Micro Halal Community Enterprise Database System: Case Study in Pattani and Songkhla Provinces

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ABSTRACT

Government has given priority to the Halal industry in the five southern border provinces through Thai Ministry approval in 2009. The Halal industry has produced several products through groups of Small and Micro Community Enterprises (SMCEs). However, this particular business model still lacks a mechanism to support some significant data in the areas of producing and marketing, among others that will partly enhance such businesses. The database system is a major factor in enhancing and strengthening the economic structure so that people will be able to access production, data storage, and knowledge distribution for the creation of a knowledge-based, economic society. This study aimed to determine user needs and the primary data of a Halal standard for SMCEs and to design and create a database system for the Pattani and Songkhla Halal SMCEs through a webpage. The results revealed that there was a need for a database system for Halal SMCEs that was related to the production process (30%) with the product market and marketing options at lower percentages. Furthermore, the results indicated that the database system needed to give more importance to the information related to the production process, product markets, and the marketing options of Halal SMCEs in Pattani and Songkhla provinces. The database system was composed of general data of the SMCEs, production process, production markets, market opportunities, and other useful and needed data. The program designed was composed of 16 data files—general data, SMCE product data, product group data, product type data, subunit product type data, product data, production process data, production market data, market opportunity data, provincial data, district data, sub-district data, SMCE group, SMCE type, SMCE detail, and SMCE name. Microsoft SQL Server, Microsoft Access, and My SQL were used for the database system design. SMCE groups, producers, consumers, businessmen, researchers, and academic personnel can easily gain benefits from this system through accessing the webpage at www.smce-halal.com.

Keyword: Halal information system, database system, Halal community

INTRODUCTION

At present, the Thai government has given priority to the Halal industry. On 7 April 2009, the Thai Ministry gave approval for development plans in a specific region in five southern border provinces for the period 2009–2012 to be an industrial base for Halal food production. This particular region is rich

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in plant, animal, and fishing resources and also contains the Halal Food Science Center at the Pattani Campus, Prince of Songkla University. This center provides a scientific unit to support Halal food development. Furthermore, the Thai government has given priority to the development of an industrial estate to support Halal food production. From the past until the present, the Halal industry has produced various types of products through groups of Small and Micro Community Enterprises (SMCEs). However, they still lack a mechanism to support a database system in the region related to manufacturing and marketing that can provide components to support several types of SMCE businesses in this particular region. Thus, the database system is a component of information technology that will be an important factor to enhance economic structure and strength to build, collect, and distribute knowledge to promote a society of wisdom and learning consistent with the present direction that is developing into a knowledge-based economic society capable of creating wisdom and advanced knowledge and skills by itself (Groff & Jones, 2003; Panit, 2007)

The study found that the development of a database system was a knowledge asset and could be a component to partly support knowledge management in developing increased work efficiency that would lead to a learning organization (Rheansawapark, 2005).

To meet the objectives and to be consistent with the plan of this study, the recognition of data management was efficiently developed to lead to a learning organization by the application of technology in the working process, network management, and knowledge building to create good image. The Halal Standard Institute of Thailand (2010) indicated problems found with Halal products were associated with: different standards of the certification and approval of Halal products from several countries, businessmen lacked skills and understanding in this business, Halal products needed more public relations input, and there was no central organization to coordinate those related units. Consequently, the development of a database system for SMCEs and collecting best practices among groups of SMCEs that have the potential to implement authentic Halal produce according to the standards of the SMCEs will help with the collection of data to develop the Halal industry consistent with meeting the objectives and building knowledge networks to develop a proper body of knowledge. Furthermore, this will result in producers developing a system of Halal certification and approval in the future. For the above reasons, the researchers studied the development of such a database system using data from Pattani and Songkhla provinces. The study used proper and consistent techniques and processes to develop a standard, qualified database system for Pattani and Songkhla Halal SMCEs. Such a system can be defined as being accurate, complete, simple, timely, reliable, worthwhile, verifiable, flexible, fulfilling, easily accessed, and secure. These criteria will be used for the analysis of problem conditions, the project plan, and to respond to the process of knowledge management, the development and promotion of the learning process to be a learning organization, and knowledge assets as the prototype of developing other related systems in the future, progressively and continuously.

