Information System Technology Plan for Dm's Enterprise

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ABSTRACT

As time advances every day, so does technology - Different kinds of business across the globe are rising and being advanced thanks to the technology we have today. As researchers, we discovered that there are still businesses that don't have a system that can improve the process of the organization. Thus, we conducted and proposed a system - Where we confidently believe can highly improve and advance its organization performance. Through this proposal thoroughly and strategic approach and planning, we can secure a successful and effective implementation.

Keywords: Biometric System, business process and routines, computer related solution, IT Infrastructure

INTRODUCTION

Background of the Company

The business was founded in 2013 by Dariel Medalla. Before starting the business, he worked as a pedicab driver. The business started when he frequently went to his brother's small shop, who was also in the same line of work. Through his observation of his brother's work, he slowly learned the basics of printing. He was so eager to learn that he bought himself an old computer using his own income from being a pedicab driver. He used the computer to continue learning and practicing. He started small, only offering basic printing services like paper printing while also mastering layout design. His dedication and eagerness to improve his life helped the business grow.

Current Routines and Business Processes

Current Routines

The business operates depending on the work that needs to be done. On a normal day, employees can leave the workplace by 9 PM. But during busier times, they often stay until midnight. The business has multiple services. It includes Printing services, T-shirt printing, Sublimation shirts, Jerseys, Polo shirts, Tarpaulin, and signage making. Employees have different tasks, depending on their skills. Some employees are assigned to sewing, and there are also people for basic printing, like paper printing or tarpaulins. There are also different people assigned to lay out. The high quality that they produce is the number one asset of the business.

Table 1. Event Tables of DM's Enterprise

Start time	End Time	Task	Duration
7:50 AM	8:00 AM	Unrecorded employee arrival	10 MINS.
8:00 AM	9:00 AM	Cleaning the equipment	1 HR.
9:00 AM	12:00 NN	Work on tasks	3 HRS.

12:00 NN	1:00 PM	Lunch break	1 HR.
1:00 PM	3:30 PM	Resume of work	2 HRS AND 30 MINS
3:30 PM	**4**:00 PM	Break time	30 MINS.
4:00 PM	8:10 PM	Resume of work	4 HRS AND 10 MINS
8:10 PM	9:00 PM	Cleaning and closing	50 MINS.

Business Process

The shop is open from 8:00 am and closes at 9:00 pm. The business is overseen by the owner himself, who resides near the establishment. For their services such as shirt printing, making jerseys and other large projects, a 50% down payment is required before starting the work. The team ensures to produce a high-quality product, making sure to meet the customer's expectations. Customers can avail themselves of their services by leaving a message on their Facebook page or by visiting the shop in person.

Existing Technologies

Existing Technologies	Specification	Qty	Utilization
Acer Aspire X1430	AMD E-Series or Athlon II X2/X4 2GB to 4GB DDR3 320GB to 500GB HDD No SSD AMD Radeon HD 6310	4	Used for creating and editing layout designs.
Epson SureColor SC-F6430H	**Memory**: 1 GB **Acoustic noise level:** Sound Pressure Level: Approx.53.5 dB(A) Sound Power Level: Approx.7.0 dB (A) **Control Panel:** 4.3" Colour LCD Touch Panel **Consumables:** Maintenance Kit (C13S210063)	2	Used for sublimation printing on sports jerseys, shirts, and large-format soft signage.

Problem Found

Manual Recording of Employee Attendance. As DM's Enterprise continues to grow, there is still no proper system in place to track daily attendance and work hours.

Absence of IT. All tasks- such as order tracking, customer records, and employee salary computation– are done manually.

Goal and Objectives

General Objective

The researchers aim to:

Propose an IT Infrastructure to ensure smooth core business functions, and Biometrics Time and Attendance System to enhance business operations through digital solutions for online selling and employee time tracking.

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 set up a reliable IT infrastructure that supports daily business activities, and smooth workflow.
2. To install a Biometrics time and Attendance System for accurate employee tracking.

