

VALENCIA CITY ANIMAL PROFILING INFORMATION MANAGEMENT SYSTEM

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**UNDERGRADUATE CAPSTONE PROJECT PROPOSAL SUBMITTED TO THE
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CHAPTER 1

Introduction

1.1 Background of the

Record keeping is vital for effective livestock business management, serving purposes such as financial planning, government compliance, and livestock management decisions, and evaluating dairy farm records to allow informed decision-making based on actual farm performance. It also establishes an efficient record-keeping system aid in farm planning and analysis of production and financial records. Additionally, farm records are essential for compliance with regulations, monitoring antimicrobial use, and assessing efficiencies. Health records, including vaccinations and disease history, are crucial for dairy farm management. That is why maintaining accurate records enhances farm performance and decision-making (Yadeta, 2020).

In addition, choosing the right type of record keeping helps better monitoring and data management of a farm, computerized record-keeping systems have revolutionized farm management, it offers benefits like easy access to management reports for individual animals or the entire herd. These reports cover various aspects of herd management such as production, nutrition, reproduction, and health. Moreover, computerized record keeping systems are suitable for analysis since they offer graphical displays that simplify data analysis and decision-making. Graphs provide valuable insights into breeding and health, aiding in assessing reproductive performance against set goals (Yadeta, 2020).

Because of this, Phil-AHIS was designed from the Foot and Mouth Disease Information Management System (FMD-IMS) to enhance animal health management in the Philippines. This software system was designed to modernize animal health management, standardize data practices, ensuring timeliness, and enhancing reliability. It aims to improve decision-making, disease control, and public health outcomes in the Philippines (Gealone et al., 2012). However, the local veterinary office does not use this

system since the software system has a different workflow from the city veterinary office.

As a result, Valencia City Veterinary Office who caters animal health care within Valencia City, and provides services such as vaccination, animal health care, production, artificial insemination, consultation, certification, and training, shows lack of information management system. Based on the needs assessment result, the facility does not have information management system that can sync and manage their data effectively, since different departments within the facility utilize different tools for their record keeping, such as paper and pen, and Excel, as mentioned by one of their staff.

This study aims to develop an application for profiling and record-keeping for the Valencia City Veterinary Office. It involves the development of an information system for the information department, animal health department, production department, and administrative department of the veterinary office. The purpose of this development is to sync data from the four mentioned departments, enhancing data accessibility and the facility's record-keeping system.

1.2 Statement of the Problem

The Valencia City Veterinary Office contains different department, which uses different types of record keeping, such as manual record keeping using pen and paper, excel and other types of record keeping which is feasible to the officer in charge of that department, and no centralized database making it difficult for them to sync their data leading to delayed reporting, and limitations in storing and exchanging information, showing the need to have a system that can manage data and can sync data of different department within the Veterinary office, to improve data accessibility, animal record tracking, animal disease recognition and create animal disease control and prevention within the city.

1.3 Objectives of the Study

General Objective

The main objective of this study will be to create a desktop application that focuses on animal profiling information management system in Valencia City Veterinary Office.

Specific objectives

Specifically, this project aims to:

- create centralized database for animal profiling;
- create a user page that store, and update data;
- create an admin page that monitors, store, and update, and delete data;
- create account for Veterinary information, Animal Health, Animal Production, and Administrator department;
- document tracing, logs, reports and printing features.

1.4 Scope and Limitations of the Study

This study will be focusing only on developing an Animal Profiling Information Management System for different departments in Valencia City Veterinary Office, the information department, animal health department, animal production department, and admin department. Beyond the mentioned department are excluded from the scope of this study.

1.5 Significance of the Study

Animal diseases and outbreaks cause significant damage to our society, including economic losses and potential public health risks. The Valencia Veterinary Office is responsible for animal health monitoring and reporting. It emphasizes that managing data within the facility is crucial for securing and tracking animal health records, identifying animal diseases easily, and conducting animal disease control and prevention. However, there is currently a lack of integrated computing solutions, profiling information systems, and synced records of different departments within the said facility. Which shows the need for an Animal Profiling Information Management System in the

Valencia Veterinary Office. The implementation of a Veterinary Information Management System in the Valencia Veterinary Office holds immense significance for various stakeholders.

