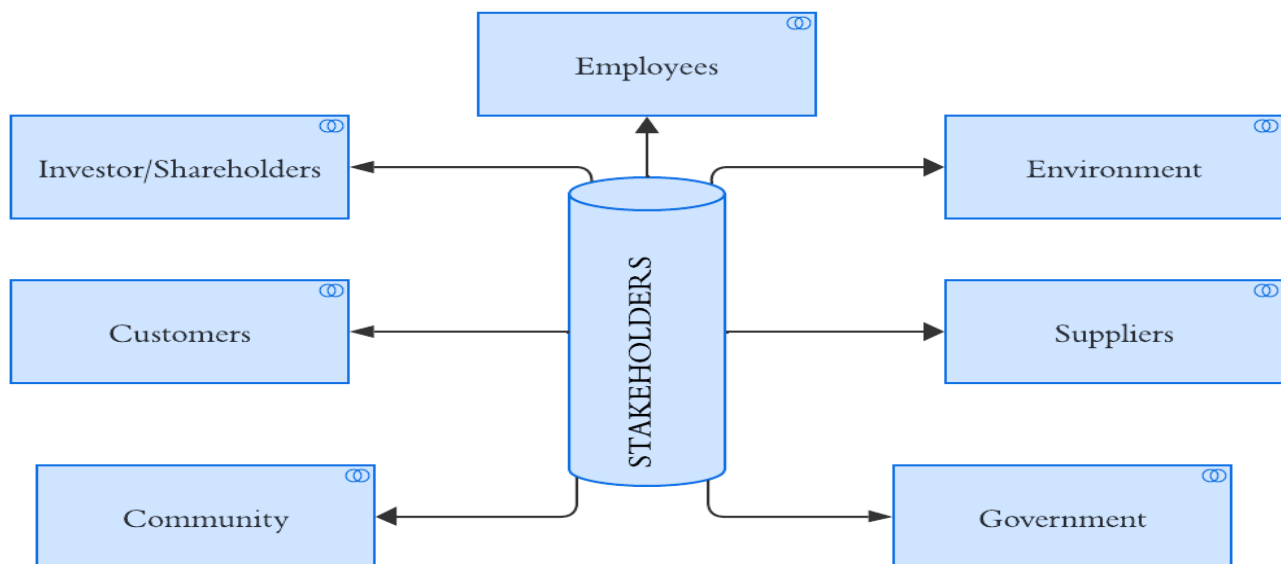
Stakeholders

Fig 2: Stakeholders of Felcris Supermarket Inc.

Employees, consumers, investors, suppliers, the government, the environment, and communities can all be important Felcris Supermarket stakeholders.

Proposed Information Systems

The researchers proposed a Retail Management System. Implementing an integrated system combining inventory management, Point-of-Sale (POS), and Business Intelligence (BI) is crucial to running a successful business. Many small businesses rely on traditional methods and manual labor for payments, stocking, and inventory tracking, leading to inaccurate sales and poor inventory management.

Review of the Related Study

Related Literature

Running a small retail store in the retail industry, which includes establishments like pharmacies, hardware stores, supermarkets, shopping centers, bookstores, and many more, requires a basic information system.

The inventory management system is a critical function within any organization that deals with physical goods, whether in manufacturing, retail, or distribution. Inventory management ensures that the correct quantity of products is available at the right time, minimizing excess inventory and stockouts [1]. Effective inventory management depends on reducing expenses, improving customer satisfaction, and preserving operational efficiency.

Inventory management nowadays is no longer confined to the manual process. Computerizing processes in today's offices are already a mandate for every organization. In the Philippine setting, using Information Technology products and applications is sought after by government institutions as early as the year 2000 when former President Joseph Ejercito Estrada addressed his keynote speech on the Knowledge Economy Conference that he would especially want to see the broader, effective, widespread and extensive use of information and communications technology in all sectors of government specifically in making sure that citizen has open use of information and an immediate and the government's effective giving out of service to the people [2].

Customers walk into a store expecting to have the products available and of good quality. Retail stores that lack a system that monitors sold-out products, or expired goods will likely have low customer sales and loyalty.

Retailers lacking POS, such as small retail stores, can experience a slow transaction process due to manual operations [3]. A POS can help solve this problem and improve the business process.

Business Intelligence refers to the processes, technologies, and equipment used to gather, analyze, and convert data into meaningful information for better strategic planning for a business. The acceptability of integrating Business Intelligence with mobile commerce in a local business. It improved customer engagement, use efficiency, user satisfaction, and reliability [4]. This allows businesses to anticipate sales trends and customer demands.

