AN INFORMATION SYSTEM FOR AGRICULTURAL COOPERATIVE MANAGEMENT IN KAMPONG THOM PROVINCE, CAMBODIA (A PROTOTYPE SYSTEM)

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เรื่อง : ระบบสารสนเทศเพื่อการจัดการสหกรณ์การเกษตรในจังหวัดกำปุงธม ประเทศกัมพูชา (ระบบต้นแบบ)

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การวิจัยนี้มีวัตถุประสงค์เพื่อ(1)ศึกษาการมีส่วนร่วมของสหกรณ์การเกษตรกับประชาชนในชนบทในจังหวัดกำปุงธม และกระบวนการทำงานของสำนักงานสหกรณ์การเกษตรในจังหวัด (PDA) ที่ส่งเสริมและสนับสนุนต่อสหกรณ์การเกษตร และ (2) เพื่อออกแบบและพัฒนาระบบสารสนเทศเพื่อการจัดการต้นแบบเพื่อสนับสนุนให้เกษตรกรและเจ้าหน้าที่ผู้เกี่ยวข้องสามารถเข้าถึงและเผยแพร่ข้อมูลสารสนเทศที่เกี่ยวข้องในจังหวัดกำปุงธมทั้งนี้การเก็บรักษาข้อมูลและเอกสารต่างๆที่เกี่ยวกับสหกรณ์การเกษตรที่ผ่านมายังเก็บในรูปแบบเอกสารที่ไม่เป็นระบบแน่นนอนทำให้การเก็บรักษาและเผยแพร่ข้อมูลสู่สาธารณะยังไม่มีประสิทธิภาพ

ระบบสารสนเทศเพื่อการจัดการนี้เพื่อออกแบบและพัฒนาระบบปฏิบัติการ Microsoft Windows 7 โดยใช้โปรแกรม MySQL มาใช้ในการจัดการฐานข้อมูล โดยใช้โปรแกรมภาษา SQL เป็นเครื่องมือสร้างฐานข้อมูล และใช้ภาษาPHPในการออกแบบเว็บเพจและติดต่อฐานข้อมูล ซึ่งระบบสารสนเทศที่ได้พัฒนานี้สามารถจัดเก็บข้อมูล เพิ่ม ลบ ได้ตามสิทธิ์การใช้งานที่กำหนด สามารถประมวลผล และแสดงผลข้อมูลต่างๆของสหกรณ์การเกษตร เช่น ข้อมูลทั่วไป จำนวนสมาชิกทั้งหมด จำนวนสมาชิกเพศหญิง จำนวนและราคาของหุ้น และการบริการต่างๆของสหกรณ์การเกษตร

ผลการประเมินประสิทธิภาพของระบบสารสนเทศโดยผู้ใช้งานระบบและผู้เชี่ยวชาญด้านเทคโนโลยีสารสนเทศด้วยวิธี Black Box Testing ผลการประเมินความพึงพอใจของผู้เชี่ยวชาญด้านเทคโนโลยีสารสนเทศ และผู้ใช้งานระบบสารสนเทศ พบว่า ผลการประเมินประสิทธิภาพของระบบมีค่าคะแนนที่ 7.30 และ 7.28 จากคะแนนเต็ม 10 ตามลำดับ แสดงว่าระบบสารสนเทศที่ได้พัฒนาขึ้นมีประสิทธิภาพและสามารถนำมาใช้งานได้อยู่ในระดับดี

ABSTRACT

TITLE : AN INFORMATION SYSTEM FOR AGRICULTURAL COOPERATIVE MANAGEMENT IN KAMPONG THOM PROVINCE, CAMBODIA (A PROTOTYPE SYSTEM)
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DEGREE : MASTER OF SCIENCE
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KEYWORDS : MANAGEMENT INFORMATION SYSTEM, AGRICULTURAL COOPERATIVE, KAMPONG THOM, CAMBODIA

The objectives of this study were to (i) study on the contribution of cooperatives to rural people and the working system of the Kampong ThomProvincial Department of Agriculture on the promotion and encouragement to agri_coop in Kampong Thom province and (ii) to design and develop a management information system prototype to support the farmers and the relevant authorities to access and distribute information related to the agri_coop in province. The former data record was stored in the form of paper rarely distributed in to public yet inefficient. The system processes included adding, editing, and searching data with efficiency on data management, visibility, usability and publicity. The prospective conduct research is ten operation units in ten villages, four communes and four districts with about 100 respondents.