For staff members, such a system streamlines data management processes, allowing for efficient recording, retrieval, and analysis of animal health information. This not only enhances operational effectiveness but also facilitates informed decision-making regarding disease control and prevention strategies.

Animal owners stand to benefit significantly as well. With an integrated system in place, they gain access to comprehensive and up-to-date records of their animals' health status and treatment history. This fosters greater transparency and trust between veterinarians and animal owners, ultimately leading to improved care and welfare for the animals.

At the community level, the implementation of a Veterinary Information Management System contributes to public health and safety. By enabling swift identification and containment of disease outbreaks, the system helps mitigate the spread of infectious diseases among animals, thereby reducing the risk of zoonotic transmission to humans.

Furthermore, the availability of standardized, digitized data sets opens up opportunities for future researchers to conduct epidemiological studies and analyze trends in animal health over time. This not only advances our understanding of disease dynamics but also informs the development of more effective control measures and veterinary interventions.

In summary, the establishment of a Veterinary Information Management System in the Valencia Veterinary Office not only benefits staff members in their daily operations but also enhances service delivery to animal owners, promotes community health, and provides a valuable resource for future research endeavors in the field of veterinary medicine.

CHAPTER 2

Review of Related Literature

Information System

The most crucial asset for a business system's competitiveness, next only to its human resources, is the information it possesses. No matter the nature of its operations, a large business system cannot function optimally without effective management of information, which stems from a well-established information system (Omankwu, et al., 2018). Management Information System (MIS) is a structured system comprising people, procedures, software, databases, and devices designed to provide regular information to managers and decision-makers, it focuses mainly on operational efficiency and support various functional areas like marketing, production, and finance, connecting them through a shared database. MISs originated in the 1960s, where it utilizes information systems to generate managerial reports, often on a periodic basis. Due to their usefulness, MISs have become widespread among management levels, with reports initially intended for one manager often proving valuable to others in different roles, enhancing monitoring and control capabilities advantages (Stair & Reynolds, 2009).

Principles of Information System

The principle of the information system shows that information is important as it correlates directly with its ability to assist decision-makers in accomplishing the objectives of the organization. As well as computers and information systems as it continuously enables organizations to enhance their business operations. Moreover, understanding the potential effects of information systems and effectively applying this understanding can lead to both personal career success and organizations achieving their objectives. System users, business managers, and information systems professionals also need to collaborate closely to construct an effective information system, and information systems need to be implemented with careful consideration

and attention to ensure that society, businesses, and industries worldwide can fully capitalize on their significant advantages (Stair & Reynolds, 2009).

Decision Making

Information Management encompasses a continuous cycle of activities, including identifying information needs, obtaining and creating information, analyzing and interpreting it, organizing and storing it, facilitating access and dissemination, and ultimately utilizing the information (Opoku, 2015). It also includes decision-making, which is the process of reasoning through relevant information to make decisions or take actions aimed at achieving goals. Decision-making is crucial in addressing the needs and solving problems within an organization, with its effectiveness determining the success and advancement of the organization (Santoso et al., 2022).

Information System in Industry

Because of the usefulness of the information system every department in a company, uses this system in almost every industry or field in business. Accounting Information Systems (AIS) plays a critical role in providing consistent and relevant financial information to stakeholders for making informed decisions. It has been widely adopted by numerous organizations to automate and integrate their business operations, to improve efficiency and gain competitive advantages. The IT component of AIS is particularly influential, enabling firms to easily track, record, and generate financial and accounting reports. Traditional manual methods such as paper ledgers and handwritten statements have been replaced by computerized systems, allowing for the rapid conversion of individual transactions into comprehensive financial reports. (Ganyam & Ivungu, 2019).

In addition, many corporations utilize information systems to automate processes and enhance operational efficiency, aiming to improve organizational effectiveness and competitiveness. Previous studies have shown that adopting information systems leads to enhanced performance and efficiency. In Malaysia, small and medium enterprises (SMEs) are crucial for driving domestic investment post the 1997 economic crisis.

