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# A SYSTEM ENGINEERING APPROACH TO ENHANCE OPERATIONAL EFFICIENCY IN A STATE COLLEGE FOOD COURT THROUGH AN INTEGRATED POS AND INVENTORY PLATFORM

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**ABSTRACT**
For the past twelve years, the Food Court at Northwestern Mindanao State College has used a manual sales and inventory system, resulting in inefficiencies and delayed reporting. Research conducted through interviews and surveys revealed an obvious need for enhancement. This research was intended to create an Automated Point of Sale (POS) and Inventory Management System that would streamline transaction processing and allow for inventory tracking in real-time. A mixed-methods approach was employed to gather evidence which includes: interviews using an Ishikawa Diagram Analysis, SWOT Evaluation Analysis, BPMN Modelling, and Strategic planning to identify fundamental causes, operational requirements, and system development. A simulation of operational data and post-assessment of the system will show improved accuracy, shorter processing time, better inventory monitoring and improved user satisfaction. The study concludes that the implementation of the proposed POS and Inventory Management System will greatly enhance operational efficiency, support better data-driven decision-making, and enable the continued use of technology by the Food Court.

**Keywords:**
Inventory Management System, Ishikawa Diagram, Sales and Inventory Automation, Business Process Model and Notation, Point of Sale System

## INTRODUCTION

Food service operations, especially in the case of institutional cafeterias and restaurants, must have the ability to monitor inventory and sales accurately in order to conduct daily sales transactions based on stock counts. A poor inventory system has the potential to produce stockouts, accounting errors, delayed reporting, and dissatisfaction from customers. (Gill, 2021) states that restaurant operations experience a high level of inefficiency due to the use of ineffective manual systems for recording inventory and reporting sales because they require real-time inventory tracking to stay in stock and prevent losses, so with an ever-growing demand for products from food businesses, keeping inventory systems as modern as possible is critical in ensuring that customers receive continued dependable service while maintaining the performance of the operation.

As technology continues to evolve, businesses are implementing point-of-sale (POS) systems and inventory management through automated processes. The integration of the POS system and inventory management provides the following benefits: The ability to track inventory using barcodes, the ability to track inventory through a database, the ability to generate reports automatically, and the ability to monitor stock on a real-time basis. The research has demonstrated that integrating the POS and inventory systems has resulted in an increase

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in speed and accuracy regarding transactions and recording of financial data, as well as decreased chance of human error. As noted by (Bashini M & Akilan S, 2022)combining the two systems enables businesses to run more effective and efficient operations, update inventory information accurately, and make better-informed business decisions from the use of automated data analysis processes.

Countries around the world, including Indonesia, India, and the USA, have implemented widely distributed Point of Sale (POS) Inventory Systems to optimize Restaurant Operations and decrease (the need for) Human Related Processes. Digital POS Applications provide all international Food Service Businesses with greater efficiencies, lower losses, and enhanced Quality of Service (Pendidikan dan Kewirausahaan et al., 2023). Conversely, in The Philippines, most Food Courts located at School Facilities, and small Systematic Cafeterias for educational institutions, are still dependent on Manual Entry and Paper-Based Tracking for their Food Inventory. This puts these types of Food Service Facilities at risk of losing data, incorrectly reporting data to regulatory bodies, and experiencing operational delays. Even though Modern POS Technology is available, there is still a lack of adoption due to limited resources, insufficient training opportunities, and high initial costs; especially for Public Academic Institutions.

According to (Asrani et al., 2024), outdated manual sales systems are still causing problems with transaction delays, inventory discrepancies and financial discrepancies for a large number of businesses. Northwestern Mindanao State College of Science and Technology (NMSCST) Food Court has been using a manual inventory system to record their sales and keep track of their stock for more than ten years now. As a result, NMSCST Food Court has had challenges with delays in reporting, inconsistent records and risk data loss as a result of using the old manual inventory system for this time period. Therefore, the purpose of this study is to develop and implement a new Point of Sale (POS) and Inventory Management System that will automate all transactions; provide more accurate, up-to-date, timely and comprehensive reporting; better control and monitor stock inventory; improve overall efficiency of food court operations.

## REVIEW OF RELATED LITERATURE

This section provides the compilation of the review of related literature and studies relevant to the study.

