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INFORMATION SYSTEMS DEVELOPMENT PLAN FOR STA. TERESA FUNERAL HOMES

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ABSTRACT
Nowadays, it's hard to imagine a business without IT infrastructure. Some years ago, most companies wouldn't even have it because they deem it not business-friendly. Fast forward to today, any company that fails to incorporate IT into their business process is unnoticed by their competition.
Consequently, our team has decided to apply two systems that can help to improve the business process and to halt traditional routine of the company. Production Monitoring System (PMS) is responsible for controlling and stabilizing the production line to stop over-production and to check business performance and operation. Moreover, in terms of human power, the primary step once an employee entered to the firm is attendance. It would be a waste of time if manual system will still be applied and can greatly affect one's performance. Biometric Time and Attendance System (BTAS) should also be implemented. It gives a high level of accuracy and efficiently maintains employee attendance records.
Thus, imposing these systems and other computer-related solution can be a great way to eradicate errors and to increase business productivity and performance.

Keywords: Biometric Time and Attendance System, business process, computer-related solution, IT Infrastructure, Production Monitoring System

INTRODUCTION

1.1 BACKGROUND OF THE COMPANY

In 1993, Roderico Atillo Enad, a licensed embalmer, bought his cousin's casket factory and converted it into a funeral home. Mr. Enad was not a total beginner. He grew up in this type of business since their family has been operating funeral homes in different provinces. A time goes by, his business widens, and he added another viewing chapel.
In the year 2000, when he started massive renovations and higher revenue, he purchased adjacent lots that were to put up for sale. The business reached another milestone when it opened a new branch in a nearby city in 2007. The company offers services that are affordable and reasonable to bereaved families, even those from indigent groups.

Sta. Teresa Funeral Homes is a family business that is why most of its employees are close relatives. In 2010, three years after they opened their first branch, Mr. Enad's only child, Angelique passed the Licensure Examination for Embalmers to further help their business. This year, they just successfully opened a two-story building to accommodate the higher demands of customers. Their business motto is "Family satisfaction is our prime objective".

1.2 Current routines and business processes

1.2.1 Current Routines

The business operates 24 hours a day and has various daily routines such as picking up cadavers that are either from residences or hospitals. Given the situation that we are facing a deadly virus right now, the establishment must follow health and safety protocols in executing the process that is in accordance to the mandate of the Department of Health and Local Government Unit. Their personnel will not proceed if the informant, either a family member or a local official cannot present a certification signed by the City Health Office that the deceased does not belong to the Persons Under Monitoring or Persons Under Investigation.

From 8:00 AM to 8:00 PM their office is open and ready to assist customers with their funeral billings and on how to avail burial assistance from different government offices. Their staff provides advices and instructions so customers can produce the requirements needed and can go ahead with the process. The business is an affiliated partner of Department of Social Welfare and Development, Lingap Para sa Mahihirap, Office of the President, Office of the Special Assistant to the President, Office of the Deputy and Executive Secretary of Finance and Administration, and the City Social Welfare Development Office of Panabo City that provides financial aid to bereaved family for their funeral and burial billing.

Cleanliness of the area is one of the assets of the business. When people hear the word “funeral” it is mostly associated with horror and filthiness but that perception changes when you enter the establishment of Sta. Teresa Funeral Homes. They make sure that the facility is clean and sanitized the same with their vehicles and funereal hearses. Their employees are divided into two shifts, day and night shifts respectively in which they reshuffle every week.

Table 1. Event Table of Sta.Teressa Funeral Homes

Start Time	End Time	Task	Duration
7:45 AM	8:00 AM	Log in for day shift	15 MINS.
8:00 AM	12:00 NN	Attending to scheduled interments, collecting of payments from customers, preparing burial contracts of new clients, picking up cadavers from residences and hospitals, preparing viewing equipment for the wake, cleaning the facility.	4 HRS.
12:00 NN	12:30 PM	Lunch break	30 MINS.
12:30	3:00 PM	Resume of work	2 HRS. AND 30 MINS.
3:00 PM	3:15 PM	Break time	15 MINS.
3:15 PM	5:00 PM	Resume of work	1 HR AND 45 MINS.
5:00 PM	7:45 PM	Overtime hours for day shift	2 HRS. AND 45 MINS.
7:45 PM	8:00 PM	Log out for day shift, log in for night shift, End of office hours	15 MINS.
8:00 PM	12:00 MN	Resume of work	4 HRS.
12:00 MN	12:30 AM	Lunch break	30 MINS.
12:30 AM	3:00 AM	Resume of work	2 HRS. AND 30 MINS.
3:00 AM	3:15 AM	Break time	15 MINS.
3:15 AM	5:00 AM	Resume of work	1 HR. AND 45 MINS.
5:00 AM	7:45 AM	Overtime hours for night shift	2 HRS. AND 45 MINS.
7:45 AM	8:00 AM	Log out for night shift, log in for day shift. Start of office hours.	15 MINS.