The system was developed on Microsoft Windows 7 uses MySQL database management and SQL as tool database building with PHP application language program. The system is capable to storage, add and delete according to the privilege right and compute capabilities manufacturing, data collection of agri_coop in report, and amount of members, female member, share, share price, services and activities. The majority of agri_coop members are aware how to make collaboration and communication way with the relevant sectors in order to improve the standard of living and empowering the community development campaign.

The evaluation result of management information system efficiency by users and computer specialist for the competent system use Black Box Testing with the average score of 7.3 0 and 7.28 from 10, respectively. The efficiency of the system was presented with highly significant level regard that the system operates rapidly and conveniently usability.

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ABBREVIATION

ABBREVIATION	MEANING
ADB	Asian Development Bank
ADRA	Adventist Development and Relief Agency
agri_coop	agricultural cooperative
API	Application Programming Interface
AVSF	Allan Vincent Smith Foundation
CBRDP	Community-Based Rural Development Project
CDRI	Cambodia Development Resource Institute
DB	Database
FO	Farmer Association
GDA	General Directorate of Agriculture
GDP	Gross Domestic Product
GDP	Gross Domestic Product
GIZ	Deutsche Gesellschaft fuer Internationale Zusammenarbeit (German International Cooperation Agency)
GNU	Gnu's Not Linux
GPL	General Public License
GRF	Group Revolving Fund
GTZ	German Technical Cooperation Agency
HTML	Hyper Text Markup Language
HTTP	Hyper Text Transfer Protocol
IMAP	Internet Message Access Protocol
IT	Information System
Kg.Thom	Kampong Thom
KTPDA	Kampong Thom Provincial Department of Agriculture
LDAP	Lightweight Directory Access Protocol
MAFF	Ministry of Agriculture Forestry and Fishery
NA	National Strategy
NGOs	Non Government Organization
NIS	National Institute of Statistic

PDA	Provincial Department of Agriculture
PHP	Hypertext Preprocessor
POP	Post Office Protocol
RGC	Royal Government of Cambodia
SQL	Structured Query Language
URL	Uniform Resource Locator
VDC	Village Development Committee
WB	World Bank
WWW	World Wide Web
XAMPP	X (any of four different operating system), Apache, MySQL, PHP and Perl

CHAPTER 1
INTRODUCTION

1.1 Introduction

Agriculture sector is the main income for Cambodian. In Cambodia, agriculture accounts for 34% of GDP and employs 70% of the labor force and 85% of total populations are farmers. In order to reach the goal of poverty reduction strategy, the government of Cambodia has been tried effort in combination between remote areas to urban. These aims to alleviate the scarcity, make incrementing fast improvement of the condition of living by producing the rural market and upgrading the social service to reach the hand of ordinary citizen. The quality of arable land is calmly poor and yields are considerable low which can easily be improved with the slurry resulting from the manure fermenting process in the digester. The government has a fundamental and authentic commitment to poverty alleviation through community development (MAFF, 2006).

Cambodia has encountered a dramatic economic transfiguration rapidly comparing to the others country in the region, with an impressive GDP growth rate of 9.8% in 2000-2008. This dramatically growth is accompanied by remarkable performance in the agricultural sector and rural development, which grew at 5.6 % per year over the same period. The Royal Government of Cambodia has identified potential and constraints for future development of the agriculture sector by string to effort development and agricultural diversification (CDRI, 2011).The decentralization and concentration of public services delivery support for participatory decentralized-based programs, and the provision of credit to households and small businesses.

Despite there were several definitely changed in the recent decades but agricultural sector is still in the urgent requirement output. Lacking of knowledge for the human management system causes less awareness to farmers and villagers to make a good collaboration in order to strengthen the rapid growth. The information system for the agricultural cooperatives data management is less efficiency for data storage

direct effects to the farmer's information awareness. The high technology not yet modern and caught up requires the rapid growth of information technology.

1.2 Statement of the Problem

The capacity building program on agricultural cooperative is not only to enhance the knowledge system and skills of the service providers, and general stakeholders, but also to strengthen knowledge and skills of farmers, and rural organizations, fostering cooperation with other stockholders for supports and assistance, techniques and information required for extension work, developing human resources and building their capacity on agricultural extension methodologies, techniques and market economy for improved skills and enabling leadership in the sector; and establishing and strengthening government's capacity and partners (private sector, NGOs, etc.) in extension at all levels in order to implement extension work and support farmers effectively.