Organizational Structure

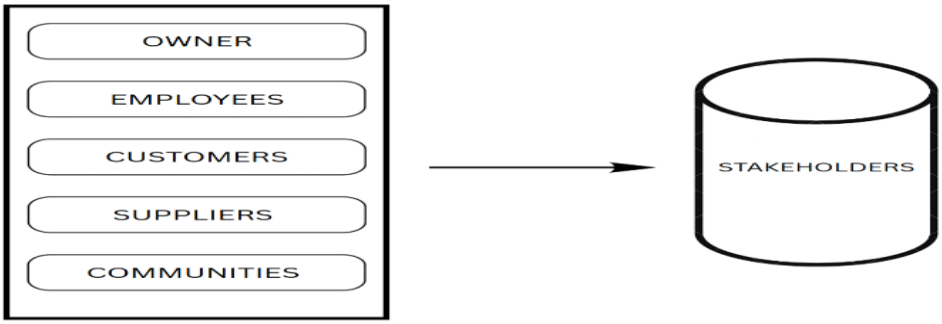

Figure 1: Organizational Structure of DM's Enterprise

The business owner is the one who oversees the final decision, but due to his tied schedule, he assigned a manager-who rejected the request of his name–to help him manage the business operations. It has employees who work for the business as shown in Figure 1.

Stakeholders

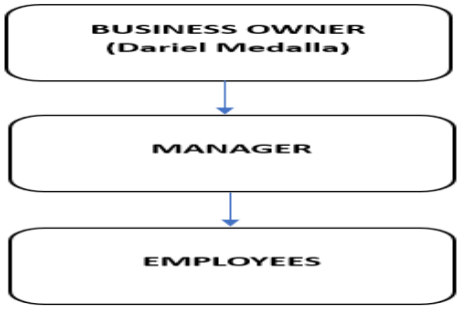

Figure 2: S Stakeholders of DM's Enterprise

Proposed Information Systems

The researchers proposed a DM's Enterprise Biometrics System to achieve growth production and to record the data for worker efficiency and unbiased data gathering.

Name of Information System

Biometric Time and Attendance System Machine Using fingerprint-based biometric technology, it is intended to replace the manual time-logging process and offer a precise, safe, and effective way to track employee attendance. This system will expedite payroll preparation, improve accountability, and reduce time fraud (such as buddy punching).

RELATED LITERATURE

Biometric attendance systems are dependable, affordable, and impenetrable, businesses are using them more and more to improve payroll accuracy, lessen administrative load, and expedite employee timekeeping. In contrast to manual logbooks or swipe card systems, biometric attendance systems are far more efficient because they use distinct physical features, principally fingerprints, to lower the chances of identity theft or buddy punching. Characteristics that can be measured and used for authentication as an access control method are termed biometrics. Examples of biometrics include fingerprint identification, facial recognition, hand geometry, iris scanning, and voice recognition. To reduce te chances of identity fraud and buddy punching, biometric attendance systems utilize these distinct physical identifiers. Biometrics are unique physical characteristics that can be measured to identify an individual for access control purposes. Two biometrics examples include face recognition and fingerprints [3], [4].

As detailed by Rahman et al. [1], a fingerprint-based time and attendance system integrated with payroll functionalities was developed. The authors sought to automate staff monitoring aimed towards maximizing productivity at workplaces. Their findings demonstrate that these systems are user-friendly, flexible, and integrate effortlessly with other technological tools. Most importantly, the study illustrated the ways into which these devices can be integrated with relational database systems for automation of attendance notifying for real-time attendance tracking, mitigation of time deception. and improved responsibility. Ultimately, the authors document that these systems are even suitable for small-sized firms considering their high flexibility, speed, and reliability when compared to conventional systems.

Initially, Martin and Beltran [2]. research the Philippines' case study in Don Honorio Ventura State University's Philippines Electronics Engineering Department. This study suggested that attendance records reliability and transparency was significantly heightened with the system reinstallation. Furthermore, the system also enhanced the level of accountability and reduced employee lateness. Manual attendance record keeping had to be cross-referenced, but with the biometric system, payroll grew effortless due to automated attendance logging. The ease to which biometric systems can be implemented in the country's government offices and schools highlights the technological adaptability of a society with little resources.

