Information System Technology Plan for Nabó Café in Panabo City, Davao Del Norte

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ABSTRACT

Technology plays a significant role not only in our daily lives but also in business integrating technology into a business can improve efficiency and streamline a company process. This study presents a plan to develop a Biometric Attendance System (BAS) for Nabó Café. The café currently uses a manual method to track attendance, which often leads to errors and delays in payroll. The proposed system will use fingerprint and scanning to record time-in and time-out automatically. It will help improve accuracy, reduce time fraud, and make employee monitoring easier. The system includes the needed hardware, software, and network setup. This will make daily operations smoother and more efficient for the café.

Keywords: Biometric Attendance Systems, Employee Monitoring, Payroll, Accuracy, Workforce Management, Fingerprint Scanner, Information System.

INTRODUCTION

Background of the Company

Nabó Café was established on November 14, 2024, by JL Barcenas, a food enthusiast inspired by the unique dishes he encountered during his travels. Noticing the lack of such options in Panabo City, he decided to open a café offering a different dining experience from other local establishments. The café operates as a standalone coffee shop, built to provide high-quality food and a visually appealing space for customers. It is currently staffed by 14 employees, who work together to maintain the café's standard of service and quality. Since its opening, it has steadily grown, attracting regular and new customers with its distinct concept and service.

Current Routines and Business Processes

Current Routines

The café operates daily from 10:00 AM to 3:00 AM, catering to early diners and late-night coffee lovers, including virtual assistants and call center agents whose hours extended past midnight. Employees work 8 hours daily, with a break divided into 30-minute segments. Overtime is rendered as needed and is computed by the Department of Labor Employment's (DOLE) guidelines. Cleanliness and ambiance are highly prioritized, with the café space regularly cleaned and upholding hygiene standards and aesthetic appeal.

Table 1. Event Tables of Nabo Coffee Shop

Start time	End Time	Task	Duration
9:30 AM	12:00 PM	Opening duties, prep work, and serving	2.5hours

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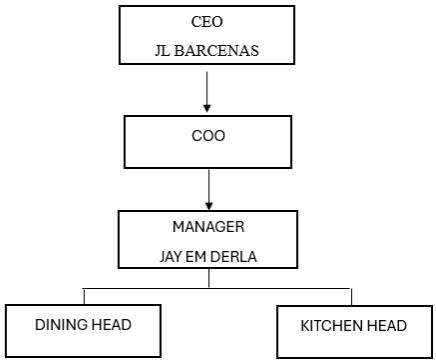
12:00 PM	12:30 PM	Break	30 mins
2:30 PM	4:00 PM	Lunch service and customer care	3.5 hours
4:00 PM	4:30 PM	Second shift log-in	30 mins
4:30 PM	7:30 PM	Break	3 hours
3:30 PM	7:30 PM	Dinner service and closing prep	5 hours
12:00 PM	2:00 PM	Log out for the first shift and log in for the third shift	2 hours
2:00 PM	2:30 PM	Assist with lunch service and customer care.	30 mins
2:30 PM	5:30 PM	Break	3 hours
5:30 PM	6:00 PM	Continued service and inventory checks	30 mins
6:00 PM	10:00 PM	Break	4 hours
5:00 PM	3:00 AM	Dinner service and closing prep Assist with dinner service and customer care, final clean up, and closing duties	11hours

1.5 Organizational Structure



Business Process

The business is open 18 hours a day to serve a steady flow of customers seeking a comfortable space to dine and relax. It maintains a standard routine from opening until closing, with staff assigned to various shifts to ensure continuous and efficient service. Each day begins with preparing the café, which includes cleaning the designated area, setting up the tables and chairs, and ensuring that equipment and ingredients are ready to use. Managements oversee daily operations, assist with customer concerns, and ensure that staff follow standard operating procedures. Regular coordination with suppliers ensures timely restocking of goods.

Problem Found

- **Manual Recording.** The coffee shop relies on a manual process for recording employee attendance, which can lead to errors, inconsistencies, and difficulty in accurately tracking working hours.

Goal and Objectives

General Objective

The researchers aim to develop and implement a Biometric Attendance System for Nabó café that enhances employee timekeeping accuracy, payroll processing, and operational efficiency.

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Specific Objectives

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

- To develop a biometric system that records employee attendance based on shift schedules.
- To generate automated attendance reports for improved payroll accuracy and staff management.
- To identify and address the limitations of the current manual attendance process