Because of that, it is important for SMEs to adopt information systems, especially Accounting Systems (AS), to stay competitive amidst pressure from both within their industries and larger firms (Kharuddin et al., 2010).

On the other hand, over the past four decades, the agricultural sector has faced unprecedented complexity and rapid change. Farm Management Information System (FMIS) incorporating a (non)linear optimization gives advantages in providing farmers with a deeper understanding of their farm operations, particularly concerning numerous internal interdependencies. Additionally, scenario analysis and "what if" analysis facilitated by these new tools can significantly enhance management decision-making processes (Husemann & Novković, 2014).

Information System in Health Care

Study also shows that implementing information systems or Electronic Medical Records (EMRs) to animal health care such as for pets brings comparable advantages to those observed in human healthcare, such as better care quality, enhanced collaboration among veterinary experts, and streamlined treatment planning. The growth of veterinary informatics, involving the implementation of innovative methods, strategies, and technologies, is crucial for reinforcing conventional surveillance systems focused on preventing and managing diseases that can spread between animals and humans (Tamburis et al., 2021).

During the COVID-19 pandemic, information systems have become crucial tools for controlling infectious patients and limiting the spread of the virus, primarily through mobile applications. Many countries have introduced such apps to enhance contact tracing efforts and mitigate the transmission of the virus. The development of information systems for managing infectious patients has gained significant importance in our current circumstances (Govorushchenko et al., 2023).

Philippines Animal Health Information System

Phil-AHIS is an advanced software system developed from the Foot and Mouth Disease Information Management System (FMD-IMS) to enhance animal health

management in the Philippines. It utilizes a relational database management system to ensure standard, timely, and reliable information. Phil-AHIS consists of three interconnected subsystems: data collection and entry, data storage and management, and report generation and analysis. Its objectives include modernizing animal health management, standardizing data practices, ensuring timeliness, and enhancing reliability. Overall, Phil-AHIS aims to improve decision-making, disease control, and public health outcomes in the Philippines (Gealone et al., 2012).

In conclusion, the information system plays a crucial role in managing information, it is being used in different industries, such as business and finance, as well as health care sectors to enhance their operational efficiency, make informed decisions, and improve data accessibility. Applying this to animal healthcare, an information system is essential for tracking records and controlling widespread diseases if they occur. Although Phil-AHIS exists for this sector, its features do not align with the workflow of local Veterinary Offices, resulting in their underutilization of the system.

Because of that, this project will develop an information system intended for the Valencia City Veterinary Office, allowing the information department, animal health department, production department, and admin department of the said office to sync their data, and improve their operational works.

CHAPTER 3

Technical Background

In developing Animal Profiling Information Management System, the proponents selected a collection of tools and technologies that enable efficient and effective desktop application development. This section presents an overview of the main components of our technological framework:

3.1. Programming Language and Integrated Development Environment (IDE)

3.1.1. Visual Basic

The proponents have chosen Visual Basic as a primary programming language for developing Animal Profiling Information Management System due to its flexibility to create customized applications that run on windows or web, making it versatile, and robust, allowing developers to create programs by dragging and dropping visual elements and then easily coding their behavior.

3.1.2. Visual Studio

Visual Studio will serve as an integrated development environment (IDE) for Visual Basic and .Net for the development of this project. It is a comprehensive (IDE) that provides a robust set of features for writing, editing, debugging, and running code. The versatility and compatibility of Visual Studio with Visual Studio and .Net make it an excellent choice for developing this project.

3.2. Framework

3.2.1. .NET

.NET is free, open source, and works across different operating systems, including Windows, Linux, and MacOS. It allows developers to build applications and run seamlessly on various platforms. It also has a large ecosystem and powerful tooling, making it one of the most productive platforms for developers.

3.3. Backend Services and Database

3.3.1. MySQL

The proponent will use MySQL as a database design approach for Animal Profiling. MySQL is a database management system that organizes, stores and retrieves data efficiently. It also provides a reliable and efficient way to manage data from simple to vast corporate networks. MySQL is an open source database and widely used for application development. The performance, reliability, flexibility, scalability, and its security features are the factors that makes it an excellent choice for database management of this project.