Objectives

1. To determine user needs and primary data of the Halal standard of Halal SMCEs.

2. To analyze, design, and develop the database system and display it in the format of a map via a network system.

METHODOLOGY

The population used for this study was SMCEs in Pattani and Songkhla provinces which total 647 SMCEs (Pattani Provincial Agricultural Extension Office, 2010; Songkhla Provincial Agricultural Extension Office, 2010). Only 19

registered SMCEs were used in this study that had potential according to the Halal standard for SMCEs (The Halal Standard Institute of Thailand, 2010) and had staff that used and were involved with Halal information technology. The study process was divided into five stages (Somboonsuke, 2002).

Stage 1: Assess needs of users and primary data of Halal standard of SMCEs through interviews using structured questionnaires, meetings, and collecting related documents from previous studies and including them with existing data.

Stage 2: Collect all types of SMCE data in Pattani and Songkhla provinces. The population used for this study was the 647 registered SMCEs in Pattani and Songkhla provinces (Pattani Provincial Agricultural Extension Office, 2010; Songkhla Provincial Agricultural Extension Office, 2010). The study aimed to collect data from those active SMCEs.

Stage 3: Collect and analyze the data received from the potential Halal SMCEs in Pattani and Songkhla provinces to develop a particular body of knowledge of Halal food SMCEs. This study only considered 19 registered SMCEs that had potential according to the Halal standard (The Halal Standard Institute of Thailand, 2010) through interviews according to the knowledge management process used to collect data on best practice.

Stage 4: Analyze, design, and develop the database system in the format of a network system. Data were composed of two parts—SMCE data and registered SMCEs that had potential according to the Halal standard. The database system was designed to meet the needs of users by using details of data from stages 1–3 as guidelines by specifying the primary structure of the data and then specified data were improved to be consistent with the data structure of the database that would be used for this study. The verification of data was done to determine overlapping data. Then, the development of the database system was processed using computer coding or a database system program that could display the database system using a composed map.

Stage 5: Training on using the database system of SMCEs and registered SMCEs that had potential according to the Halal standard. All data collected were stored in the database system. A user manual of this database system was provided with training to relevant users.

Interviews based on structured questionnaires and semi-questionnaires were used in the study process along with small-group discussions.

RESULTS

Assessing needs of database system for Halal SMCEs in Pattani and Songkhla provinces

Indicating the database system requirements for Halal SMCEs

The study determined the information needed for the production, marketing, and consumption of SMCEs as shown in Figure 1.

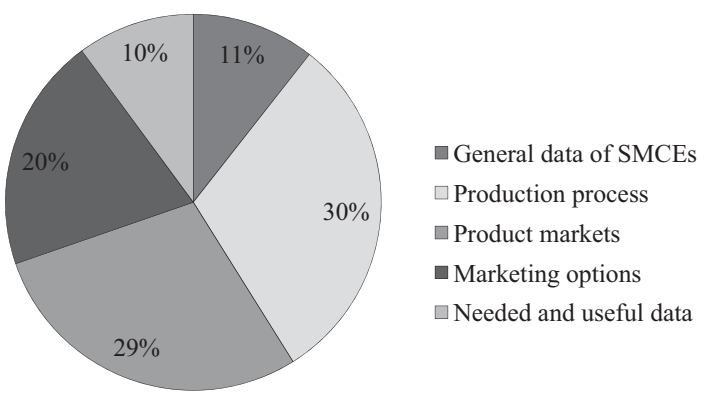

Figure 1 Determining needs of database system for Halal SMCEs.

The study indicated that the most information needed was related to the production process (30%) with the product market and marketing options at lower percentages. The results of this study indicated that the database system designed needed to give more significance to information related to the production process, product markets, and marketing options of Halal SMCEs in Pattani and Songkhla provinces.