The technology associated with today's Point-of-Sale and inventory processes has been found in multiple recent studies to significantly impact transaction processing time, data accuracy and managerial visibility in food service settings. According to (Gill, 2021), when restaurants have access to real-time inventory information via the use of POS and inventory technology, this minimizes the potential for human error when performing stock management tasks and improves timely stock management. (Mashayekhy et al., 2022) with (Gill, 2021) in relation to food service by indicating that by integrating IoT into the supply chain, there will be increased visibility and operational effectiveness. RFID has also increased the speed of item identification and reduced record-keeping discrepancies(Alpeshkumar Kathiriya, 2025). Additionally, there is a trend now whereby most cloud-enabled POS systems will provide a single repository where sales and inventory data can be accessed; therefore, there will no longer be concerns regarding data corruption due to the numerous served daily throughout different locations connected to one central server. Lastly, mobile POS systems provide continuous accessibility and facilitate on-the-go transactions (Rajan & Sulthana, 2022), and in the near future, there are emerging technologies such as AI and ML that are being used to provide insights into future demand and optimising stock replenishment decisions (Kayode et al., 2025) (Kayode et al., 2025; Khedr & S, 2024). (Desai, 2025) notes that PWAs provide a more lightweight and scalable solution for managing inventories, as this method allows users to access their inventory across multiple platforms without requiring the use of advanced technology. Other research findings, such as those on automated stock optimization (Bera et al., 2022), barcode-based replenishment logic (Panganiban & Bermusa, 2020), and smart POS prototypes (Ambore, 2023), show that by combining the various technologies together, fast-paced food service establishments experience significant gains in efficiency.

At the same time, a number of limits identified in literature that may hinder widespread low-cost adoption were also mentioned. A key example of this is that barcode systems need to be scanned manually which may lead to increased time/effort by users (Panganiban & Bermusa, 2020); Additionally, many POS systems that can be bought "off the shelf" do not scale well, have limited reporting capabilities, and/or have a poor user interface (which presents a barrier for novice users) (Asrani et al., 2024; Bashini M & Akilan S, 2022; Wijaya & Tanamal, 2025). According to research conducted by (Sihombing, 2024) and (Pasalkar et al., 2024), systems developed without following "iterative user-centered methodologies" (i.e., tested with users iteratively) often have significant problems with maintainability and usability. (Rajan & Sulthana, 2022) agree that many mobile POS solutions are short on the level of analytic sophistication needed to do dynamic inventory management. Further,

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the advanced options for Inventory Management Systems (IMSs) (such as IoT, RFID, Blockchain, and Artificial Intelligence (AI)) have potential, but are often limited by issues with cost, complexity, and data security for small (Anurag Mehta, 2021; Krishna & Mattegunta, 2025; Mark et al., 2025; Tan & Sundarakani, 2021). Numerous empirical surveys and case studies (Gaddam, 2023; Pendidikan dan Kewirausahaan et al., 2023; Shaikh et al., 2020; Tripathi et al., 2021) suggest that developing inventory management systems requires balancing automation with affordability, usability, and ease of use; however, dynamic inventory management models (Winkelmann et al., 2024; Zhang et al., 2025) indicate a need for improved forecasting through more robust infrastructure.

Across all studies, a continuous research gap appears to exist. The type of institution/provider system utilized by entities such as a School Food Court must provide a system that synchronizes together nearly in real-time; provides efficient inventory control; provides an easy-to-use interface; and enables vendors to install and operate this type of system quickly and affordably without the need for technical experts. While previous studies provide possible solutions toward aspects of this issue (i.e. the use of cloud/web-based point-of-sales systems: (Ambore, 2023); utilizing web-based systems for Micro Small to Medium Enterprises: (Angellin et al., 2023); and creating automated stock optimization: (Bera et al., 2022), none of the previously completed studies fully address the problem of providing real-time visibility into the stock of items, as well as through use of the adaptive-term replenishment (influenced by sales frequency) and a user-friendly interface worthy of operational cost to set up and use effectively for small entities, such as Schools (Asrani et al., 2024; Kayode et al., 2025; Panganiban & Bermusa, 2020; Wijaya & Tanamal, 2025)This study seeks to design and implement a streamlined web-based point-of-sale and inventory management systems to integrate adaptive thresholding (sales frequency based), barcode-RFID hybrid input mechanisms, cloud-based synchronization and simplified user interfaces, in order to provide the School Food Court with the ability to see its stock in real-time, make automated notifications for replenishments, and be user-friendly, for non-technical staff.

## METHODOLOGY

The research process for developing the Web-based point of sale (POS) and inventory management system is described in detail in this chapter. The location of this study was Northwestern Mindanao State College of Science and Technology in Tangub City, Misamis Occidental, Philippines, particularly, the State College Food Court. The gathering of data, testing and implementation of the system were performed on-site to provide full reliability.

### Research Methodology

A mixed methods research design combining qualitative and quantitative approaches were used within this study. The qualitative aspect included interviews, workflow observation, SWOT Analysis, BPMN Model, and Root Cause Analysis which aided in identifying the operational issues and determining what the users needed. The quantitative component used survey instruments to measure participants' perceived current processes as well as benefits of the proposed new system to be implemented. Together the two approaches provided comprehensive evaluations of user experience with the current system, as well as ongoing research performance assessments of the proposed system.