Business Intelligence significantly impacts Small and Medium Enterprises (SMEs). It facilitates and processes accurate data, allowing them to generate informed decisions. This allows a business to meet customer needs and boost employees' performance.

A study shows that implementing Business Intelligence can improve productivity and decision-making. Although large enterprises have long engaged in business intelligence, local businesses have shown interest in and beneficial outcomes from applying business intelligence [5]. These three systems can be integrated into one system. A Retail Management System.

Related System

A Retail Management System (RMS) is a platform that unifies the management of every retail industry aspect, including accounting software, staff management, and inventory flow. By integrating various modules into a single system, departments can work together more effectively, and, more importantly, internal processes can be better controlled, boosting overall corporate efficiency [6].

The Retail Management System aims to provide an application for Retail System staff and owners to control business processes in retail chains and online stores. The RMS system integrates business processes from cataloging and tracking inventory, managing sales in stores and online stores, and storing clients' and personnel's info.

Small retail management systems owned by small retailers are essential. This helps the retailers minimize the loss of their retail outlets. As a developing country, it must move forward with technology [7]. Accordingly, even small retail stores at the village level should be developed by introducing technological improvements. This can be done by introducing some technology to small retail stores.

1.1 Name of Information System

A retail management system is a piece of software designed to make different parts of retail operations more efficient. Retail accounting, inventory control, customer relationship management (CRM), and point-of-sale (POS) systems are all integrated into one platform to assist small business in running their businesses.

1.1.1 System Functionality

1. Stock Monitoring

2. Sales Transaction Processing

3. Customer Feedback System

4. Sales Reports

System Architecture
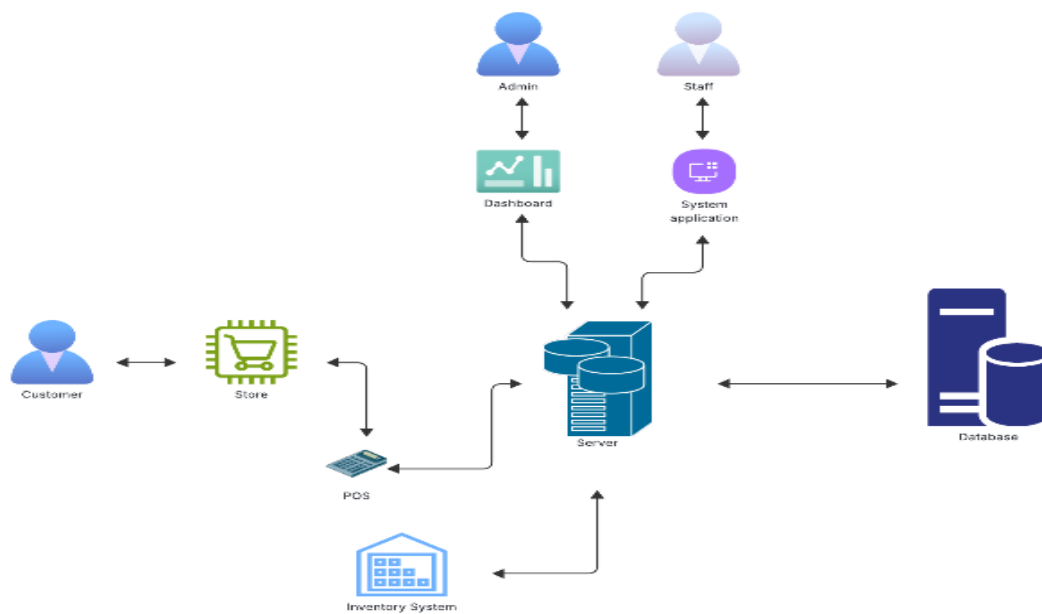

Figure 3. System Architecture of Felcris Supermarket Inc.

Cost Structure

Table 2. Cost Structure

Cost Description	Cost
Operational Cost	₱65,000
Maintenance Cost	₱5,000
Total Cost: ₱ 70,000	

Proposed It Infrastructure and Peopleware

Proposed Computer Hardware

The researchers suggest improving both efficiency and speed in working.

Desktop computer

A computer device designed to fit on top of a desk can store essential transactions and secure data.

Table 3. Computer Hardware

Computer Hardware	Specification	Unit Cost	Qty	Total Cost
Desktop Computer Set	**Brand Name:** Dell i5 **Item model number:** Dell OptiPlex 3020 **Processor:** 3.4	₱10,3000	1	₱10,3000

	GHz Intel Core i5 **Ram:** 4GB **Hard Drive:** 1TB **Coprocessor:** Intel HD 4600			
Overall Cost: ₱10,300				

Proposed Operating System Platforms

The researchers proposed an operating system that is fundamentally fast, familiar, safer, more secure, and can support software applications.