Table 1 shows the daily events and tasks performed by the employees of Sta. Teresa Funeral Homes.

1.2.2 Business Process

This business is open 24/7 since it's a funeral home, and any minute a call will arrive. That is why there are personnel always on standby. It is overseen by the manager who resides within the premises of the establishment. The business offers high-quality caskets at a reasonable cost with excellent service. They have their casket factory, and every product is checked by an eye that's keen for detail, the owner himself.

Customers can avail packages and settle them a day before the scheduled interment. The business doesn't demand a down payment the moment the customer chose a particular package. Instead, they will be advised to avail of burial assistance offered by various government offices. In this way, customers will be able to save a massive amount of money.

The business has its viewing chapels and spaces. Customers who decide to have the wake at the facility will be charged depending on the chosen room and length of days. The utility personnel will maintain their area.

1.3 Problems Found

- **Absence of IT.** Manual process of inputting worker's daily attendance, calculating salary and identifying number of production
- **Difficulty of Production Monitoring.** They are having their hard time to determine how many caskets are left and are needed to be produced by the production team.

1.4 Goals and Objectives

1.4.1 General Objectives

The researchers aim to propose IT infrastructure to achieve rich productivity, Production Monitoring System (PMS) and Biometric Time and Attendance System (BTAS) to regulate number of casket production and to automate worker's salary in accordance with the number of working hours.

1.4.2 Specific Objectives

- To identify the number of products needed to be produced.
- To enhance business productivity.
- To systematize the worker's data attendance and salary using Biometrics Time and Attendance System (BTAS).

1.5 Organizational Structure

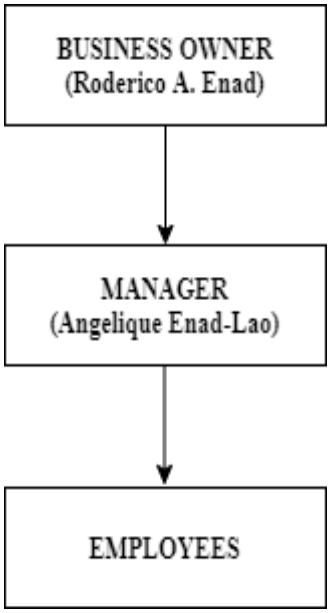

Figure 1: Organizational Structure of Sta. Teresa Funeral Homes

Sta. Teresa Funeral Homes is a family business and its owner is the one who is in charge for final decisions but because of his old age, his only daughter, the manager, is the one who oversees most of the business's operations and transactions as well as its branch. It has its employees who work for the company as shown in Figure 1.

1.6 Stakeholders

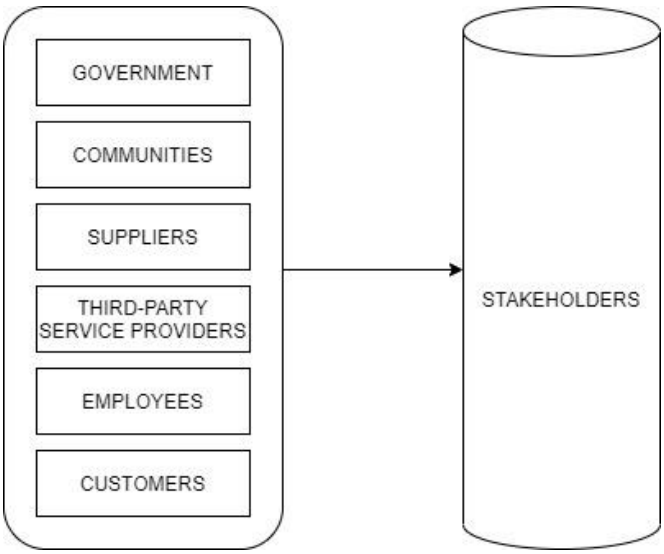

Figure 2: Stakeholders of Sta. Teresa Funeral Homes

Government, Communities, Suppliers, Third-Party Service Providers, Employees, and Customers are considered as a stakeholder in Sta. Teresa Funeral Homes as shown in Figure 2.