The research Martin and Beltran [2] DM's Enterprise and other small to medium-sized businesses marking the scope of this study. This relevance can be extended to these are small and medium-sized enterprises who struggle with manual time clocking, irregular attendance marking, rudimentary record keeping, or lack administrative staff. Such systems are highly configurable for printing companies that utilize precise daily labor and reliability in scheduling because of their capability to track individual employee logs, eliminate buddy punching, and automate report generation. The research demonstrates the applicability of biometric systems in more confined, localized contexts, thus reinforcing the argument for employing such a system in like commercial contexts.

With the advent in biometric technology, the areas that biometric attendance systems can employed has widely broadened making them excellent tools for efficient, precise, and responsible time tracking throughout organizational frameworks. International research emphasizes their scalability, security, and simplicity of integration with current systems, while local and national studies show how they can be used practically in resource-constrained Philippine institutions. These systems have several advantages, especially for small businesses like DM's Enterprise: they decrease time theft, stop buddy punching, and automate attendance tracking. Overall, the results demonstrate that putting in place a biometric attendance system to improve workforce dependability and operational performance is both feasible and relevant.

Local, national, and international literature supports small businesses' adoption of biometric attendance systems. Collectively, these studies demonstrate the efficiency, cost-effectiveness, and benefits of using fingerprint-based biometric systems to track attendance. These systems reduce administrative tasks and human error while also encouraging discipline, accountability, and accurate payroll processing—all of which are critical for improving operational effectiveness in service-oriented businesses like DM's Enterprise.

System Functionality

1. Employee time-in and time-out are conducted via biometric fingerprint scanning.
2. Automatic Log Storage in a secure database
3. Real-Time Monitoring of employee attendance
4. Dashboard for administrators to generate payroll data and view reports.
5. User management for employee account registration, updates, and deactivation.

System Architecture

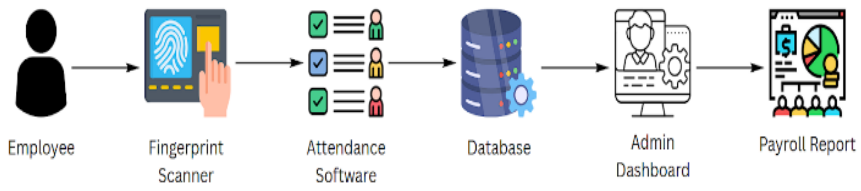

Figure 3. System Architecture of DM's Enterprise

Cost Structure

Table 2. Cost Structure

Cost Description	Cost
Operational Cost	₱ 50,000
Development Cost	₱ 20,000
Maintenance Cost	₱ 10,000
Total Cost:	₱ 80,000

Proposed It Infrastructure And Peopleware

Proposed Computer Hardware

Table 3. Computer Hardware

Computer Hardware	Specification	Unit Cost	Quantity	Total Cost
Desktop Computer Set	AMD Ryzen 5 5600G Integrated Radeon Vega 7 Graphics 16GB DDR4 3200MHz 240GB SSD 1TB HDD B450M / A520M 500W PSU	₱ 27,000	2	₱ 54,000
Biometric Time and Attendance System Machine	fingerprint reader with durable and highly accurate optical sensor. Stores 3000 templates, 5,000 CARDS, and 30,000	₱ 11,000	1	₱ 11,000

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	transactions. Reads Fingerprint and/or CARD. OPTIONAL integrated smart CARD reader. Built-in Serial and Ethernet ports. Tamper-proofs switch and alarm outputs. Request-to-exit and alarm contacts Audio-Visual indications for acceptance and rejection of valid or invalid fingers.			
Overall Cost: ₱ 65,000				

Proposed Operating System Platforms

The Operating System is the foundation of the computer - It enables the computer to function and manage user interactions.