3.4. Design and Prototyping Tools

3.4.1. Visual Studio

The proponent will directly use Visual Studio for prototyping to create the user interface (UI) and user experience (UX) design of Animal Profiling. It is a comprehensive (IDE) that provides a robust set of features for writing, editing, debugging, and running code. The versatility and compatibility of Visual Studio with Visual Studio and .Net make it an excellent choice for developing a prototype of this project.

4.3.1 Agile Development Approach:

Adopting an agile development approach has allowed the team to adapt to changing requirements and priorities quickly. Iterative development cycles enable continuous feedback and refinement, ensuring that the Valencia City - Animal Profiling Information Management System remains aligned with stakeholder needs.

CHAPTER 4

Methodology

This chapter elucidates the methodology adopted for crafting the Valencia City Profiling Information Management System (VC-PIMS).

4.1 Conceptual Framework

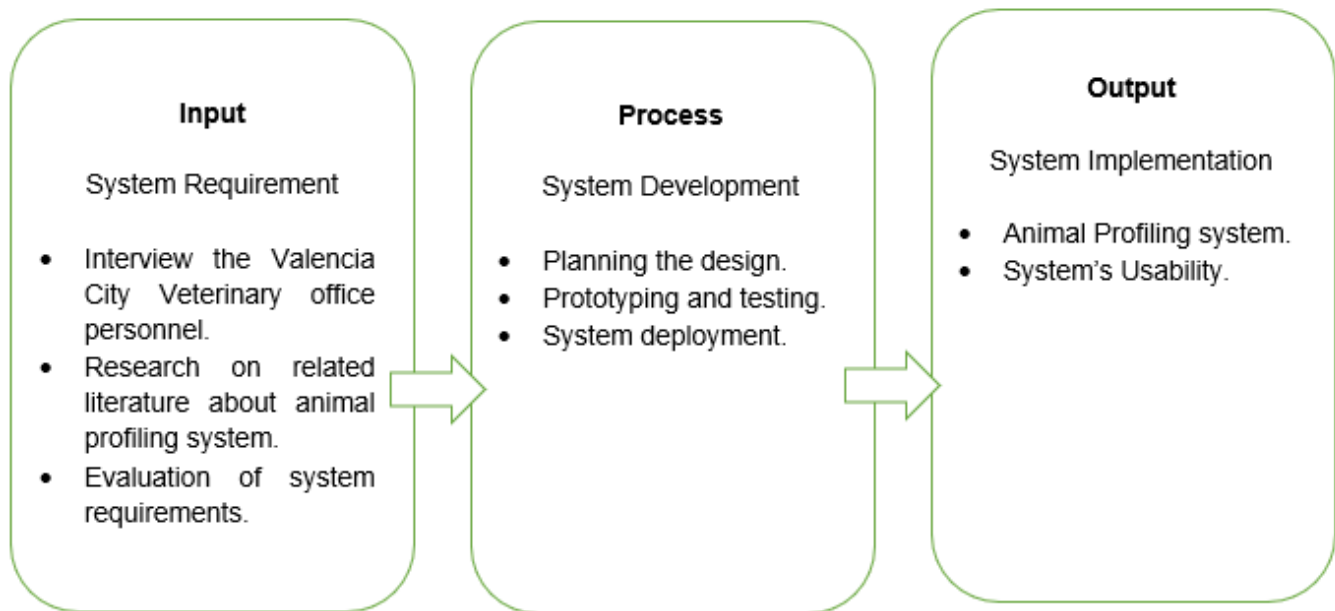


Figure 1. Process for the system developed.

This figure discussed the process of the Valencia City – Profiling Information Management System. The proponent identified the project's developed system requirements, which were conducted through interviews, research and evaluation. After identifying the requirements, the proponent will undergo system development, including planning the design of the system, prototyping and testing its functionalities, and deployment of the system. Furthermore, after the development process, the application will be implemented to identify the system's usability towards the users.

4.2 Research Methodology

4.2.1 Research Design

Our research design adheres to a qualitative approach, predominantly reliant on interviews for data collection. This method enables us to delve deeply into the needs and expectations of stakeholders at the Valencia City Veterinary Office.