Agricultural cooperative for rural farmers plays a very pivotal for the poverty eradication in Cambodia since establishment in 1980s. Membership in the agricultural cooperatives generated various benefits for the rural poor including the social, economic and institutional aspects.

Nearly 70 % of overall populations of Kampong Thom province are farmers and horticulture workers (NIS, 2012). The agricultural cooperatives are 44 units which approximately 4,257 members, 23,127 shares with holding budget of share 133,335,500 Riel with the total budget 2,971,122,100 Riel operating in each commune in the whole province focusing on the grant loan service, technical support and plantation consulting. The average capital cost 10 million Riel of each agricultural cooperatives which from 3 million to 30 million Riel (PDA, 2014).

(1) However, these local institutions still face several major challenges and problems namely: unclear indentation of operation scale, uncertainly of cooperatives, lack of technical knowledge and experience and complexity.

(2) The management skill is limited due to lack of education and training. Many cooperatives just accept the rich and powerful households to provide service in the local neither poor people. Due to the poor farmers households have low income and

landless, so they cannot afford service charge. It is really hard for poor famers to join the service.

(3) Lacking of human resources and incentive for staff working in remote areas and institutional and human resource capacity development in this sector has been progressing though the development of policy and regulatory framework necessary for the implementation of rural development activities including the following draft national policies, national strategies and other regulations: Royal Decree on Village Development Committee (VDC) and Sub-Decree on Procedures for the Establishment and Functioning of the VDC, which has been Submitted to Council of Ministers for endorsement (National Strategy, 2014).

1.2 Objective of the Study

1.2.1 To examine of the contribution of agricultural cooperatives to the rural people in Kampong Thom provinceand to assist Agricultural Cooperative Extension Office of the Provincial Department of Agriculture (PDA) officer and the relevant system controller in order to offer more sufficiency information storage.

1.2.2 To design and develop the prototype management information system to assist farmers and officers to reach the public information related to the agricultural cooperative in Kampong Thom province

1.3 Scope and Limitation of the Study

The conduct research is specifically on designing and developing to Information System (IT), supporting for existing data storage of human resource, cooperative service and operation, and grant loan management system for the agricultural cooperative in Kampong Thom province, Kingdom of Cambodia. The emphasis of the study is mainly specific on the characteristics and contributions of members of agri_coop in Kg.Thom province.

The scope of case study highlights the direct role and the potential of member of agricultural cooperative and the newer cooperatives in Kampong Thom province which locates at the northeast of Cambodia. Kampong Thom is located in the geographical center of Cambodia. It borders PreahVihear to the North, Kratie to the East, Kampong Cham and Kampong Chhnang to the South and the Tonle Sap lake and

Pursat to the West. The area of the province is 15,060 square kilometers with the population about 743,599 people (MAFF, www.maff.gov.kh). The topography is of the province is variable, from the Tonle Sap floodplains in the Southwest through lowland paddy fields, to lowland/ upland mosaic and upland forested areas in the Northeast. Kampong Thom is classified as a rural province. The total populations nearly 70 % are farmers and farm cultivators. The province divides in two part the by the national highway road number 6. The elevation above the sea level is 67 meters. It receives on average 1,849.9 mm of the precipitation annually rainfall in 141 days per year.

(1) The content is collecting on the surrounding relevant datasets and documents by analyzing of database and the relevant theory on the information system for agricultural cooperatives in Kampong Thom Province, dividing of obligation and diversification management.

(2) Study the basis fundamental capacity building on the management of the agricultural cooperative of Kampong Thom province.

(3) Study the available information system for human resource and loan management of agricultural cooperative in the whole province.

1.4 Literature Review

The prospective of the study aims to examine the management and operation of agricultural cooperatives in Kg.Thom province. The former existing system of management specifically record on the Microsoft Word and Excel directory or on the hard copy. Through the previous experience, the officers and farmers didn't access the system on the internet software storage. Moreover, it was damaged by for such many reasons as long keeping and non-quality maintenance material. This information system for agricultural management assists system controller and users to maintenance and broadcasting on the internet access. There are steps:

1.4.1 Feasibility studies to the target areas.

1.4.2 Study the relevant researches involve in Kampong Thom province.

1.4.3 Study the existing data in Words or Excels or hard copies of Provincial Department of Agriculture of Kampong Thom province.