Organizational Structure

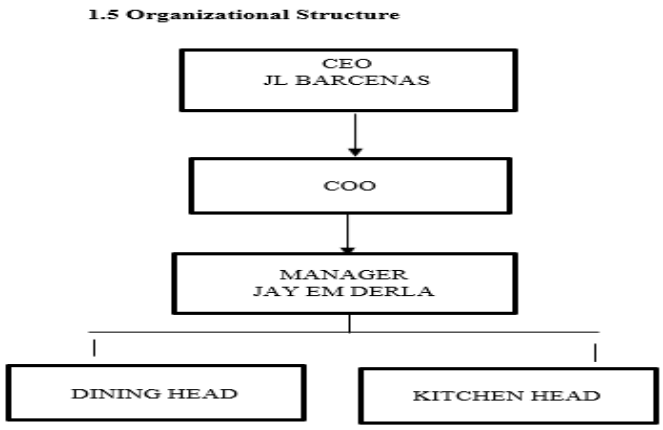

Figure 1: Organizational Structure of Nabo

Stakeholders

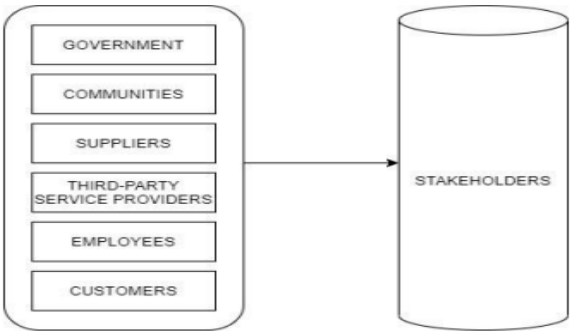

Figure 2: Stakeholders of Nabo

Proposed Information Systems

The researcher proposed a Biometric Time and Attendance System to record employee time-in and time-out at Nabó Café accurately. The system will reduce errors, prevent time fraud, and generate reports to support payroll and shift monitoring, improving overall efficiency and accountability.

REVIEW OF RELATED STUDY

Related Literature

Keeping track of employees or students in a class is one of the time-consuming activities in any school, institution, or educational place. Taking attendance, for example, takes up both the teacher's time and the lecture

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period. If the instructor skips this procedure, the school and community will be unaware whether the students participate in the classes. Various human and automated tracking approaches and techniques have been developed to ensure that users' and employees' attendance is checked and recorded regularly [1]. Effective attendance timing in the workplace helps increase employees' or workers' performance, leading to an overhead cost saving that enhances an organization's operational performance. The way that time is managed at work is guided by time management. Attendance timing serves as a guide for actions taken to increase efficiency. Timing of attendance is essential for people to meet their needs as workers in the workplace and maintain work-life balance. Although workers are expected to report to work, they also have personal responsibilities that they must attend to. An efficient attendance tracking system can guarantee that people and the workplace are in balance with one another. The amount of pay that an employee is entitled to depends on how many working hours they are expected to put in each month. These working hours may be determined by the pattern of work. Employees may work in the regular, shift, and overtime (locum) patterns[2]. These working hours are determined based on the legal requirements, collective bargaining, agreements for unions of workers, organizational policy, and best practices in the industry, among other considerations. The biometric clocking systems may be used in two modes, that is identification and verification [4].

In Nigeria, a finger-based Staff Attendance Monitoring System was developed to enhance time tracking and employee management in organizations [6]. The study addressed the inefficiencies of paper-based systems, which are susceptible to manipulation and data loss. By implementing a biometric approach, the system enables real-time and secure attendance logging. Fingerprint recognition offers greater accuracy and reliability compared to traditional methods like passwords and ID cards, which are often forgotten or compromised.

A study on the design and development of a fully customized Biometric Attendance Monitoring System (BAMS) was conducted at Cagayan State University – Lasam Campus. The system enables users to input, edit, and store attendance-related data, contributing to improved organizational work values and promoting better employee governance. This implementation demonstrates the potential of localized biometric systems in higher education institutions to streamline administrative processes and improve accountability. The study highlights how tailored biometric systems can be adapted to institutional needs, supporting the relevance of adopting similar solutions in other campuses or agencies [7].

In Davao, I developed an Information Systems Development Plan for a local convenience store in Panabo City, Davao del Norte. Their study proposed the implementation of a biometric system (ZKTeco iFace 702) to automate employee attendance. The goal was to reduce manual errors, ensure accurate timekeeping, and promote accountability in the workplace. They found that using biometrics significantly improved employee performance and the workplace. They found that using biometrics considerably enhanced employee performance and work ethics. The system was deemed cost-effective and practical for local retail businesses, highlighting the benefits of digital transformation in small to medium enterprises in Davao [8].

Name of Information System

Biometric Attendance System is a very commonly deployed digital technology in all types of organizations to monitor and record the availability of individual employees and to develop an overall picture of staff availability in any department of the organization. Organizations, where BTAS has been adopted and monitored, have noted a significant impact on staff attendance and in curtailing the practices of reporting late at work and leaving early from work. In the conventional method of attendance registers, spreadsheets are used, where the employees record their attendance for themselves, which is likely to be biased and often does not reflect the real record of their attendance. In contrast, in BAS, the employee presses his finger at a specified place in the machine, and the machine captures the record in real time without bias [8].