In addition to the above approaches, a strategic planning framework was developed as the general project methodology and guided the development of the proposed Point-of-Sale and Inventory Management System for the Food Court of the NMSCST. Strategic planning is ideal for system development projects because it provides an organized and iterative approach to identifying operational concerns, developing solutions, and assessing outcomes. There were five phases being followed: (1) Formulating a plan-a phase where setting objectives, defining projected cost analysis, creating a work breakdown structure, and analyzing the food court's SWOT analysis were made; (2) Implementation: a phase for the execution of the strategies and deliverables to meet the objectives and goals set. All details were appropriately monitored to implement the required changes quickly. (3) Evaluation: acquired feedback and compared the goal and the implementation results. (4) Modification was a phase where failures were corrected, and weaknesses were strengthened. (5) Completion: a phase where final deliverables were handed over to the customers.

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*Figure 1 Strategic Planning*

**Conceptual Framework**

The study used the Input-Process-Output (IPO) Model as its conceptual framework. Input comprised interview findings, recorded issues, SWOT analysis, and root-cause identification using the Ishikawa diagram. The process includes four major strategic planning phases: plan formulation, execution, assessment, and revision. To automate the process of recording sales, eliminate the need for manual effort, and provide real-time updates of inventory. Using the development framework, the proponents linked all of the problems that they were able to identify with the solutions that are applicable through a disciplined development process.


*Figure 2 IPO Diagram*

**Data Gathering Procedure**

Data were collected through:

- Semi-structured interviews with employees or staff of the food court to gain insight into their current methods and the issues they face. Direct surveillance of transaction flow, sales records, and inventory management.
- Analyze existing handwritten logs, sales sheets, credit records, and stock cards.
- These data were utilized to map out current processes and highlight crucial areas for improvement.

**Business Process Modeling and Notation**

The study generated two sets of BPMN diagrams.

- Current BPMN depicts the present manual processes in sales transactions and inventory recording.
- Proposed BPMN - depicts the enhanced workflow when the POS and Inventory System are installed, with automatic sales updates, real-time stock monitoring, and digitally generated reports.

These models served as templates for system requirements and interface design.

**Cost Benefit Analysis**

A cost-benefit analysis was carried out to assess the proposed system's financial viability. This includes:

- Estimated expenses for system development
- Hardware requirements
- Maintenance Considerations
- Anticipated operational and administrative benefits.

The purpose of this research was to determine if adding a POS and inventory system will result in positive long-term benefits for the food court. Hence, the computation of the Return of Investment using the following formula:

$$ROI = \frac{Total\ Benefits - Initial\ Cost}{Total\ Cost} x\ 100$$

**Work Breakdown Structure**

A Work Breakdown Structure (WBS) was created to highlight essential responsibilities during the strategic planning process. Tasks in the project were made up of many different types, including gathering requirements, designing a system, developing modules, forming documentation, evaluating the project, and

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making changes to improve it. A Gantt chart was also used that detailed the length, sequence, and dependencies of the tasks in this project.

NMSCST FOOD COURT POINT OF SALE & INVENTORY SYSTEM

STRATEGIC PLAN - WORK BREAKDOWN STRUCTURE

| TASK / PROCESS | Month 1 | | | | Month 2 | | | | Month 3 | | | | Month 4 | | | | Month 5 | | | | Month 6 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| week | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 | 1 | 2 | 3 | 4 |
| **Formulating a Plan**<br>• Define Stakeholder, Project Goals, and Budget allocations<br>• Create a Task Plan/Schedule Management<br>• Hold a Stakeholder's Meeting/Survey/Interview | | | | | | | | | | | | | | | | | | | | | | | | |
| **Implementation**<br>• System Development/Building<br>• Risk Management<br>• Cost Management<br>• Resource Management<br>• Testing Plan/Testing Report<br>• Comparison of Plan vs. Actual Project's Progress<br>• Implementation of the Proposed System | | | | | | | | | | | | | | | | | | | | | | | | |
| **Evaluation**<br>• System Progress Monitoring<br>• Performance Tracking<br>• Strategy and System Evaluation Survey | | | | | | | | | | | | | | | | | | | | | | | | |
| **Modification**<br>• Strategy and System Improvement/Refinement | | | | | | | | | | | | | | | | | | | | | | | | |
| **Completion**<br>• User/Staff Training<br>• Handover Deliverables<br>• Project Post Evaluation | | | | | | | | | | | | | | | | | | | | | | | | |

***Figure 3 Work Breakdown Structure***

**Evaluation Instrument**

To assess the system's level of acceptability, a 5-point Likert scale tool was administered. The evaluation criteria included the following:

- User- Friendly Interface
- Functionality
  - Order Processing
  - Sales Tracking
  - Barcode Generation / Reading
- Inventory Management
  - Ingredients Inventory
  - Product Inventory
  - Consignment Inventory
- Reporting and Analytics
- Overall Satisfaction

Respondents also provided qualitative comments and recommendations

**Data Analysis**

The data collected from the evaluation instrument were analyzed as follows:

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- Weighted Means - used to find the average acceptability rating for all components of the systems evaluated.
- Standard Deviation - used to determine how much variability there was in the responses.
- Pearson Product Moment Correlation (if relevant) - used to identify connections between system characteristics and overall satisfaction.