1.4.4 Study the local communities on the management procedure requirements of the agriculture cooperative on its technique and feasibility study on the target areas for the whole 44 example units.

1.4.5 Analyses and design the new information system for the proper human resource evaluation methods on knowledge, type of skill and experiences, the human resources structures, activities such as meeting, workshop, donation and foundation support.

1.4.6 Set the database system of the human resource process.

1.4.7 Develop and design the information system through the internet access as well as the non-internet service.

1.4.8 Advocate and evaluate the information system for the agriculture cooperative management.

1.5 Glossary

There are several substituted systems applying for this conduct research such as Decision Support System (DSS), and Management Information System (MIS).

1.5.1 Decision Support System (DSS) is a system intended to support managerial decision makers in semi-structured and unstructured decision situations. It meant to be adjunct to decision makers (extending their capabilities but not replacing their judgment) aimed at decisions that required judgment or at decisions that could not be completely supported by algorithms would be computer based; operate interactively; and would have graphical output capabilities. A DSS is typically built to support the solution of a certain problem (or to evaluate a specific opportunity (Intarapairote, 2012).

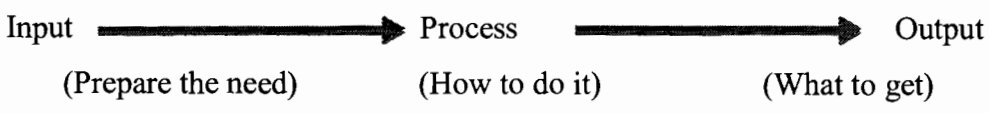

Figure 1.1 The Decision Support System processing

Resource: Intarapairote (2012)

1.5.2 Management Information System (MIS) Management Information System is organized information and documentation service that systematically collects, stores, processes, analyzes reports and disseminates information and data. MIS(whether computer-based or manual) as a communicative process in which data are accumulated, processed, stored, and transmitted to appropriate organizational personnel for the purpose of providing information on which to base management decisions. As such then, an information system consists of, at least, a person of a certain psychological type who accesses a problem within same organizational context for which he need evidence to arrive at a solution, where the evidence is made available through some mode of presentation.