Table 5. Operating System

OS Platform	Specification	Unit Cost	Quantity	Total Cost
Microsoft Windows 10 pro	**Processor:** 1GHz or faster **RAM:** 2GB minimum (Recommended: 16GB) **Storage:** 32GB minimum (Configured: 240GB SSD) **Graphics:** DirectX 9 or later with WDDM 1.0 **Display:** Full HD (1920×1080	₱ 9,000	2	₱ 18,000
Overall Cost: ₱ 18,000				

Proposed Enterprise Software Applications

These software programs are affordable, scalable, and appropriate for small and medium-sized business operations. They support centralized order processing, employee time tracking, and process automation.

Table 6. Enterprise Software Applications

Enterprise Software	Specification	Unit Cost	Quantity	Total Cost
E-Commerce Platform	Online storefront, mobile-friendly interface, product management, order tracking, GCash/Bank integration	₱ 15,000	1	₱ 15,000
Overall Cost: ₱ 15,000				

Proposed Data Management

Data will be gathered, saved, and backed up in a methodical manner to prevent data loss, facilitate reporting, and boost operational effectiveness. When handling data, the system will adhere to the CRUD (Create, Read, Update, Delete) paradigm.

Table 7. Data Management

Proposed Data Management	Specification	Unit Cost	Quantity	Total Cost
Microsoft 365 Business Standard	Excel Word PowerPoint Outlook Teams OneDrive (1TB cloud) SharePoint OneNote Access Publisher	₱ 4,899	2	₱ 9,798
Overall Cost: ₱ 9,798				

Proposed Network & Telecommunications

Biometrics time and attendance, real-time communication, and daily business operations all depend on a dependable network and telecommunications infrastructure. The suggested network infrastructure will offer DM's Enterprise dependable internet access, safe internal communications, and smooth data transfer across all digital channels.

Table 8. Network & Telecommunications

Proposed Network & Telecommunications	Specification	Unit Cost	Quantity	Total Cost
Wi-Fi Router	Dual band (2.4GHz/5GHz), 4 LAN Ports, up to 300 Mbps	₱ 2,000	1	₱
Internet Plan	Fiber connection, minimum 20 Mbps, with modem/router (monthly)	₱ 1,500	1 year	₱ 18,000
LAN Cabling	Cat6 Ethernet cable, 15 meters + installation	₱ 1,000	1	1,000
Overall Cost: ₱ 21,000				

Proposed Internet Platforms

E-commerce systems facilitate real-time order processing, online transactions, and customer-business communication.

Table 9. Internet Platform

Proposed Internet Platforms	Specification	Unit Cost	Quantity	Total Cost
E-Commerce	Allow customers of DM's Enterprise to pay online	Free	1	Free
Overall Cost: Free				

Proposed IT Manpower

DM's Enterprise will need the assistance of qualified IT specialists to guarantee the successful implementation and upkeep of the suggested systems. These experts will oversee preserving system functionality, fixing technical problems, and assisting the company in making efficient use of digital platforms.

Table 10. IT Manpower

Proposed IT Manpower	Specification	Unit Cost	Quantity	Total Cost
IT Support Technician	Installs, maintains, and troubleshoots computer hardware and software used in e-commerce and attendance systems.	₱ 1,000 per session	Per session	₱ 1,000 per session
Computer Analyst	Helps the owner utilize the computer systems efficiently, prepares technical reports, and supports system upgrades.	₱ 10,000 per month	Per month	₱ 10,000 per month
Overall Cost: ₱ 11,000				

CONCLUSION AND RECOMMENDATION

Conclusions

Based on the outcomes, the study concludes that DM's Enterprise can improve its operations by using new technology. The suggested plans include setting up a Biometrics System. These proposed plans will help the business track employee attendance better, making daily work easier and more organized.

Recommendations

The following are recommendations the researchers suggest for DM's Enterprise to consider:

1. To replace or upgrade outdated computers to improve work efficiency.

2. To implement an attendance tracking system to monitor employee attendance accurately

3. To follow the proposed system for the improvement of DM's Enterprise.

These recommendations will have a positive impact on the business by improving efficiency, ensuring employee monitoring, and expanding its reach through a stronger online presence.

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