4.2.2 Data Collection

The collection of data will be through interviews. The proponent will go to the Valencia City Veterinary office to conduct the interview. The collected data will be recorded and handled with confidentiality.

4.2.3 Data Analysis

The interview was recorded and was transcribed, the transcripts were read line by line and open coding was used to label concepts and assigned descriptive codes to represent ideas mentioned from the interview, then selective coding was used to select the most relevant information that would be used in creating and developing the proposed system.

4.2.4 One-to-one Interview

One-to-one Interview was used in conducting the needs assessment to know the requirements for designing and developing the system. This interview was done with the attending veterinarians from departments within the Valencia City Veterinary Office, including personnel from the information department, animal health department, animal production department, and administrative department. Through these interviews, we aimed to elicit comprehensive insights into the specific functionalities and features required by each department to enhance their data management and operational efficiency.

4.3. Requirements Gathering

4.3.1. Identification of Stakeholders and User Groups

In the process of identifying stakeholders, various methods were employed to engage both service seekers and providers for participation in the survey. To reach service seekers, a convenience sampling technique was employed, where individuals were randomly selected from Bukidnon. On the other hand, identifying service providers involves a multifaceted strategy. This included connecting with known service providers within the network of the survey proponents, making on-site visits to places such as Emporium in Valencia City, which is a popular location for service providers, and randomly approaching individuals to inquire about the services. The combination of these diverse approaches ensured a comprehensive representation of both groups in the target geographical area, thus increasing the inclusivity and reliability of the survey outcomes.

4.3.2. Functional and Non-functional Requirements

4.3.2.1. Functional Requirement

Animal Profiling Information Management System has different features for every department. The user will be asked to login first to verify the user's identity. To manage the users, authorized users may click the users tab and see the users information. For client information, profiling the user may click the client tab in the dashboard where it shows information about the client, a registration form and services that the client may acquire. For the animals information records, the user may go to the pet tab in the dashboard to look or register animal's information. These features work together towards the goal of improving the record keeping and workflow in Valencia City Veterinary Office.

4.3.2.2. Non-Functional Requirement

The application will utilize efficient coding methods, employing Visual Basic and .Net technologies, to fulfill non-functional requirements effectively.

These requirements include scalability to manage growing user and task demands, robust security measures ensuring secure user authentication and safeguarding of user data and transactions, and intuitive navigation for user-friendly interaction.

4.3.2.3 Software Requirement

The software requirements for this desktop application specify compatibility with operating systems such as Windows. Users will need to install the application on their desktop computers or laptops running these operating systems. The application is designed to function with the need of internet connection, to ensure data transfer and content delivery for the collaboration work of different departments in Valencia City Veterinary Office.

4.3.2.4 Hardware Requirement

The hardware requirements for optimal performance of the desktop application will rely on internet connectivity. The desktop application will use internet connectivity to enhance collaboration and productivity. While it can function offline, it seamlessly integrates with online services to facilitate real-time collaboration and data sharing among users. This connectivity enables users to collaborate on projects, share files, and communicate efficiently. Furthermore, the application is designed to be lightweight and efficient, requiring only minimal storage space for installation. Its compatibility with the latest operating systems ensures smooth performance across different desktop platforms, while its internet connectivity empowers users to collaborate effectively in today's digital workplace.

4.4 Design of Software, Systems, Products and/or Processes

The primary function of the Animal Profiling Information System is to have a responsive design that facilitates the management and retrieval of animal data for

Valencia Veterinary Office, the records of animal health, production, and the data from the information department. This is to ensure that the said office can easily navigate the application, access relevant information, and engage effectively with the system's functionalities.