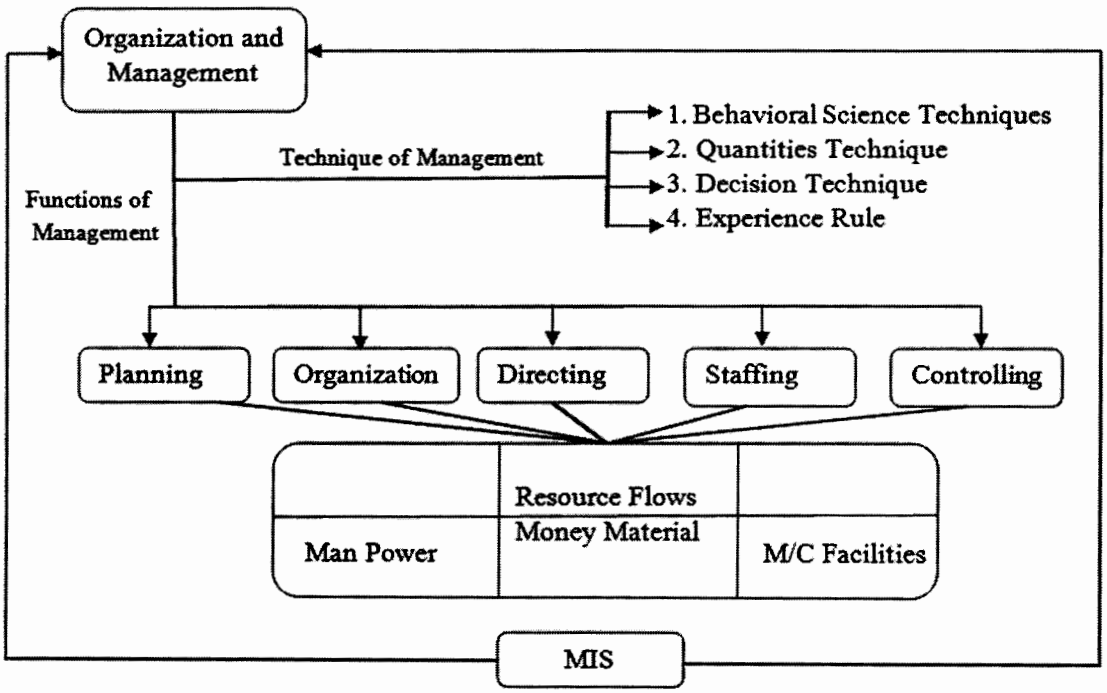

Figure 1.2 The MIS processing

Resource: Kunwar (2011)

1.6 Tools of the Study

The tools usability in the following study divides into two types:

1.6.1 Computer hardware

1.6.1.1 Sever

1.6.1.2 Client

1.6.1.3 Printer

1.6.2 Application tools (software)

1.6.2.1 Window 7 professional

1.6.2.2 Appserv 2.5.9 (PHP, Apache, and MySQL)

1.6.2.3 Macromedia Dreamweaver CS6 with the license key

1.6.2.4 Microsoft Office Word professional 2010

1.6.2.5 Microsoft Excel Word professional 2010

1.6.2.6 Microsoft Visio Word professional 2010

1.7 Conceptual Framework

The research examined the common existing data of agricultural cooperative's performance in study including benefits and the satisfaction of the members through the services that cooperatives offered to the members. The social aspects consisted of membership, knowledge and skills, and employee opportunities. The economic aspects comprised of economic income, yield, and better price of the purchase of inputs, while the institutional aspects covered provision of training and equality in democratic management.

Satisfactions of the members were examined through the satisfaction of each services including satisfaction of services, income. Problems, constraints and potential of the cooperative's performance identified the cooperative's performance. Finally, based on findings and conclusions, certain recommendations could be suggested to strengthen the cooperative's performance in the coming year.

CHAPTER 2
REVIEW OF LITERATURE

The purpose of development of the information system for agricultural cooperative in Kampong Thom province aim to study from the methodology of the information system and the relevant tools in system development through divide in title and subtitle such as:

2.1 Background Agricultural Cooperatives in Cambodia

2.2 The Conceptual of Agriculture Cooperative in Cambodia

2.3 The Agricultural Cooperatives in Kampong Thom province

2.4 The Conceptual of Human Resource Management

2.5 The Management of Information System

2.6 The PHP language application

2.7 The HTML application

2.8 The Relational database

2.9 The Relevant research mythological way

2.1 Background of Agricultural Cooperatives in Cambodia

In 1950's and 1966's, 512 cooperatives were well established in Cambodia. They were under the control and administration of the Royal Office of Cooperatives of Cambodia and the supervision of Ministry of Agriculture. During that time, there were 13 provincial credit cooperatives granted loans to cooperative members, 390 multipurpose agricultural cooperatives, 55 consumers cooperatives, 14 specialized production cooperatives (e.g. for rice, cotton, tobacco) and 40 school cooperatives. In 1965, agricultural cooperatives roughly owned total trading turnover of 13 million US Dollars. Under the regime of Democratic Kampuchea (1975-1979) all cooperatives were transformed into "Popular Communes" that operated on a collectivized basis with all activities directed to the furtherance of the socio-political objectives of the government. After the 1979, People Republic of Kampuchea, collective cooperatives was transformed into "Solidarity Groups" for collective production using the limited

remaining resources left after the period of Democratic Kampuchea. After the period of absent cooperatives in Cambodia (1979-1999), actually in 2001, a Royal Decree on Establishment and Functioning of Agricultural Cooperatives was approved by the Government of Cambodia, and then in 2003, MAFF prepared the Proclamation on promulgating of the Royal Decree on establishment and functioning of agricultural cooperatives in Cambodia. 67 agricultural cooperatives, with a membership of 4092, and a share capital subscribed by its members around 167,835USDollars, were established by rural poor farmers in 17 provinces/city of Cambodia. Generally, an agricultural cooperative can implement businesses based on their needs such as credit, supply, marketing and farm guidance activities (MAFF, 2007).

