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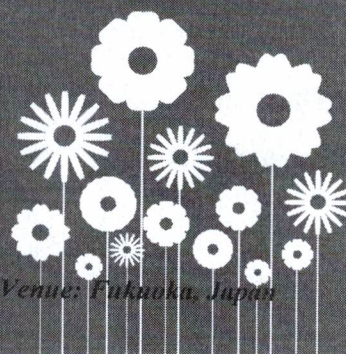
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Chair's Message

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IAM2018S Call for Papers, Chiang Mai, Thailand, July 10-13, 2018.

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HOME

The Development of Database System of Thai Food Local for Communities in Phetchabun, Thailand

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Abstract

There were three objectives of this research: 1) to develop the Thai Food Local Database System in Phetchabun, 2) to evaluate the developed FSDB system via users and 3) to develop the infographic for Thai Food Local.

This research methodology is divided into three parts: 1) A synthesis of food local database system model. 2) Development of the infographic for Thai Food Local and 3) Development of the FSDB, analysis, design, development and evaluation of the analyzed data Development of the infographic for Thai Food Local. For the research processes we studied the related information, selected the application prototype based on studied criteria, and developed the prototype selected. Black-box test was chosen to evaluate and assess results obtained from the experts.

The analysis of the evaluation of system efficiency by the experts, chairmen and people from the Phetchabun Province found that the system efficiency was at the high level over five aspects with a mean of 4.61 and a standard deviation of 0.49. Usability Test tested in the good rating threshold ($\bar{x} = 4.47$, S.D. = 0.52), Functional Requirement Test was at very good ($\bar{x} = 4.58$, S.D. = 0.50) Security Test was at very good level ($\bar{x} = 4.93$, S.D. = 0.26). Output Validation Test was at very good ($\bar{x} = 4.67$, S.D. = 0.50) and Functional Test was at good ($\bar{x} = 4.38$, S.D. = 0.5)

Keywords: Food local; database system; infographic

1. Introduction

During the years 2011 to present, the impact of food insecurity in the country of Thailand is recognized to be food contamination from germs and worms. The different types of chemical contamination from the condition of food production sources reveals that the number of people in Thailand that are at risk of health problems from consuming contaminated food is increasing every year. Socioeconomic conditions and modern technology used in food production are developing at a rapid pace, and the progress of these technologies makes more diverse foods available to meet the needs of consumers as some become lifelong consumers. In addition, modern technology can also help solve the problem of food shortages. The ability to transport food all over the world – while being a benefit of technological progress – causes more problems as food becomes potentially insecure. Each country around the world is trying to fix the problem. (Ratanakorn, 2016) (Wanwimolruk, Kanchanamayoon, Phopin, & Prachayasittikul, 2015) (Poolklai, 2015)

Phetchabun province supports food local with its many industries and agricultural resources. Application of the management information system, which is the digital sharing, gathering, storage, application and community dissemination to the database community of process of technical and academic grade food local information, as well as the community wisdom, skills and food requirements, is directly related and beneficial to the government's response to these requirements through policy and community economic development.

Therefore, researchers have automated library system services to link network. Problems in the database have been identified, being a lack of integration between the library in the community, between researcher and research development, and lack of agricultural industrial community support in regards to food local improvement measures using the database and promote the Thai food local infographic for communities understanding.

2. Literature Review

2.1 Database

Database is a collection of information that is organized so to be easily accessed, managed and updated. Data is organized into rows, columns and tables, and indexed to make it easier to find relevant information. Data gets updated, expanded and deleted as new information is added. Databases process workloads to create and update themselves, querying the data they contain and running applications against it (Beal, 2016). Internet technology has become a major tool that enriches the way people interact, express ideas, and share knowledge. Through different means such as personal Web sites, social networking applications, blogging, and discussion boards, people express their opinions, interest, and knowledge in particular matters from which a connection or relationship can be drawn. (Materia, et al., 2016; Granell et al., 2016)

