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Development and Implementation of Marinduke Native Pig Breed Information System

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Abstract *– Through analyzing the cumulative data from end-user inputs to produce information that is useful for controlling operations, the information system plays an important role in the enterprise. The Marinduque Native Pig Breed Information System aims to develop a system that will collect and monitor the qualitative and quantitative traits of the Markaduke. It also aims to provide fast and efficient morphological recording system. The system was developed as designed in accordance with the requirements and specifications in the conduct of monitoring of pigs in the farm and gathering data such as qualitative (appearance) and quantitative (performance) data of native pigs. The developed system is working in accordance with the existing process of monitoring pigs on the organization with the following features: Add New Pig, Breeder Records, Breeding Records, Grower Records, List of Pig Records, and Generation of Reports. The process of measuring and capturing records (appearance) is still manual in nature using a measuring tape, weighing scale, and record book. In order to secure the system, each user of the system was given a username and password and given restrictions to use the system. SMS Technology features notify the end-user in identifying which native pig is to be measured.*

Keywords *– Information System, Markaduke, Native Pig, qualitative traits, quantitative traits.*

INTRODUCTION

The advancement and application of data frameworks is a cutting-edge trend that is primarily concerned with the gathering, processing, and the change of valuable data that coordinates an organization for better planning, leadership, and, ultimately, better outcomes. Human error is limited by data framework and improving job proficiency is one of every organization's and association's primary goals. They are impossible to achieve without a brilliant data system capable of providing the necessary information in a matter of seconds.

The breed produces with a well-built body and a coarse, dense black coat with silvery white hairs strewn over their sides. In male pigs during breeding season, elongated, firm hairs form a top that runs down the middle of the back, forming a famous mane over the neck and head crest. Smooth skin, a solid/uniform coat color pattern, and white body coat colors were the most common characteristics of pigs. Their ears are prickly and droopy, with a forward or upward orientation. Pigs have straight tails, heads, and backlines, with snouts that are often long and small (Karnuah, 2018). However, it is necessary to promote raising a local pig breed that needs minimal inputs in terms of housing, feeding, and veterinary care, as well as the productivity through better management, record keeping, and simple genetic selection.

Other notable characteristics of native pigs include their adaptability to local environmental conditions, obvious disease tolerance, and the meat's distinct texture and flavor. There are compelling reasons to invest in R&D initiatives aimed at improving the country's indigenous pig population (Baguio, 2017).

Morphometric data was used to determine the physical appearance of different animal breeds and may provide first-hand information on animal breeding suitability (Nesamvuni et al., 2000; Mwacharo et al., 2006; Adeola et al., 2013, Adjei et al., 2015).

As evident, the organization encountered different problems such as delay submission of reports. The leading cause of this problem is when the farmers forgot to gather data of the pigs, which delays the posting of such data. Another problem is some data of the pigs get lost because of the data captured were written only in booklets, and sometimes these booklets are misplaced.

Thus, the development of a web-based information system showcasing the unique qualitative and quantitative traits of the Philippine Native Pig of Marinduque.

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OBJECTIVES OF THE STUDY

The main focus of this study is to develop an information system that will improve the manner of collecting, capturing, recording, and providing of statistical information (qualitative and quantitative traits) of Markaduke Native Pig in a fast and effective manner.

MATERIALS AND METHODS

The method was designed using a modified waterfall methodology, in which the model offers an ordered sequence of development steps with some versatile iterative stages to encourage the adequacy of documentation and design reviews to ensure the project's consistency, efficiency, and maintainability. This method is also the chosen method for undertaking highly complex and technologically demanding custom software development projects.

An interview was conducted at Marinduque State College, Torrijos, Marinduque to gather relevant information essentials on the development of the system. Sample forms and reports were asked from the organization, and this serves as guide in designing the developed system. Other data like morphological and morphometrics of native pig were also asked and these information are another essential input in conceptualizing the system.

A prototype was made and presented to the user. The built prototype includes the adding/inserting of records, updating of records, login interface, and simple design of the system. After presenting the prototype, the users suggested some adjustments like in scheduling of sending SMS for updating the user for the data gathering. Use Case Diagram served as the blueprint in the entire development of the system.

RESULTS AND DISCUSSION

The Marinduque State College Native Pig Research farm uses a manual process in data gathering and collection of records of native pigs. The staff uses booklets in data gathering, every after 45 days, 60 days, 90 days, 120 days, 150 days, 180 days, 210 days and 240 days old, and check if there are newborn pigs and then the Research Assistant records the data gathered in a spreadsheet and print the reports to be submitted to Department of Science and Technology- Philippine Council for Agriculture, Aquatic and Natural Resources Research and Development (DOST-PCAARRD).

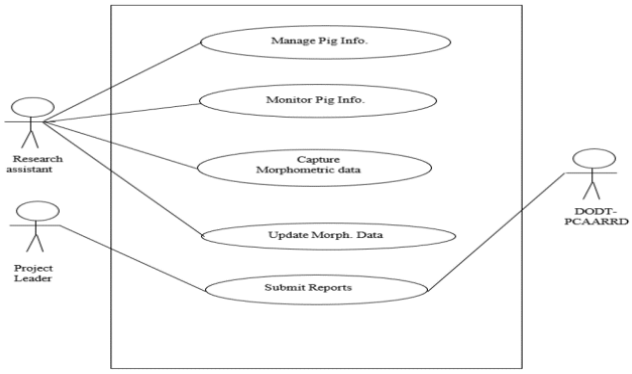

Figure 1. Use Case of the Existing System

Features of the Markaduque Native Pig Breed Information System

The developed system was developed to easily manage native pig records and make transaction become faster. The system can insert and update the record when it comes to native pig information. It also provides secure information on pig records because the native pig record is also accessible for users and admin of the system only. Generating reports also be done in the system such as sales and mortality, breeding record, morphometric data, slaughtered reports, insemination breeding, and inventory reports.