The Royal Government of Cambodia has strong effort to draft the law of agricultural community sets the boundaries for the establishment of and the mechanisms to support farming co-operatives. Under the control of the MAFF would restrict freedom of establishment–economic freedom, because co-operatives are required to register with the government in order to be eligible. The registration cost of cooperative is nothing, and officials needed co-operatives to register because the government would help support their growth. The drafted co-operative law last month, between 2003 and 2013, the Ministry of Agriculture, Forestry and Fisheries has established 375 agricultural communities across the country with 35,630 members and capital of over 2.25 million US Dollar. Currently, all agricultural communities are playing an important small part in participating in implementing government policies pushing paddy production and milled rice exports.

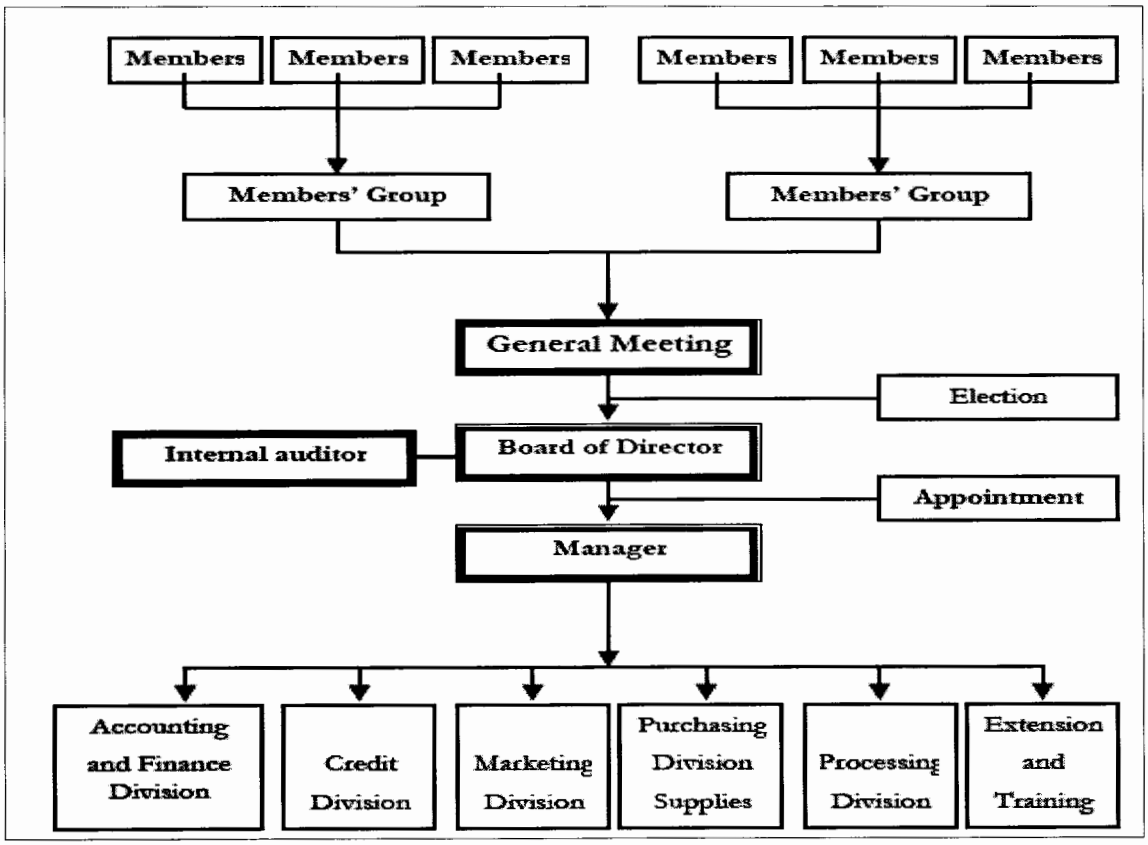

Figure 2.1 The agricultural cooperative structure of Cambodia

Resource: MAFF (2013)

2.2 Conceptual of Agriculture Cooperative in Cambodia

Agricultural cooperative is a self-supported economically autonomous organization of the members who have need and interests. They voluntarily contribute money and labor for the foundation of cooperative in accordance with the legal regulations on order to improve the power of a group and of an individual so as to help each other to carry out production and contribution to the social economic development of the country. (Tuan Pham Trung, 2009).