Database Management Systems (DBMSs) are complex, mission-critical software systems. Today's DBMSs embody decades of academic and industrial research and intense corporate software development. Database systems were among the earliest widely deployed online server systems and, as such, have pioneered design solutions spanning not only data management, but also applications, operating systems, and networked services. The early DBMSs are among the most influential software systems in computer science, and the ideas and implementation issues pioneered for DBMSs are widely copied and reinvented. For a number of reasons, the lessons of database systems architecture are not as broadly known as they should be. First, the applied database systems community is fairly small. Since market forces only support a few competitors at the high end, only a handful of successful DBMS implementations exist. The community of people involved in designing and implementing database systems is tight: many attended the same schools, worked on the same influential research projects, and collaborated on the same commercial products. Second, academic treatment of database systems often ignores architectural issues. Textbook presentations of database systems traditionally focus on algorithmic and theoretical issues — which are natural to teach, study, and test — without a holistic discussion of system architecture in full implementations. In sum, much conventional wisdom about how to build database systems is available, but little of it has been written down or communicated broadly. (Adya, 2000; Agrawal et al., 1987; Astrahan et al., 1976).

2.2 Food Local

Food local is essential to good nutrition and health. WHO – a scientific discipline describing handling, preparation, and storage of food in ways that prevent foodborne illness – estimates that every year, 1 in 10 people fall ill and 125,000 children under 5 years of age die from foodborne disease (WHO, 2016). This includes a number of routines that should be followed to avoid potentially severe health hazards.

3. Research Methodology

3.1 Studying and Collecting Related Data

The relevant literatures and researches were analyzed and synthesized. These were then used to design the research tools. Fig. 1 shows the research methodology framework.

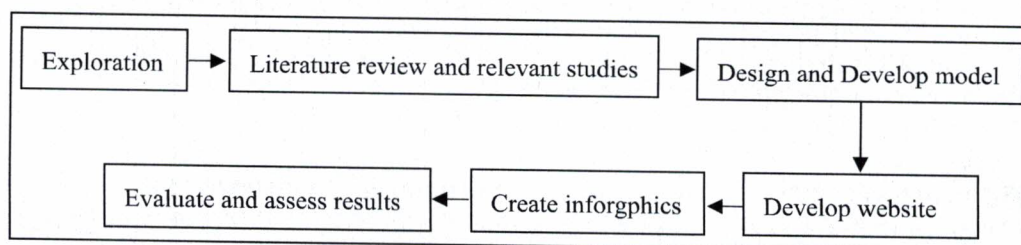


Fig. 1. Research Methodology Framework

3.2 Design and develop FSDB model

The FSDB model is viewed as a place for a group of people with common interest on information and communications technology (ICT) to meet and chat virtually. It is thus a source of information and knowledge to be shared. The FSDB system through its functions allows members to collection data and information and helps to build community and users to views information with infographics. As a collaboration module, the FSDB system helps in promoting activities for mutual benefits, through online joint learning or partnership programs (e.g. online project collaboration). It is interoperable allowing opportunities for standardization, thus making it easy to use, flexible and powerful (Bayer, & Schkolnick, 1977; Bennett, Ferris, & Ioannidis, 1991). Fig. 2 shows the modules of FSDB Model.

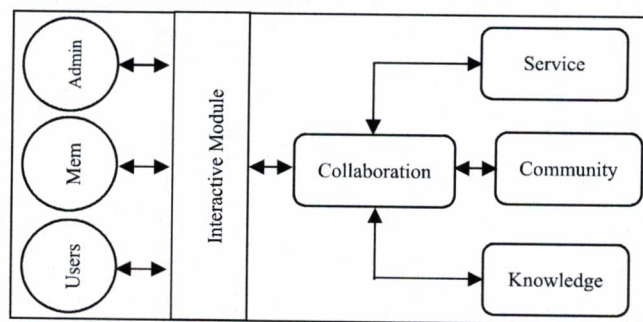


Fig. 2. FSDB Model

3.3 Design and develop FSDB web

The FSDB website was developed based on the model that is appropriate with the general user. Details shown on the sample monitor screen were as follows: Fig. 3 is the design of the website. When the user opens the browser, the user will find that the website is designed in a clear manner.