These statistical measurements enabled researchers to assess both the quantitative and qualitative aspects of system acceptance.

**Rating Scale Interpretation**

The 5-point Likert scale utilized in this study was interpreted as follows:

| POINT(S) | VERBAL INTERPRETATION |
|---|---|
| 5 points | Highly Acceptable |
| 4 points | Moderately Acceptable |
| 3 points | Acceptable |
| 2 points | Fairly Acceptable |
| 1 point | Poorly Acceptable |

This interpretation helps to objectively classify replies throughout data processing.

**Statistical Analysis**

The Weighted Arithmetic Mean was the major statistical method used to analyze respondents' ratings of the system. The research assessed the overall acceptability and efficacy of the POS and Inventory System and suggested areas for improvement.

## RESULTS AND DISCUSSION

This chapter describes the Ishikawa (Fishbone Diagram) Analysis, SWOT Analysis outcome, strategic planning and implementation results of the NMSCST Food Court and Inventory System.

**Ishikawa (Fishbone) Diagram Analysis Outcome**

The Ishikawa Diagram was created to identify the main causes of the reoccurring issues with the NMSCST Food Court's manual sales and inventory system. The investigation identified various relevant aspects classified as labor, procedures, materials, and management.

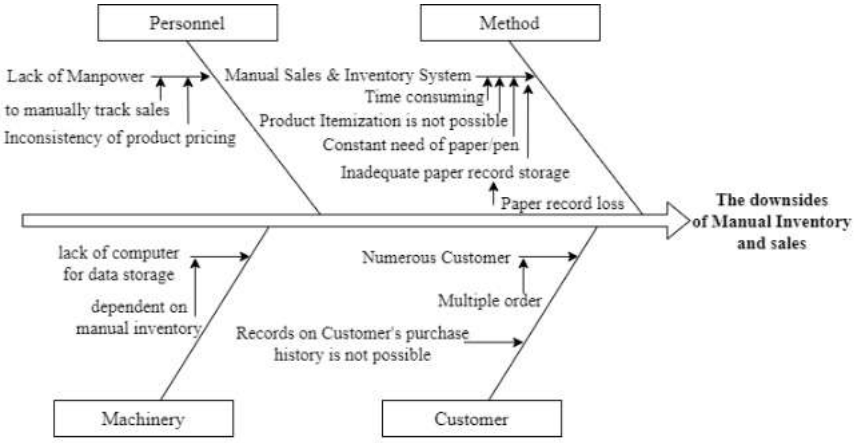


*Figure 4 Ishikawa (Fishbone) Diagram Analysis*

Over reliance on manual log books delays the reporting of transactions, makes updating transaction records more difficult, and increases the risk of losing important paperwork due to lack of proper storage. Interviews and questionnaires show that there is no electronic (i.e. automated) method for tracking food court sales or inventory movement. This makes evaluating the accuracy of product item count nearly impossible. Also, human error is prevalent with regard to inconsistent pricing methods and inaccurate recording of daily sales during peak periods when customer volume is at its highest. Together, these concerns emphasize the need to have a process that minimizes human effort and maximum operational inefficiencies.

**SWOT Analysis Outcome**

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The SWOT analysis summarizes the internal and external elements impacting the shift from manual to automated POS operations.

| STRENGTH | WEAKNESS |
|---|---|
| • Improved efficiency<br>• Increased accuracy<br>• Better inventory management<br>• Improved financial tracking | • Initial cost of investment is high<br>• Staff training and management transition might be overwhelming.<br>• Technical glitches |
| OPPORTUNITIES | THREATS |
| • Increased revenue<br>• Enhanced customer experience<br>• Easier and faster data analysis<br>• System (software) implementation is free | • Security risks<br>• Data sheets written on inventory sheets is susceptible to loss or alteration<br>• Human inventory error |

***Table 1 SWOT Analysis Outcome***

The SWOT analysis says that even if POS Systems have a lot of advantages; If you do not prepare yourself as a User by having a Good Plan and Risk Management that can help support your ideal use of these Systems, then you are less likely to be successful with your use of a POS System.

**Cost-Benefit Analysis Outcome**

A cost-benefit analysis was carried out to assess the viability of purchasing the necessary hardware and establishing the POS and inventory system. The research includes three years' worth of estimated operational, development, and maintenance expenses. Thus, improved operational efficiency, increased level of customer satisfaction, decreased manual work required for inventory management, improved control of inventory, and the ability to increase revenues through improved efficiency were all benefits realized.