The agricultural cooperative is a private business organized and joined by members to fulfill their mutual economic needs as patrons of the business, with the key control, ownership, and income distribution decision based on patronage proportions: namely, member voting, equity capital investment by patrons, and distribution of net income to patrons the proportional to use the cooperative (Barton, 1989). It is organized and incorporated to engage the economic activities with certain

ideas of democracy, social consciousness and human relation included. Agricultural cooperative provides services and benefits for its member in proportion to the use they make of their organization, rather than earning profits for the shareholders as investor.

Agricultural cooperatives are based on the value of self-help, self-sufficiency, self-responsibility, democracy, equality, equity and solidarity. In the traditional of their founders, cooperative members believe in the ethical values of honesty, openness, social responsibility, and caring for others.

Through the assistance of Government, the Ministry of Agriculture Fishery and Forestry, various foundations, and other lending agencies, agricultural cooperative members are now in a better position in accessing loans at low interest rates with grace periods appropriate to their business. Thus loans are generally classified to three categories short-term, medium-term and long-term loans (PDA, 2014). Through joint sale of products, members can obtain not only good prices but also fairness in weights and measures.

Members of the agricultural cooperative are mostly farmers or the cultivators living in the same village or the communities or another village which under authorize of the unique commune. The main purpose of the agricultural cooperative is to assist farmer members in agricultural production as well as to enable them gaining access to capital, saving facilitating, agricultural necessities, marketing movement, and improving members' standard of living. The concerted marketing of these products enables members to exceptional good prices and fairness in trading.

2.2.1 The Procedure to Form the Agricultural Cooperative

Before a farmer group takes the initiative to form as a cooperative, there is a first period (step 0) during which makes the promotion of cooperative concept, explaining cooperative philosophy and functioning. This step can take a long time before farmers feel ready or not to form a cooperative.

Generally, six steps of formulation a cooperative are introduced:

2.2.1.1 Ask persons who have common needs or interests to group together.

2.2.1.2 The group of persons holds a meeting to elect not less than 30 persons to run as a cooperative organizing committee.

2.2.1.3 The organizing committee organizes a meeting for the purposes of:

1) Defining the type, objectives for the cooperative

2) Making the agricultural cooperative operating plan

3) Making a actual name list of prospective members together with number of shares

4) Drafting the by-law of the would-be cooperative by following the law of agricultural cooperative.

2.2.1.4 The organizing committee shall call the meeting to deliberate the draft by-laws and adopt them as the by-laws of the agricultural cooperative.

2.2.1.5 The organizing committee signs the application for registration of the cooperative, and then submits to Registrar of cooperatives.

2.2.1.6 Documents essential for the registration:

1) One application for registration of the cooperative

2) Two copies of each minute of the meeting for selection of organizing committee and the meeting for the adoption of by-law of the cooperative

3) Two sets of the work plan related to the business or activities of the proposed cooperative

4) Two name lists of the members together with the signature and number of shares they wished to hold.

5) Four copies of the proposed by-law.

2.2.2 The Legislation and the Condition of the agricultural cooperative

The agricultural cooperative establishes its by-law including the following particulars set up by the general meeting under the controlled of MAFF which share the authority to Agricultural Extension Division of Kampong Thom Provincial Department of Agriculture with the following steps:

Name of agricultural cooperative.

2.2.2.1 Type of agricultural cooperative

2.2.2.2 Objects

2.2.2.3 Address of central operation site and each member's branch

2.2.2.4 Actual capital which is divided into shares, value of shares, payment of share value in cash or in kind, sale and transfer of shares as well as repayment of share value.

2.2.2.5 Setting of conditions concerning operation, accounting and finance sector.

2.2.2.6 Defining the qualifications of members, procedure for admission of members, cessation of membership as well as rights and duties of members.

2.2.2.7 Prescriptions for general meetings.

2.2.2.8 Election, term of office, vacation of office and meeting of board of directors.

2.2.2.9 Appointment, term of office, vacation of office, prescription of power, duty and responsibility of the head of agricultural cooperative.

2.2.3 Functioning of agricultural cooperatives

At the district level there are primary agricultural cooperatives and farmer groups at the village level.

2.2.3.1 Membership

Members of primary cooperatives are households, the local people, villager, farmer, in the community, just in same village and commune which only one member of each family can join the cooperative.