PROPOSED INFORMATION SYSTEM

The researchers proposed a Production Monitoring System and Biometric Time and Attendance System to achieve growth production and to record the data for worker's efficiency and unbiased data gathering.

2.1 Name of IS

Real-time Production Monitoring Systems (PMSs) are an alternative to manual data collection and captures most of the specified production data without human intervention. The overall objective of the present study is to analyses PMSs and to supply particular solutions for little and medium-sized enterprises (SMEs). The subtasks to be solved within the case of every particular PMS include determining relevant parameters, designing PMS, and developing the information analysis and prognosis model for short-term and long-term planning. The choice of suitable PMS components and relevant parameters and therefore the development of a lathe cutting unit instrument is described within the case study. Defended Inc. and National Instruments Corporation wireless components were adopted to implement an element of the PMS [3].

Biometric Time and Attendance System is one of the foremost successful applications of biometric technology. One of the most advantages of a biometric time and attendance system is it avoids "buddy-punching". Buddy punching was a serious loophole that may be exploited within the traditional time attendance systems. Fingerprint recognition is a longtime field today, but still identifying individuals from a group of enrolled fingerprints may be a time taking process. Most fingerprint-based biometric systems store the minutiae template of a user within the database. It's been traditionally assumed that the minutiae template of a user doesn't reveal any information about the initial fingerprint. This belief has now been shown to be false; several algorithms are proposed that may reconstruct fingerprint images from minutiae templates [4].

2.1.1 Related Literature

Based on a narrative analysis of the strategic development of incumbents within the funeral industry, we reconstruct the core components of strategic paths – strategic patterns and self-reinforcing mechanisms – and scrutinize the Internet's role in breaking these paths. We recommend that technological change helps break strategic paths by destabilizing the very self-reinforcing mechanisms that led to their emergence and reproduction in the first place [5]. To shed light on the disruptive nature of digitization and also the challenges that it entails for traditional offline businesses, we draw on path dependence theory to look at how digitization disrupts strategic paths. We explore this issue by analyzing the strategic path of funeral homes, a paradigmatic case of a conventional offline business that has been struck heavily by digitization [6].

Furthermore, the status of jobs is expounded to data of every completed operation, estimated production time, sequences, etc. It provides information about the order flow for the development of production sequences. A real-time overview of the assembly process supports a paperless reporting approach. Thus, comparison of planned and actual production numbers is feasible at any time and allows more realistic scheduling that may help to fulfill delivery deadlines [7].

Advances in production planning and control in recent decades have focused on increasing the sophistication of the design function. Permanently reasons, these advances have led to the centralization of the look function in production. However, the sophistication of the design function should be in balance with monitoring and control of the plan. Monitoring and control are by their nature decentralized, beginning on the workplace, and, therefore, the will for greater sophistication in monitoring and control results in renewed interest in decentralized and localized approaches [8].

Meanwhile, a biometric technology that involves the identification and verification of people by analyzing the physical body characteristics has been widely employed in various aspects of life for various purposes, most significantly as regards this study the difficulty of staff attendance. Despite the various advantages of the biometric system and its impact on various work sectors across the world, most biometric technology users face the difficulty of defining the correct and accurate biometric technology system which will be cost-effective in solving particular problems in an exceedingly specific environment. Also, within the company of South West region of Nigeria, to work out the particular biometric identifier that may be accustomed enhance their traditional staff attendance system which presently affects the productivity of the organization. The study was conducted employing a quantitative approach by designing a questionnaire because the data collection instrument supported different biometric technologies. The survey involved 37 employees who supported a stratified sampling technique. The results however show that fingerprint biometric identifier was found suitable for the staff attendance management system of the organization. It, therefore, implies that the spotlight should be paid too many factors before recommending biometric technology as a way of improving the productivity of an organization's business process [9].

In this, we propose a system that automates the entire process of taking attendance and maintaining its records in an institute. Managing people could be a difficult task for many organizations, and maintaining the attendance record is a crucial considers people management. When considering institutes, taking the attendance of employees daily and maintaining the records may be a major task. Manually taking the attendance and maintaining it for a protracted time adds to the problem of this task in addition as wastes plenty of your time. For this reason, an efficient system is meant. This technique takes attendance electronically with the assistance of a fingerprint sensor and every one the records are saved on a computer serve during this we propose a system that automates the entire process of taking attendance and maintaining its records in an institute. Managing people could be a difficult task for many organizations, and maintaining the attendance record is a very important thing about people management. When considering institutes, taking the attendance of employees each day and maintaining the records may be a major task. Manually taking the attendance and maintaining it for an extended time adds to the issue of this task also wastes plenty of your time. For this reason, an efficient system is intended. This technique takes attendance electronically with the assistance of a fingerprint sensor and every one the records are saved on a computer server [10].

