Management Information Systems and Geographic Information System for Managing Durian Resources

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AGENDA

1. Introduction
2. Objectives
3. Implementation
4. Results
5. Conclusion
1. INTRODUCTION

• Durian is part of the diversity of tropical fruits in Thailand, which has over 200 species. The knowledge of growing durians is passed down from generation to generation of durian gardeners.

• The research team recognizes the need to develop a system for disseminating and accessing information to be up-to-date and to cover the needs of users of the data in the most beneficial way.

• Therefore, the Geographic Information System (GIS) has been developed to display data to connect the durian resource data with geographical coordinates with maps.
2. OBJECTIVES

- This research aims to develop a web-based system and development of a mobile application for collecting durian resources.

- The data can be used for implementing a Geographic Information System of durian resource management and the local wisdom of Thai durian gardeners by designing to use the same database system.
3. RESEARCH METHODOLOGY

The System Development Life Cycle (SDLC) is used as same as in most organizations. This technique consists of several methodologies, depending on the system's characteristics, the expertise of the system developers. System development tools with methodology examples that are commonly used in system development, such as waterfall methodology.

The traditional life cycle system: development process consists of information system development stages, including requirement gathering and analysis, system design, implementation, integration and testing, deployment, and maintenance.
3.1 Requirement Gathering and Analysis

System investigation: System investigation is a study of a project's feasibility to see how likely it is to succeed, including assessing various feasibility such as technical feasibility, economic feasibility, and behavioral feasibility.

Collected data: Collected data is various kinds of durian information such as users, administrators, durian varieties, school information, durian character data, canopy, stem, and bark information, etc.

System analysis: System analysis is an analysis of organizational problems that are solved by information systems. This step involves identifying organizational problems, including the cause of the problem, the solution, and specifications that meet the information requirement.
3.2 System Design

**Logical systems design**: Information system design and relationships of various elements in how they appear to users. Include input, output design, database process telecommunications, control, and data security.

**Physical systems design**: Specific technical design characteristics, including hardware, software, and database design. The systems contain 42 tables with five tables extended.

**Software design**: PHP language with the Laravel framework.
3.3 Implementation

- System installation, implementation, is the process that changes from the old system into the new system.

- There are four ways to change the system, including **parallel, direct conversion, pilot conversion, and phased conversion**.

- This research implements in the form of pilot conversion from **Songkhla province** and extended to other provinces in southern Thailand.
3.4 Integration and Testing

• All the units developed in the implementation phase are integrated into a system after testing of each unit. Post integration, the entire system is tested for any faults and failures.

• The test will continue to the user testing by extending the durian garden training in three provinces, i.e., Songkhla, Satun, and Nakonsrithammarat.
3.5 Deployment of system

- Once the functional and non-functional testing is done, the web-based application will first implement and deploy in the virtual machine server, including PHP, java product is deployed in the customer environment or released into the durian gardener and government.
3.6 Deployment of system

- Once the functional and non-functional testing is done, the web-based application will first implement and deploy in the virtual machine server, including PHP, java product is deployed in the customer environment or released into the durian gardener and government.
Some issues come up in the durian garden environment, such as some area cannot connect with 3G/4G.

The researcher need to use another device to collect the GPS signal and save the data into the device.

In order to fix the issues, the program can record the data into the device and update the data to the online database when catching the internet signal.
4. Results

4.1 Web-based Results

4.2 Mobile Application Results

4.3 GIS Results
4.1 Web-based Results

• Figure 2 shows the durian tree's web-based interface, number of durian types, and the number of each particular type.
4.2 MOBILE APPLICATION RESULTS

MOBILE APPLICATION INTERFACE, UX/UI SHOWN IN FIGURE 3.
4.3 GIS Results

- Geographic Information System (GIS) will display the information and process information about durian resources and other relevant information, such as the accession of durian tree, latitude, longitude, address, province, and durian varieties.
4.4 Evaluation results

- There were four evaluation categories of both system, mobile application and web-based application, including: installation and understanding, operation and function, format, and usage.

- Table 1 shows that most of the four categories are in high level of the both systems, mobile application and web-based application. However, in terms of overview works, the result is in very high level. This result show that both systems are suitable for using in the durian garden field and most of the user accepts to use.
5. Conclusion

- This research paper explains a durian varieties survey system, including developing, disseminating, and searching for information on durian resources and wisdom of Thai durian gardeners for use via the network.

- The system is designed to collect and manage durian genetic resources and local knowledge of durian farmers in Thailand for the most benefit. It can store data digitally through web applications that are used via web-based applications and smartphones to run the Android operating system.
<table>
<thead>
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<th>Topics</th>
<th>Avg</th>
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ACKNOWLEDGEMENT

• The author wishes to extend special thanks to the Plant Genetic Conservation project under the Royal Initiative of Her Royal Highness Princess Maha Chakri Sirindhorn for initiating the durian conservation project, Department of Plant Science, Faculty of Science, Mahidol University for supporting the fundamental of durian knowledge, and all the durian orchard owners for providing research materials and informative local wisdom.
REFERENCES

Q & A