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| Costs | | Year 1 | Year 2 | Year 3 | Total |
|---|---|---|---|---|---|
| | **Developmental & Operational Cost** | | | | |
| | UPS | 3,400 | 0 | 0 | 3,400 |
| | Computer set (CPU, mouse, keyboard, monitor) | 29,785 | 0 | 0 | 29,785 |
| | Barcode Scanner | 1,400 | 0 | 1,400 | 2,800 |
| | Thermal Receipt printer | 3,700 | 0 | 3,700 | 7,400 |
| | System Development | 15,000 | 0 | 0 | 15,000 |
| | Consultation Fee | 5,000 | | | 5,000 |
| | Testing and Training | 4,000 | | | 4,000 |
| | Transportation Fee | 5,000 | | | 5,000 |
| | Annual Maintenance | 5,000 | 5,000 | 5,000 | 15,000 |
| | Thermal Paper | 6,000 | 7,000 | 8,000 | 21,000 |
| | Ink | 12,000 | 13,000 | 14,000 | 39,000 |
| | Personnel<br>· User 1 (600*22days*12months)<br>· User 2 (450*22days*12months) | 158,400<br>118,800 | 158,400<br>118,800 | 158,400<br>118,800 | 475,200<br>356,400 |
| | **Total per annum costs** | 367,485 | 302,200 | 309,300 | **978,985** |
| **Benefits** | | | | | |
| | Improved Efficiency | | | | |
| | Better Inventory Management | | | | |
| | Increased Revenue | | | | |
| | Data-Driven Decisions | | | | |
| | Enhanced Customer Experience | | | | |
| | Personnel (2 Users for inventory instead of 3 in year 1, and instead of 4 in year 3) | 118,800 | 118,800 | 237,600 | 475,200 |
| | **Total per annum benefits** | 118,800 | 118,800 | 237,600 | **475,200** |

***Figure 5 Cost Benefit Analysis***

$$ROI = \frac{Total\ Benefits - Initial\ Cost}{Total\ Cost} x\ 100$$

$$ROI = \frac{475{,}200 - 367{,}285}{978{,}985} x\ 100$$

$$ROI = \frac{107{,}915}{978{,}985} x\ 100$$

$$ROI = 0.1102\ x\ 100$$
$$ROI = 11.02\ or\ 11\%$$

The use of the system does show a return on investment of 11% over the three-year period, which provides evidence for long-term sustainability of financial and operational aspects of this project.

**Work Breakdown Structure Outcome**

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The WBS helped in defining what the project should achieve, and through a systematic way of dividing up the project, deliverables.