2.1.2 Functionality

Production Monitoring System

- It prevents shortage and over-production.
- It monitors the manual production of parts and offers assistance to the worker.
- It stabilizes the production line.
- It reduces the cost of resources and guarantees consistency in production.

Biometric Time and Attendance System

- It reduces employee time theft.
- It integrates payroll, accounting, and billing systems easily.
- It provides accurate and detailed recording.
- It increases worker’s productivity.

2.1.3 System Architecture

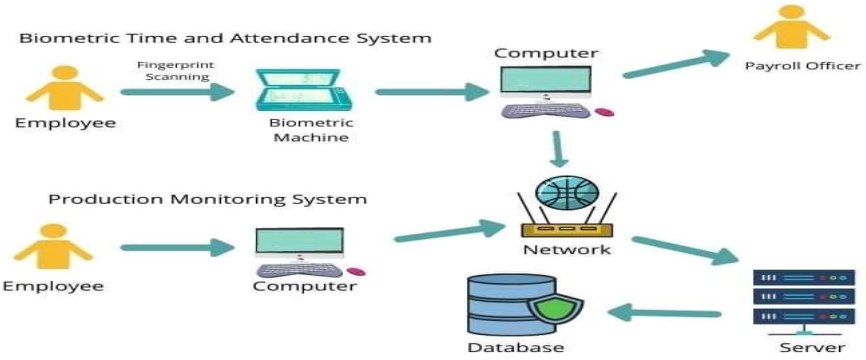

Figure 3: System Architecture of Sta. Teresa Funeral Homes

Figure 3 shows the system architecture of Sta. Teresa Funeral Homes using Biometric Time and Attendance System and Production Monitoring System. The data entered by the employees in the biometric machine are gathered, processed, and stored on the database, the same with the data entered by the personnel from the production line. These data are used in payroll transactions and supports decision-making activities that deal with the production of caskets, its quantity and designs.

2.1.4 Economic Feasibility

Table 2.Economic Feasibility of Sta. Teresa Funeral Homes

Cost Description	Cost
Operational cost	Php. 50,000.00
Development cost	Php. 20,000.00
Maintenance cost	Php. 10,000.00
Total Cost	**Php. 80,000.00**

Table 2 shows the overall cost of the business if they apply the proposed system.

PROPOSED IT INFRASTRUCTURE

The researchers want to improve both efficiency and productivity of the business and its employees specifically those in the production line. Given the situation in which the business and its casket factory are geographically apart, the researchers consider it as a factor in determining what components are needed.

3.1. Proposed Computer Hardware

The hardware infrastructure is integrated with fast-growing technologies to make business operations function smoothly. A business is considered operationally robust with adequate hardware.

Table 3: Proposed Computer Hardware for Sta. Teresa Funeral Homes

Computer Hardware	Specifications	Unit Cost	Qty	Total Cost
Desktop Computer Set	Core i5 i5 – 7200U (2133MHz) Windows 10 Professional 64-bit 8GB Integrated DDR4 1TB HDD NVidia GeForce 930MX 2GB	Php25,499.00	2	Php50,998.00
Biometric Fingerprint Time Attendance Machine	1 touch/second user recognition. Fingerprint reader with durable and highly accurate optical sensor. Stores 3000 templates, 5,000 CARDS and 30,000 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.	Php10,971.00	1	Php10,971.00
	Overall Computer Hardware Cost			**Php61,969.00**

Table 3 shows the overall computer hardware cost of Sta. Teresa Funeral Homes if they apply the proposed plan

3.2 Proposed Operating System Platform

The operating system is the most critical software that runs on a computer. It manages the computer's memory and processes, as well as all of its software and hardware.