System Functionality

- To use biometrics to confirm employee identity
- To automatically record time in and out

- To add up the total hours worked and connect with the payroll
- To create secure reports for managers to review performance

System Architecture

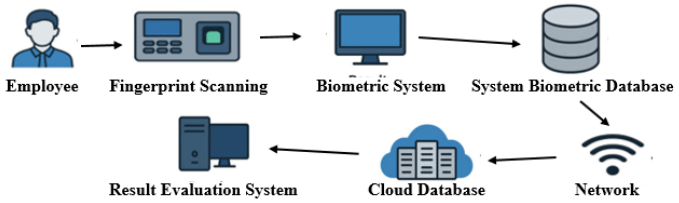

Figure 3. System Architecture of Nabo

Cost Structure

Table 2. Cost Structure

Cost Description	Cost
Operational Cost	₱ 20, 000.00
Maintenance Cost	₱ 10, 000.00
Total Cost:	₱ 30,000.00

Proposed It Infrastructure and Peopleware

Proposed Computer Hardware

The proposed hardware infrastructure is designed to support the efficient operation of Nabó Café's biometric time and attendance system. Integrating modern and reliable hardware ensures smooth business processes, enhances system performance, and minimizes downtime. A business with adequate and up-to-date hardware is better equipped to handle daily operations and future growth.

Table 3. Computer Hardware

Computer Hardware	Specification	Unit Cost	Quantity	Total Cost
Desktop Computer Set	VERITON X4690G Intel Core i5- 12400 16GB DDR4 Memory 256GB M.2 SSD Storage Intel UHD Graphics 730 24 FHD Monitor Wifi Ready	₱ 22,888	1	₱ 22, 888

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Biometric Fingerprint Time Attendance Machine	Fingerprint reader with an accurate optical sensor. Stores 3,000 templates, 5,000 card IDs, and 30,000 logs. Reads fingerprints and/or cards. USB/Ethernet connection. Tamper-proof alarm switch. Audio-visual indicators.	₱ 10,500	1	₱ 10,500
		₱33388	2	₱33388
Overall Cost: ₱				

Proposed Operating System Platforms

The operating system is essential for managing the computer's hardware and software. A stable and compatible OS will ensure the smooth performance of Nabó Café's biometric time and attendance system.

Table 4. Operating System

OS Platform	Specification	Unit Cost	Quantity	Total Cost
Microsoft Windows 11 Pro	Processor: 1GHZ or faster with two or more cores, 64-bit architecture RAM: 4GB or more Display: 720p Storage: 64GB minimum Graphics: DirectX 12 Compatible	₱ 14,500	1	₱ 14,500
Overall Cost: ₱ 14,500				

Proposed Enterprise Software Applications

The proposed enterprise software integrates key business processes to improve efficiency and coordination. It helps Nabó Café manage resources, monitor attendance, and support overall operations through a unified system.

Table 5. Enterprise Software Applications

Enterprise Software	Specification	Unit Cost	Quantity	Total Cost
Time and Attendance Software	Compatible with biometric devices. Tracks employee check-in/check-out, working hours, and generates reports.	₱ 7,000	1	₱ 7,000
Overall Cost: ₱ 7,000				

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Proposed Data Management

The proposed data management helps organize that firm's data and makes it easy to share information with others.

Table 6. Data Management

Proposed Data Management	Specification	Unit Cost	Quantity	Total Cost
Microsoft Office	Includes Excel and Word for attendance data tracking and report generation.	₱ 5,000	1	₱ 5,000
Overall Cost: ₱5,000				

Proposed Network & Telecommunications

Proposed Network and Telecommunication: since Nabó Café operates in a single location, we suggest using a Local Area Network (LAN). This setup allows staff to share information quickly and work more efficiently while also providing a secure and stable connection within the café.

Table 7. Network & Telecommunications

Proposed Network & Telecommunications Local Area Network (LAN)	Specification For direct-wired connection to the biometric device and Desktop.	Unit Cost Php 15,000	Quantity 1	Total Cost Php 15,000
		₱15,000		₱ 15,000
Overall Cost: ₱ 15,000				

Proposed Internet Platforms

E-business is using the internet to do business activities like selling and managing tasks online.

Table 9. Internet Platform

Proposed Internet Platforms	Specification	Unit Cost	Quantity	Total Cost
E-Business	Website with domain, hosting, basic content, and social media integration	Php 17,000	1	Php 17,000
Overall Cost: Php 17,000				

Proposed IT Manpower

IT Technician is responsible for providing technical support, fixing hardware or software issues, and ensuring systems run smoothly when problems occur.

Table 10. IT Manpower

Proposed IT Manpower	Specification	Unit Cost	Quantity	Total Cost
IT Support or Technician (on call)	Maintain System Update Software Backup Attendance and troubleshoot issues.	₱ 12,000	1	₱12,000
Overall Cost: ₱12,000				

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CONCLUSION AND RECOMMENDATION

Conclusions

Based on the result, the study suggests that Nabó should upgrade its current attendance system to a biometric-based solution. This improvement will enhance employee monitoring, reduce manual errors, and support a more efficient workflow by transitioning from traditional methods to a more reliable and automated system.

Recommendations

The study has shown that improving the business process and increasing productivity at Nabó requires the integration of proper IT infrastructure and information systems. Based on the findings, the researchers recommend the following:

- Implement an automated biometric attendance system to improve employee monitoring.
- Adopt the proposed information system to streamline inventory and staff management.
- Utilize information technology to replace outdated manual processes.
- Enhance network and communication tools to support system reliability.

These recommendations aim to improve operational efficiency and support the long-term growth and effectiveness of Nabó.

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