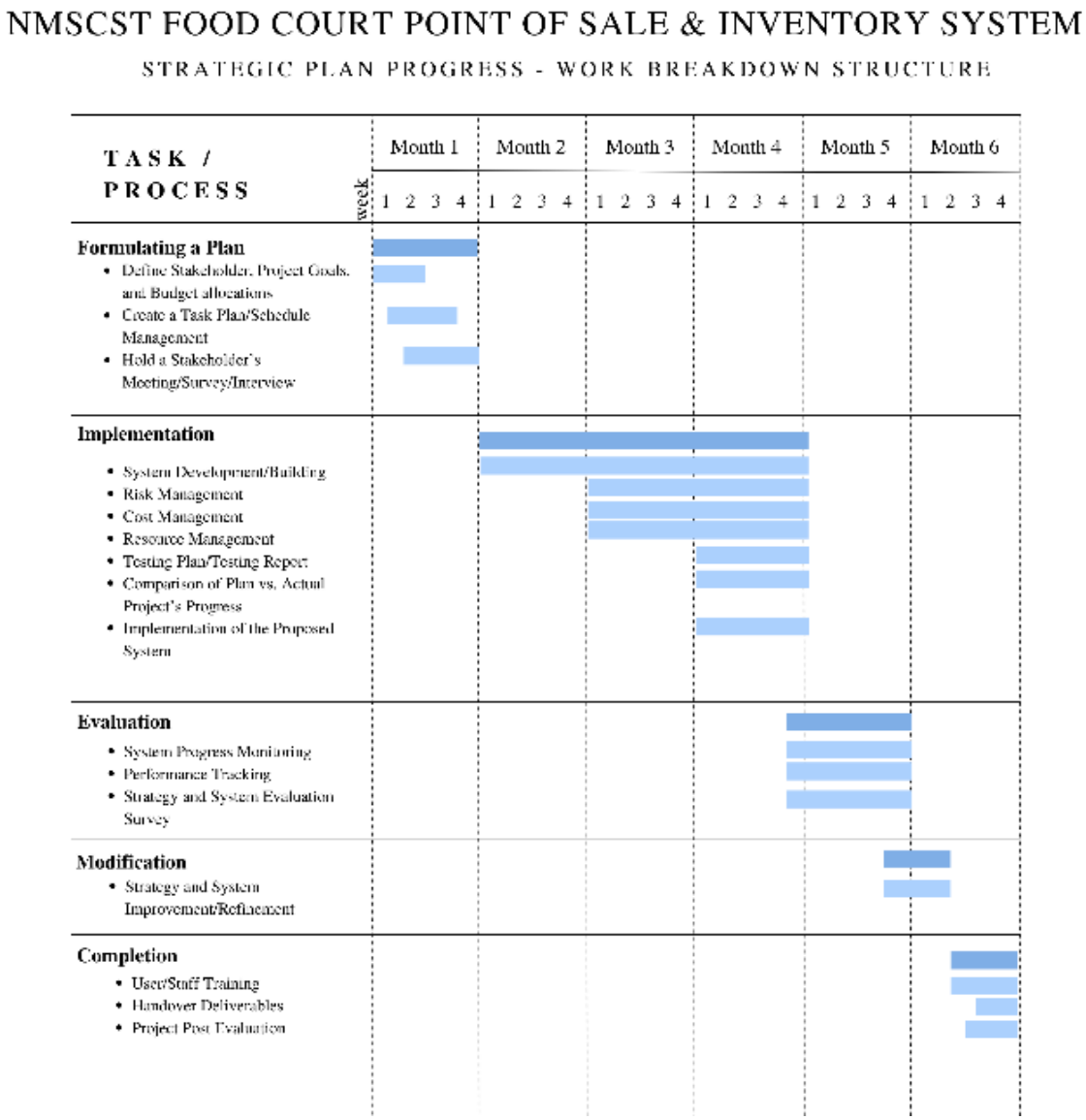


***Figure 6 Work Breakdown Structure Progress***

**Business Process Modeling and Notation**

The study generated two sets of BPMN diagrams. Current BPMN depicts the present manual processes in sales transactions and inventory recording.

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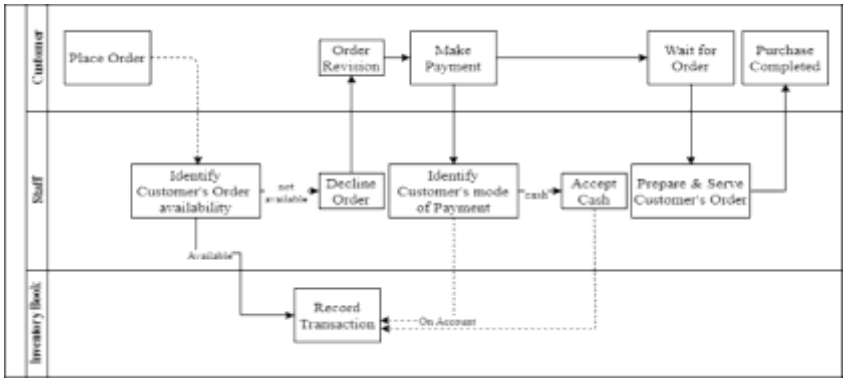


*Figure 7 Current Sales Transaction*

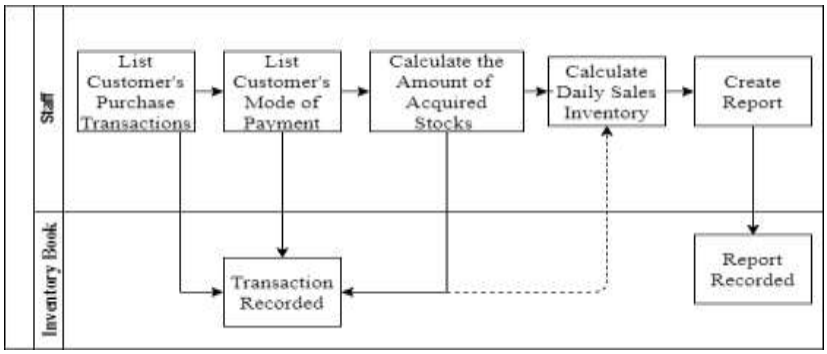


*Figure 8 Current Inventory Transactions*

BPMN that demonstrates how the work will improve when the POS and Inventory System have been set up to automatically update sales, provide real-time views of inventory levels, and generate digital reports.
These models served as templates for system requirements and interface design.