Windows 10 Home

A Microsoft operating system that supports software applications and offers built-in security features include anti-virus, firewall, and internet protections.

Table 5. Operating System

OS Platform	Specification	Unit Cost	Quantity	Total Cost
Windows 10	**Processor:** 1GHz **RAM:** 1GB for 32-bit or 2GB for 64-bit **Hard Disk space**: Up to 20GB available hard disk space **Video card:** 800 x 600 screen resolution or higher. Direct 9 Graphics processor with WDDM driver	₱5,999.00	1	₱5,999.00
Overall Cost: ₱ 5,999.00				

Proposed Enterprise Software Applications

Enterprise software helps the business's growth and is a tool used for running a business effectively; it helps and manages the entire business process efficiently.

Business Intelligence (BI) helps businesses make more intelligent decisions by turning raw data, like sales, inventory, or customer habits, into clear and valuable insights. Instead of guessing what works, you can see trends, spot problems early, and find growth opportunities. It is like having an intelligent assistant that helps you understand your business better daily.

Customer Relationship Management (CRM) software keeps track of every interaction with its customers, whether a quick chat on social media, a phone call, or an email. It stores notes and details, so you always know where things left off, making building strong relationships easier and ensuring no loyal customer is forgotten.

Table 6. Enterprise Software Applications

Enterprise Software	Specification	Unit Cost	Quantity	Total Cost
Business Intelligence	Data Mining, Reporting, Data Visualization, Querying	₱2,500	1	₱2,500
Overall Cost: ₱2,500				

Proposed Data Management

Data is critical to the business. It contains information that can be used to determine the best course of action. However, if not well-organized, it can be overwhelming. It may go to waste without yielding any benefits.

Table 7. Data Management

Proposed Data Management	Specification	Unit Cost	Qty
Microsoft SQL Server	Create database, maintain database, analyze data, generate reports	FREE	1
Google Drive	100GB Cloud Storage	₱119.00/ mo.	1
Overall Cost: ₱119.00			

Proposed Network & Telecommunications

Since the proposed devices require constant operation, the researchers include a network infrastructure with a router and switch to ensure smooth connectivity among all devices.

Table 8. Network & Telecommunications

Proposed Network & Telecommunications	Specification	Unit Cost	Qty	Total Cost
Router	Tp-link 450Mbps Wireless N Router TL-WR940N	₱1,275.00	1	₱1,275.00
Switch	TP-Link TL-SG1024D	₱3,000.00		₱3,000.00
Cable	50M CAT5e Ethernet UTP LAN Cable	₱286.00	1	₱286.00
Overall Cost: ₱4,561.00				

Proposed Internet Platforms

The business is a convenience store, so local delivery is a viable option. The ideal platform to think about is Facebook Marketplace. Social media users of every age have increased their willingness to transact online. Products can also be advertised with promos and discounts, attracting potential customers.

Table 9. Internet Platform

Proposed Internet Platforms	Specification	Unit Cost	Quantity	Total Cost
Facebook		FREE		FREE

Proposed IT Manpower

Maintaining the IT infrastructure is essential to ensure the system fulfills its function for the company. They require a specialist to make recommendations and spread knowledge about the technology. Having firsthand knowledge of problems helps keep the system's effectiveness from declining throughout the business process.

Table 10. IT Manpower

Proposed IT Manpower	Specification	Unit Cost	Quantity	Total Cost
IT Administrator	Monitors network performance, updates software, ensures security protocols, and coordinates with vendors or third-party providers.	₱35,000	1	₱35,000
Technical Support Specialist	Troubleshoots POS terminals, inventory scanners, and other computer-related concerns. Ensures minimal downtime during technical issues.	₱25,000	1	₱25,000
Overall Cost: ₱60,000				

CONCLUSION AND RECOMMENDATION

Conclusions

The researchers learned how retail organizations handle day-to-day operations and consumer interactions from their study. These business operations, such as an accurate and effective inventory system, improved customer interactions, and an increase in sales through business intelligence, would be greatly enhanced by a basic retail management system.

Recommendations

 The following are the recommendations of the researchers to further improve business operations for Felcris Supermarket Inc.

1. Integrating a Retail Management System will improve the overall workflow of business operations such as inventory tracking, transaction processing, and sales reporting. It will help streamline tasks, reduce manual errors, and enhance customer service.

2. Understand buying patterns, preferences, and customer loyalty through data dashboards and reports.

3. Using Social Media Platforms to promote products, engage customers, and increase sales.

4. Improve technologies used if the business wants to expand their scalability.

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