4.4.1 Flowchart

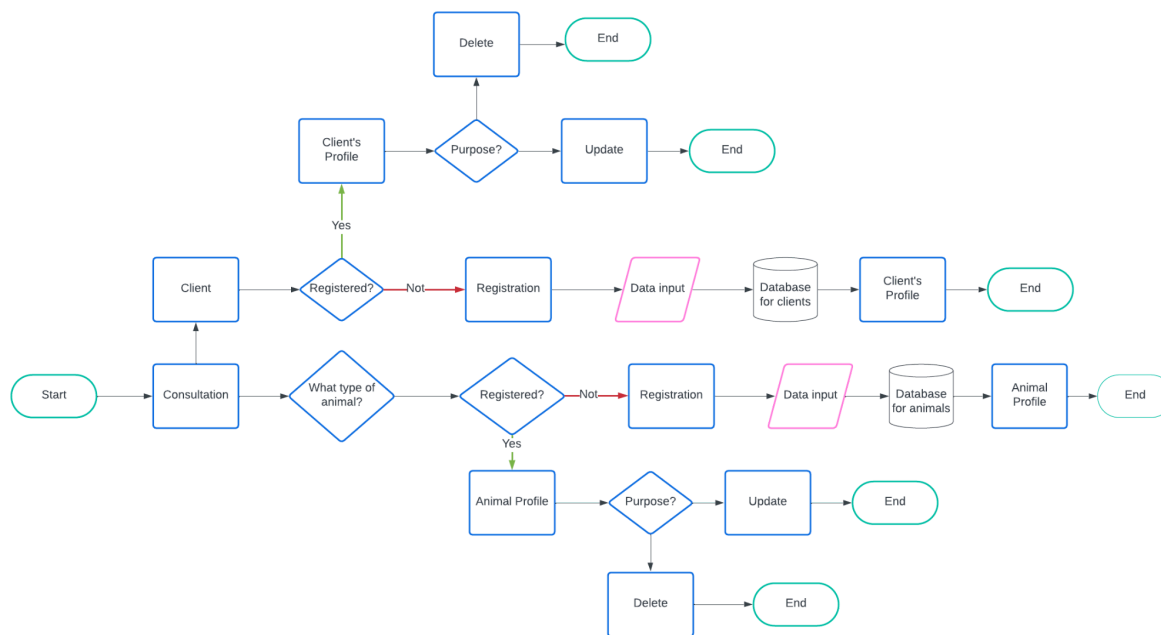


Figure 2. Animal Profiling flowchart.

The initial step involves the consultation, wherein veterinarians will register the client and the animal. After the registration process, the data will be stored in the specific database. For animal profiling, all the needed information will be recorded and identified as its purpose. The assigned personnel will identify the type of animal that will be registered and record the information for animal profiling. Same thing on client profiling, the data will be recorded also and identified as its purpose. The assigned personnel will identify the client and that data will be recorded in relation to animal profiling.

4.5 Development and Testing

The development and testing phase of the Animal Profiling Information Management System aims to create a fully functional and reliable application based on the specified requirements given by the stakeholder. During this phase, the team will employ coding methodologies to ensure robust software development and will make sure that all features of the system will be working and be effective when being implemented in the Veterinary Office.

4.5.1 Structured Programming

Top-Down

The designing of the system will be adopting a top-down approach, then the development team will define the structure of the software before focusing into the small details. Utilizing this approach will give a comprehensive understanding of the entire application and organize the modular development.

Modular Programming

The system's code will be organized into modules for specific functionalities. The modular structure will simplify maintenance and enhance the development, these modules comprises the users module, pet modules, and the clients module wherein each module caters different features depending on its needed information.

Structured Coding

Structured coding will be utilized in developing the system to ensure that the code is organized, follows logical flow and will simplify code maintenance.

4.5.4 Testing

The testing phase is integral to ensuring the reliability and functionality of the developed code. Strict testing methodologies, including unit testing, integration testing, and system testing, will be employed to identify and rectify defects.

Unit Testing

This method will allow each module to be tested individually to verify its correctness and adherence to specifications.

Integration Testing

This method will be systematically combined and will be tested to ensure that they interact well and produce the expected outcomes.

4.6 System Implementation

Once development and testing are complete, the VC-PIMS will be deployed within the Valencia City Veterinary Office. Training sessions will be conducted to familiarize users with the system's features and functionality.

4.6.1 Maintenance

The application will be partially deployed in Valencia City Veterinary Office. Additionally, during the post-release phase, the proponents will make sure that the system is completely operational and functional, updating it to meet quality standards and enhancing it throughout to ensure it continues to function.

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