To login to the main dashboard of the system, the users need to enter a username and password for the security of native pig records. The system admin of the system is one that can access the whole functionalities and features of the system. Otherwise, the users only of the system have a limited function to be accessible in the system.

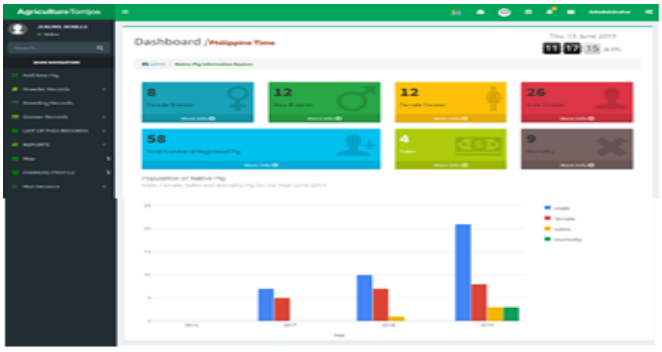

Figure 2. System Dashboard

The system admin is responsible for inserting and updating native pig records submitted by the data

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collector team responsible for data gathering. Also, it can approve pending native pig notification, generate a schedule of data gathering activities and generating different reports when it comes to native pig records. The system admin will be the one who can only printout and generate reports such as sales and mortality, breeding record, morphometric data, slaughtered reports, insemination breeding, and inventory reports.

The system user has limited access in using the developed system who is capable of adding new pig details, editing and updating (breeders, breeding, and Grower records) of native pig records such morphometric, morphology and weight.

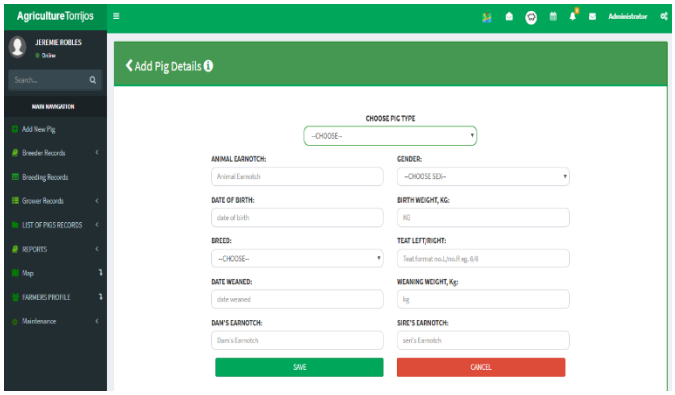

Figure 3. Adding New Pig Details

Security Measures

The system will become more secure because only the user and administrator will be the one who can access the whole features of the system. Admin will handle in terms of inserting, updating and generating native pig reports. Visitors/guests of the system cannot access the whole system. They can only view the front interface of the system with a graphical representation chart about the population of a native pig. The user is the one that can edit their data like changing password and profile picture. Other users of the system cannot change other accounts. Users was delimited to access features of the system such as generating reports and approving notification.

User's log was also other security features of the system to monitor the transactions happened in the system. User identity and the time and date that the system accessed will be recorded.

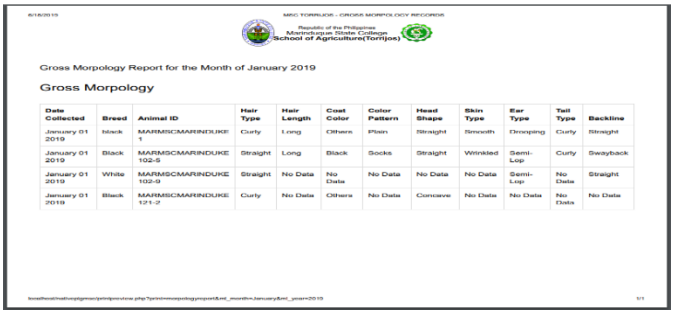

Figure 4. Gross Morphology Report

Report Generation. The system can automatically generate reports such Gross Morphology, Insemination Breeding, Slaughtered, Morphometric, Mortality and Sales, Sow and Litter Records, Breeding, Promotion, and Experimentation Reports.

CONCLUSION AND RECOMMENDATION

The developed system was designed and developed in accordance to the requirements and specification in the conduct of monitoring and tracking of native pigs in the farm, and also gathering native pig traits data such as morphological and morphometric, and for deployment and implementation.

CONCLUSION AND RECOMMENDATION

TR 11 font size, uppercase bold, and centered. Six spaces indentation for first statement. Leave one space for next paragraph. This portion presents your interpretation of the results given in Results Section and draw conclusions from your analysis of those results and then make recommendations based on your analysis. In short, tell your results mean and what actions should be taken as a result of your findings.

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