Classifying information needed for production, market, and consumption of SMCEs

In the study of the basic needs for information on the SMCEs in Pattani and Songkhla provinces to specify the structure of the database system of Halal SMCEs, the study synthesized the different types of information needed as. (1) general data of SMCEs, (2) production process, (3) product markets, (4) marketing options, and (5) needed and useful data. Details are shown in Table 1.

Primary program design

In designing the primary program of the database, the researchers synthesized data received from the collection that could be divided into eight

Table 1 Database system of Halal SMCEs in Pattani and Songkhla provinces

Information Data	Feature/Type
1. General data of SMCEs	1.1 general data
	1.2 economic and social status
	1.3 grouping
	1.4 certifying product quality
	1.5 inside and outside networks
	1.6 characteristics of linking with local community
	1.7 types of products, quantities of production per year
	1.8 level of strength of groups, level of member participation, and sources of income of members in the groups
	1.9 potential linkage with foreign countries - production (raw materials) and marketing/product processing
2. Production process	2.1 production capability and ability to produce per month or per year
	2.2 production steps
	2.3 period of production/day/month
	2.4 working process such as production cost, turnover, profits, and profit return
	2.5 problems and threats
3. Marketing of products	3.1 types of consumers
	3.2 marketing laws and regulations
	3.3 potential and development (production quantity, production needs and services)
	3.4 problems and threats
4. Marketing options	4.1 buying sources of goods
	4.2 types of transportation
	4.3 problems and threats
5. Useful and needed data	

data files: (1) Sub-district, (2) District, (3) General data of micro Halal community enterprise (GMHCE), (4) MHCE product, (5) MHCE product type, (6) MHCE marketing system, (7) MHCE marketing channel, and (8) MHCE production process. The descriptions of these files are as follows:

Database file name: Sub-district

Sub-district (District ID, Sub-district ID, Sub-district name, Latitude, Longtitude)

Database file name: District

District (Province ID, District ID, District name, Latitude, Longtitude)

Database file name: General Data of Micro Halal Community Enterprise (GMHCE)

GMHCE (MHCE ID, MHCE name, MHCE status, Address, Sub-district ID, District ID, Province ID, Tel. Number, Fax Number, Type of activity, MHCE's leader name, MHCE's saving, MHCE's debt, MHCE's investment fund, Social status, Establishment date, Number of members, Registration ID, Registration Fund, MHCE's number)

Database file name: MHCE Product

MHCE Product (MHCE ID, MHCE Product ID)

Database file name: MHCE Product type

MHCE Product type (MHCE Product ID, MHCE Product name, MHCE Product Quantity)

Database file name: MHCE marketing system

MHCE Marketing system (MHCE ID, MHCE Product ID, Group sale, Direct sale, Contact sale, Rule and regulation sale, Marketing potential, Marketing constraint)

Database file name: MHCE marketing channel

MHCE marketing channel (MHCE ID, MHCE Product ID, Marketing channel type, Logistic type, Marketing channel constraint)

Databased file name: MHCE Production process

MHCE Production process (MHCE ID, MHCE Product ID, Production process, Production period, Production cost, Production quantity, Process constraint)

Structure of SMCE database system

The survey and design project of the Halal SMCEs (called SMCE-HALAL) was an integrated information system to serve the management of the database system of Halal SMCEs by collecting relevant data and documents from various working units in both the government and private sectors. The programming system was developed using Microsoft ® ASP.NET® so that it could be accessed via internet networks. This will help to promote the building of a new body of knowledge by the process of knowledge management (KM) in formats that can be distributed, learned, exchanged, and shared so that the there is consistency in knowledge management. The outputs received from this information system development created the database system and information technology management system which were composed of the Management Information System (MIS) connected to a Geographic Information System (GIS) on the Network System. This database system could store, record, search, verify, and report. This would enhance the development of a standardized Halal SMCE database system that could lead to implementation and achieve benefits (Figure 2).

Website introduction

Users are able to access the database system at www.smce-halal.com (Figure 3).