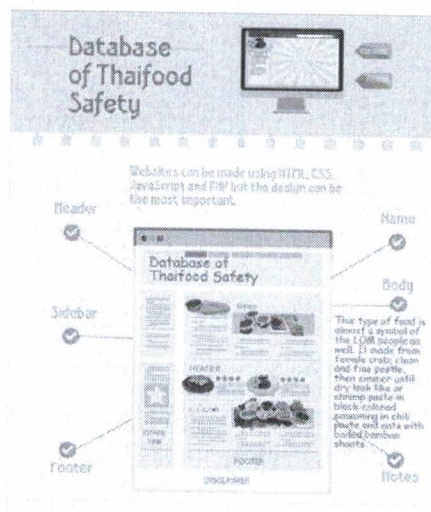


Fig. 3. Design of FSDB website

3.4 Design and create infographics

After develop the FSDB website, it was designed and created infographic. An infographic is a visual representation of a Thai food data set. An infographic takes a large amount of information about ingredients and cooking techniques of Thai food. The infographic representation into a combination of images and text, allowing viewers to quickly grasp the essential insights the information contains. The Internet has helped popularize their use communicate to interested person.

3.5 Population and Samples

- The population is made up of expert, chairmen and people from the Phetchabun Province. Participants were divided into four groups: 1) a group of experts (n = 3), 2) contextual informants in model (n = 30), 3) evaluation of satisfaction an integrated research information Phetchabun province (n = 30), and 4) evaluation of development system (n = 5).
- An in depth interview about the food local database system was the research tool used. There are four types of analysis used. 1) Planning 2) Analysis 3) Design 4) Implementation

4. Testing Results Conclusion

4.1 The Result of Testing Quality of Website

The result of black-box testing was the development of a FSDB system that consists of 5 part as follows: 1) Functional Requirement Test 2) Functional Test 3) Output Validation Test 4) Usability Test and 5) Security Test.

Table I. Descriptive Statistics and results

Construct	Statistics and results		
	Mean	SD	Interpretation
1. Functional requirement test	4.58	0.50	Very good
2. Functional test	4.38	0.50	Good
3. Output validation test	4.67	0.50	Very good
4. Usability test	4.47	0.52	Good
5. Security test	4.93	0.26	Very good
Sum	4.61	0.49	Very good

4.4 Results of the Thai food infographic

Fig. 4 is the sample of Thai food infographic.

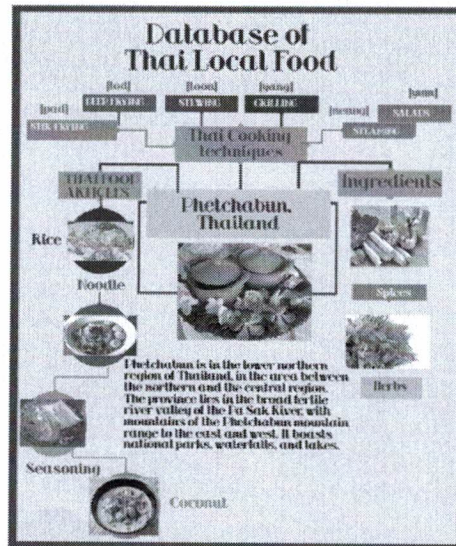


Fig. 4. The sample of Thai food infographic

5. Conclusion

This paper introduces the Thai food local database system for Phetchabun communities to collect information of Thai food local and infographic representation. Because infographics will help communities to understand and easy to learn. It is a powerful integration of texts and images. Then, this research was to develop an effective system as a computer tool for Thai food local database system for anyone who needs to complete the Thai food via web browser to improve knowledge. In this study, the developed system was analyzed by three experts, thirty contextual informants, thirty integrated researches and five developers using Blackbox testing on a rating scale questionnaires, that the results revealed that the system was at a very good level that can be concluded it can be used the developed system successfully.

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