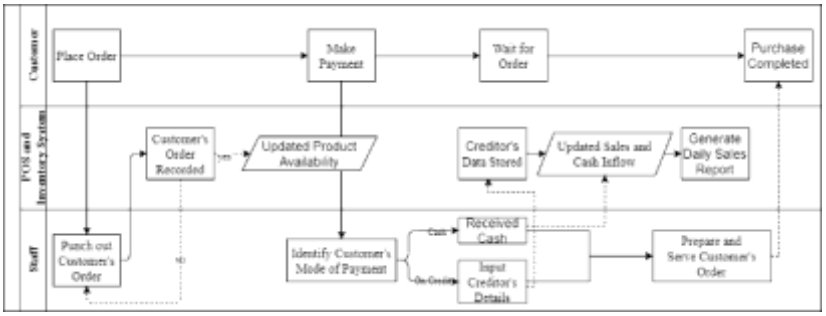


*Figure 9 POS on Sales Transactions*

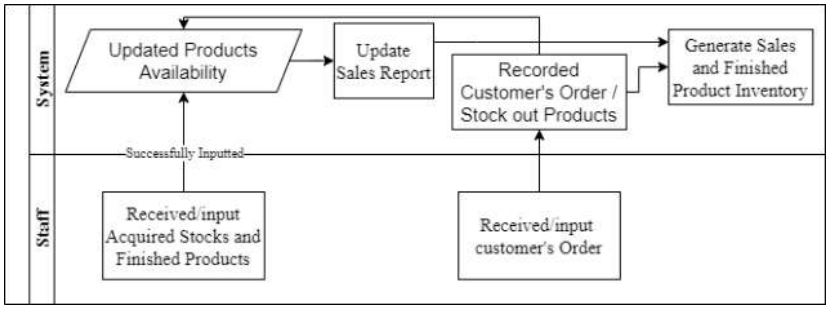


*Figure 10 POS BPMN on Product Inventory*

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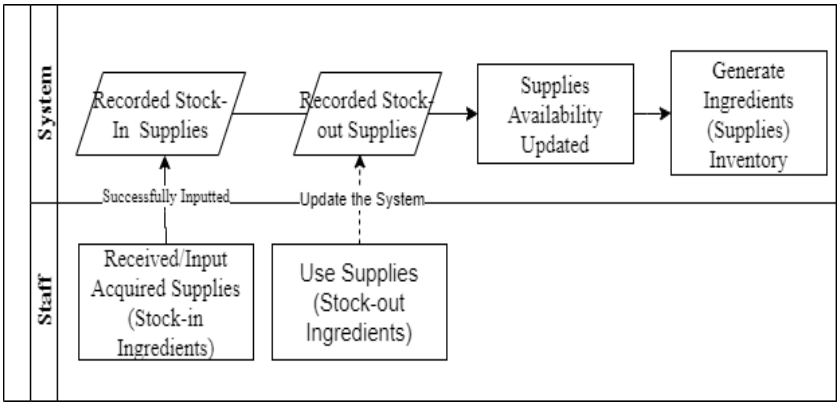


*Figure 11 POS BPMN on Ingredients Inventory*

**System User Interface Presentation**

The NMSCST Food Court POS and Inventory System has a functional User Interface designed to address the specific operational Issues identified in both the Ishikawa and SWOT Analyses. The New User Interface will allow Cashiers to complete their tasks faster, without excessive errors, and with greater access to Sales and Inventory information. Each interface component contributes to the system's aims of increasing efficiency, accuracy, and overall workflow in the food court.

*Figure 12 System Login Page*

The system log in page where the user either admin or cashier can log in their account. The system user may use the “administrator” as username and its default password “12345” to log in the administrator account.

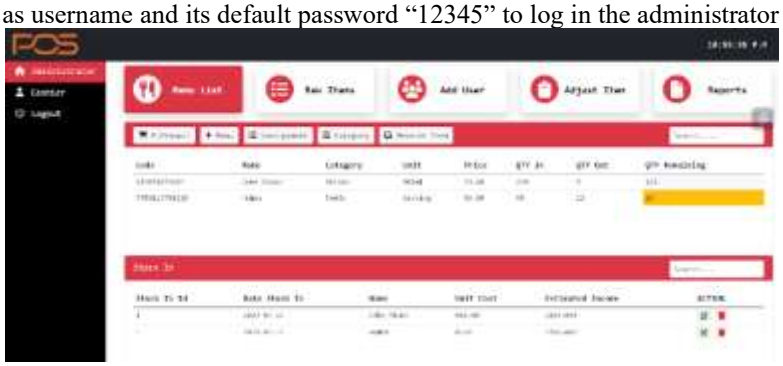

*Figure 13 Admin Homepage*

The admin homepage where the system admin can control with the system’s features and other functions.

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*Figure 14 Sales Report Page*

This is the page where the all sales reports are visible (consignment products, daily reports and monthly report). The system admin may print this or may convert the data into CSV, Excel, and PDF form.

*Figure 15 Cashier's Cash Transaction Page*

This is where cashier transactions for cash sales can be made. The user may use a barcode scanner for an easier transaction. During the sales transactions, the user may use the tab, arrows left and right, space, and enter buttons on their keyboard to navigate the cursor without using the mouse. The user may also print the list of daily sales reports visible on the upper left portion of the screen. On the right side, all available menus are visible.