Table 4. Proposed Operating System Platform for Sta. Teresa Funeral Homes

OS Platform	System Requirements	Unit Cost	Qty	Total Cost
Microsoft Windows 10	Processor: 1GHz RAM: 1 GB for 32-bit or 2GB for 64-bit Hard drive space: 16 GB for 32-bit OS, 32 GB for 64-bit OS Graphics card: DirectX 9 or later with WDDM 1.0 driver Display: 800x600	Php 14,999.00	2	Php 29,998.00
Overall OS Platform Cost	**Php 29,998.00**			

Table 4 shows the overall cost of operating system platform of Sta. Teresa Funeral Homes if they apply the proposed plan.

3.3 Proposed Enterprise Software Application

It implements resource planning by integrating all of the processes needed to run their companies with a system they acquired.

Table 5. Proposed Enterprise Software Application for Sta. Teresa Funeral Homes

Enterprise Software Application	Specification	Unit Cost	Qty	Total Cost
Point of Sale System	To specify the business pricing, inventory, and payments. To track also the time and attendance of the employees.	Php 7,500.00	1	Php 7,500.00
Overall Enterprise Software Application Cost			**Php 7,500.00**	

Table 5 shows the cost of enterprise software application of Sta. Teresa Funeral Homes if they apply the proposed plan.

3.4 Proposed Data Management

It provides the structure for information to be easily shared with others and organizes the firm's data.

Table 6. Proposed Data Management for Sta. Teresa Funeral Homes

Data Management	Specification	Unit Cost	Qty	Total Cost
Microsoft Office	Excel Word PowerPoint Outlook Teams OneDrive SharePoint OneNote Access Publisher	Php 4,899.00	2	Php 9,798.00
Overall Data Management Cost			**Php 9,798.00**	

Table 6 shows the overall data management cost of Sta. Teresa Funeral Homes.

3.5 Proposed Network and Telecommunication

Since the main business, its branch, and its casket factory are geographically apart, we proposed Metropolitan Area Network. It allows employees from both the production line and the office, and the manager to send emails fast which contributes in formulating proactive steps that avoids further problems which may occur when there is lack of communication. It also has a higher level of security.

Metropolitan Area Network

MANs are generally used to connect geographically dispersed computing devices through the internet. It acts as a gateway.

Table 7. Proposed Network and Telecommunication for Sta. Teresa Funeral Homes

Network and Telecommunication	Specification	Unit Cost	Qty	Total Cost
Metropolitan Area Network	It is commonly used to connect subscribers to a larger service network or the Internet.	Php 10,000.00	1	Php 10,000.00
Overall Network and Telecommunication Cost				**Php 10,000.00**

Table 7 shows the cost of network and telecommunication for Sta. Teresa if they apply the proposed plan.

3.6 Internet Platform

E-Commerce- is the buying and selling of goods or services via the internet, and the transfer of money and data to complete the sales.

Table 8. Proposed Internet Platform for Sta. Teresa Funeral Homes

Internet Platforms	Specification	Unit Cost	Qty	Total Cost
E-Commerce	Allow customers of Sta. Teresa to pay online	Free	1	Free
Overall Internet Platform Cost				**Free**

Table 8 shows the internet platform of Sta. Teresa Funeral Homes if they apply the proposed plan.

3.7 IT Manpower

Network Administrators are responsible for maintaining computer networks and solving any problems that may occur with them.

Table 9. Proposed IT Manpower for Sta. Teresa Funeral Homes

IT Manpower	Job Description	Proposed Salary
Network Administrator	Is responsible for maintaining computer networks and solving any problems that may occur with them.	Php 10,000.00 / month

Table 9 shows the cost of IT Manpower of Sta. Teresa Funeral Homes if they apply the proposed plan.

3.8 Prototype

Figure 4: Prototype for Sta. Teresa Funeral Homes

Biometric Machine

This prototype suits our chosen business which is the Sta. Teresa Funeral Homes help to improve the transaction process. This device will scan the fingerprint that can use to log in and log out of the employees.

CONCLUSION AND RECOMMENDATION

4.1 Conclusion

Based on the result, the study shows that Sta. Teresa Funeral Home should upgrade its attendance system and strengthen the monitoring of its casket production. The proposed plans are the best ways to improve business workflow and change the traditional IT-based system and control process.

4.2 Recommendation

The study has shown that improving the business process and boosting productivity means acquiring IT infrastructure and Information systems. The following are the researcher's suggestions for Sta. Teresa Funeral Home:

- To use information technology
- To follow the IS proposals for the improvement of the business.
- To strengthen the production monitoring.
- To acquire the best Network and Telecommunication for the firm.
- To upgrade the attendance process of the employee.

These recommendations are some of the best ways for the efficiency and effectiveness of the company.

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