Screen format and components of SMCE-HALAL system

The screen format and components of SMCE-HALAL are shown in Figure 4. The first screen is composed of icons for: (1) general information; showing general information related to Halal products, (2) information searching; this will let users search information using product information, (3) SMCE information; this will let users search information by using SMCE information, and (4) regional information; this will let users search information using regional information such as provinces and districts (Figure 4).

Synthesizing users with SMCE-HALAL (End-user)

From assessing the needs of this database system, the study categorized users into seven categories as shown in Table 2.

Figure 5 shows the whole working image of the SMCE system of stakeholders. Individual stakeholder will have different views.

The quality of system features can be described for greater understanding in terms of the use case diagram. The overall picture of the system is depicted in Figure 6.

Figure 6 indicates that stakeholders UC1, UC2, and UC3 can use the system in terms of the view and search content, view and search product, and view and search SMCE. This means that these users are classified as the type Customer and Supplier whereas UC4–UC7 can use the system in terms of manage content, manage product, manage SMCE, and manage user and these are defined as users under the type Administrator.

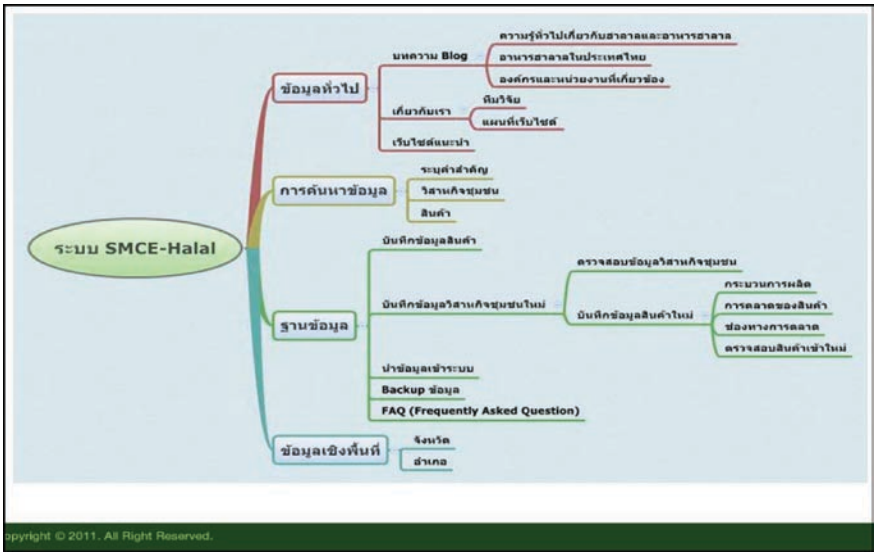

Figure 2 System plan

Figure 3 Website introduction of SMCE

Figure 4 Screen format

Table 2 Categories of end-users

English term	Thai term	Meaning/Definition
User	ผู้ใช้	General internet users
Customer	ลูกค้า	Customers or buyers intending to buy the products
Supplier	ผู้จัดส่งวัตถุดิบ	Organizations of businesses that will supply raw materials
Administrator	ผู้ดูแลระบบ	System attendant who has authorization to access every part of the information and will be able to manage the information independently via particular tools on the system with passwords to access the system
Products	สินค้า	For this study, products means consumer goods and services
SMCE	วิสาหกิจชุมชน	SMCE entrepreneurs are producers that can be categorized into 3 types - registered Halal SMCE entrepreneurs - potential Halal SMCE entrepreneurs - general SMCE entrepreneurs
Content	ข้อมูลทั่วไป	Related Halal content

CONCLUSION

The study on the needs assessment for primary information on Halal SMCEs in Pattani and Songkhla provinces concluded that those SMCEs required general information, and more specifically on the production process, product marketing, market options. The primary database design was composed of 12 data files—general data, SMCE product data, product group data, product type data, subunit product type data, product data, production process data, production market data, market opportunity data, provincial data, district data, and sub-district data. Microsoft SQL Server, Microsoft Access, and My SQL were used for the database system design. Use of this database system will