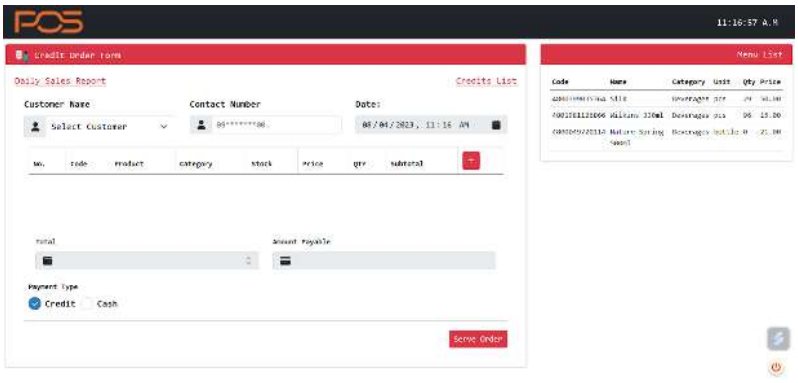


*Figure 16 Cashier's Cash Transaction Page*

This is where cashier transactions for credit sales transactions can be made. The user may use a barcode scanner for an easier transaction. During the sales transactions, the user may use the tab, arrows left and right, space, and enter buttons on their keyboard to navigate the cursor without using the mouse. The user may also print the list of daily sales reports visible on the upper left portion of the screen. On the right side, all available menus are visible. The name and contact number of the debtor are needed for inventory purposes.

**Strategic Plan Result**

The effective implementation of the strategic strategy allowed the food court to seamlessly shift from a manual to an automated system. Key enhancements made include:

- Faster transaction processing.

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- More precise sales tracking
- Timely report generation
- Reduced human mistakes.
- Improved inventory monitoring
- Increased client satisfaction

The automated technology enabled people to make more informed decisions about stock replenishment, pricing, and operations management. The risks associated with manual record-keeping, such as delayed reports and missing records, were dramatically reduced. Security mechanisms were used to ensure data integrity. The free deployment of the system increased cost efficiency, making the change both realistic and desirable.

**System Assessment Evaluation Results**

The effective implementation of the strategic strategy allowed the food court to seamlessly shift from a manual to an automated system.

| | **Weighted Mean** | **Rating** |
|---|---|---|
| User-Friendly Interface | 4.5 | Highly Acceptable |
| Functionality | 4.5 | Highly Acceptable |
| *Order Processing* | 4.6 | Highly Acceptable |
| *Sales Tracking* | 4.5 | Highly Acceptable |
| *Barcode Generation / Reading* | 4.1 | Moderately Acceptable |
| *Receipt Printing* | 4.6 | Highly Acceptable |
| Inventory Management | 4.1 | Moderately Acceptable |
| *Ingredients Inventory* | 4.0 | Moderately Acceptable |
| *Product Inventory* | 4.0 | Moderately Acceptable |
| *Consignment Inventory* | 4.0 | Moderately Acceptable |
| Reporting and Analytics | 4.3 | Moderately Acceptable |
| Overall Satisfaction | 4.6 | Highly Acceptable |

***Table 2 Implementation Result***

The automated technology enabled people to make more informed decisions about stock replenishment, pricing, and operations management. The risks associated with manual record-keeping, such as delayed reports and missing records, were dramatically reduced. The free deployment of the system increased cost efficiency, making the change both realistic and desirable.

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## CONCLUSION

This chapter presents the summary, conclusions and recommendations based on the previous sections. The goal of the research was to validate and support the effectiveness of digitalizing the sales and inventory systems at the food court and the research indicated that it met its goal.

**Summary**

A POS system is a computer-based method used for recording sales and the tracking of inventory at the same time. It is faster, more reliable, and easier to access, allowing management to make consistent, reliable, and timely decisions. For the last 12 years, NMSCST Food Court has operated a manual inventory system. The proposed POS and Inventory System developed for the NMSCST Food Court is designed to improve the historical method of conducting transactions for sales, inventory of raw materials and inventory of finished products while reducing manpower, time and workload and to help in the making of decisions. The system will help track item status, manage daily sales, and generate transaction reports.

**Conclusion**

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The NMSCST food court faces challenges in manual inventory, large write-offs, and data loss due to paper or paper-based records. A POS system can help small businesses track manufacturing processes, prevent stockouts, and generate sales reports. The researcher proposed the NMSCST Food Court POS and Inventory System to address these issues and streamline decision-making operations.

**Recommendation**

The project focuses on digitalizing the sales and inventory of the NMSCST food court's operation. For the future researchers, the scope can be expanded to include online and debit cards transactions. Future researchers may also automate the product pricing by just adding the markup percentage of every products.

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