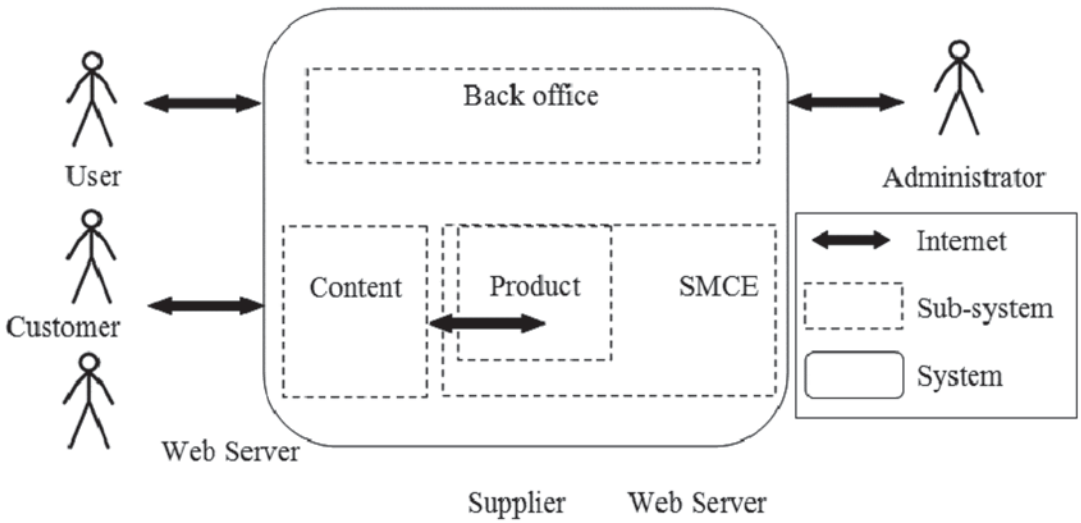

Figure 5 Overall schematic of users

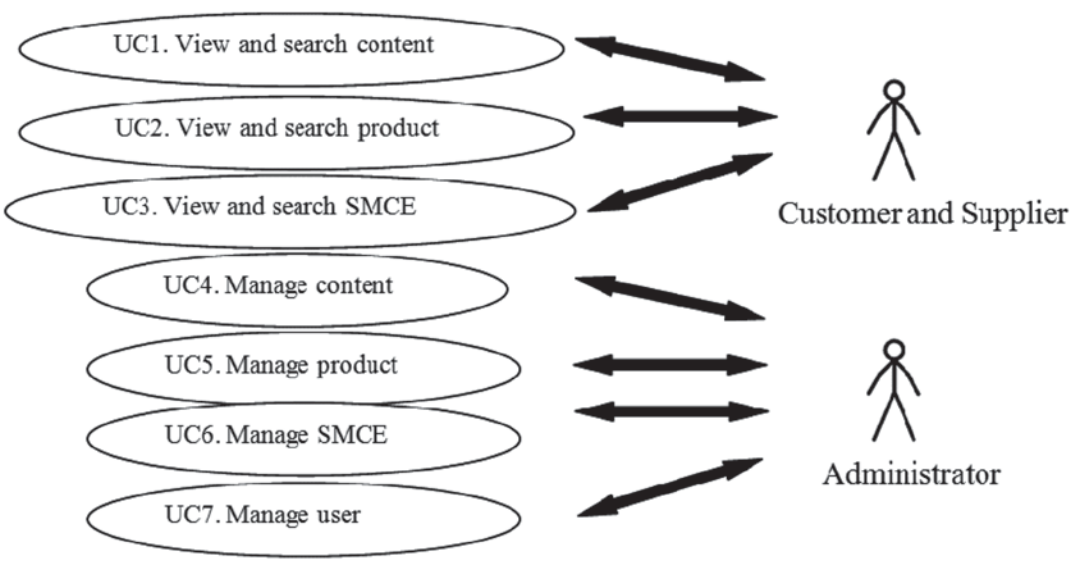

Figure 6 Use case diagram

depend on the individual objectives of each user. However, this database system will be useful in particular to SMCE produce groups, consumers, businessmen, researchers, academic staff, and system developers.

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