Every members of the agricultural cooperative have to pay the shares they subscribed otherwise their liability will be limited. Creditors should not enforce their claims over the value of shares of members. Members have a privilege to join and resign from membership. One member can buy over ten shares, then the share price is defining depend on the agreement of the meeting.

In case of member miss to repay the debt to the saving group of the agricultural cooperative, entire member have right to make an informal meeting discussing on how to crack down or any resolve for the problem. The share owner are inadequate responsibility to fulfill on share payment, won't get any dividend or interests (Sokhom, 2010). Entire member'sobligations are paying on share's price accordance to the regulation with self responsibility.

2.2.3.2 Operating area

Agricultural cooperatives perform their activities on a specific area. Two cooperatives with the same objective cannot perform in the same area, so that there is no competition between these two agricultural cooperatives in one village but the head office can divide its branch in the same village. But it can have two cooperatives in the same area as long as they have different objectives.

2.2.3.3 Structure

Agricultural cooperatives have a structure including a general assembly which elects a board of directors. The board of directors formulates the policy of the agricultural cooperatives, and appoints a manager and staff to run the cooperative. Primary agricultural cooperatives also have internal auditors mostly act by villager which member in the same village. Members of Board of Directors are not paid but they can receive allowance, which have to be approved by the general assembly. The head of agricultural cooperative must able to read and write Khmer, computer literacy and a little English.

2.2.4 The Benefit of the agricultural cooperative

The agricultural cooperative plays much role empowering and enhancing of the proper services. The mutual services offer the useful assisting to its members for the whole province.

2.2.4.1 To borrow money without limitation as to amount of corporate indebtedness or liability; to give a lien on any of its property as security therefore in any manner permitted by law; and to make advance payments and advances to members and other producers and low dividend.

2.2.2.2 To act as the agent or representative of any member or members in any of the activities.

2.2.2.3 To buy, lease, hold, and exercise all privileges of ownership over such real or personal property as may be necessary or convenient for the conduct and operation of the business of the association, or incidental thereto.

2.2.2.4 To draw, make, accept, endorse, guarantee, execute, and issue promissory notes, bills of exchange, drafts, warrants, certificates, and all kinds of obligations and negotiable or transferable instruments for any purpose that is deemed to further the objects for which this association is formed, and to give a lien on any of its property as security therefore.

2.2.2.5 To acquire, own, and develop any interest in patents, trademarks, and copyrights connected with, or incidental the business of the association.

2.2.2.6 To cooperate with other similar associations or cooperative in creating central, regional, or national cooperative agencies, for any of the purposes for

which this association is formed, and to become a member or stockholder of such agencies as now are or hereinafter may be in existence.

2.2.2.7 To have and exercise, in addition to the foregoing, all powers, privileges, and rights conferred on.

2.3 The Agricultural Cooperatives in Kampong Thom province

Agricultural cooperatives are established to enable farmer members to engaging in business together, thus helping one another in times of crisis as well as gaining for themselves a better livelihood and quality of life. It has been established under the Royal Decree on the agricultural cooperative establishment.

Under the law, the government would find financial institutions that could offer credit to farmers through the cooperatives, allowing farmers to get loans without collateral as the cooperative would guarantee the loans of its members. Recently, the MAFF has established 44 agricultural communities throughout the province with 5624 members and a total capital of 569.592 US Dollars. The communities will improve food security, reduce starvation and bolster economic and social development. From then on, the number of small agricultural cooperatives had steadily increased until the promulgation of the cooperatives. Several of these small cooperatives then grouped together, forming agricultural cooperatives at the commune level. Larger and stronger cooperatives are, then, expected to provide a wider scope of services to members.

Agricultural cooperatives are generally formed to meet the members' needs as follows:

2.3.1 To provide loans to members for productive and providential purposes at affordable interest rates;

2.3.2 To encourage members' thrift through savings and deposits;

2.3.3 To provide agricultural products and daily necessities for sale to members at reasonable prices;

2.3.4 To promote appropriate farm practices and disseminate technical know-how aimed to help members reduce production costs and obtain higher yields. With government assistance, members are introduced to proper cropping techniques as well as use of fertilizers and insecticides. Another service is in the form of farm equipment (e.g., tractors, water pumps, etc.) made available to members at reasonable charge; and

2.3.5 To enable members to market products together, thereby obtaining higher prices for their produce and maintaining fairness in terms of weights and measures.

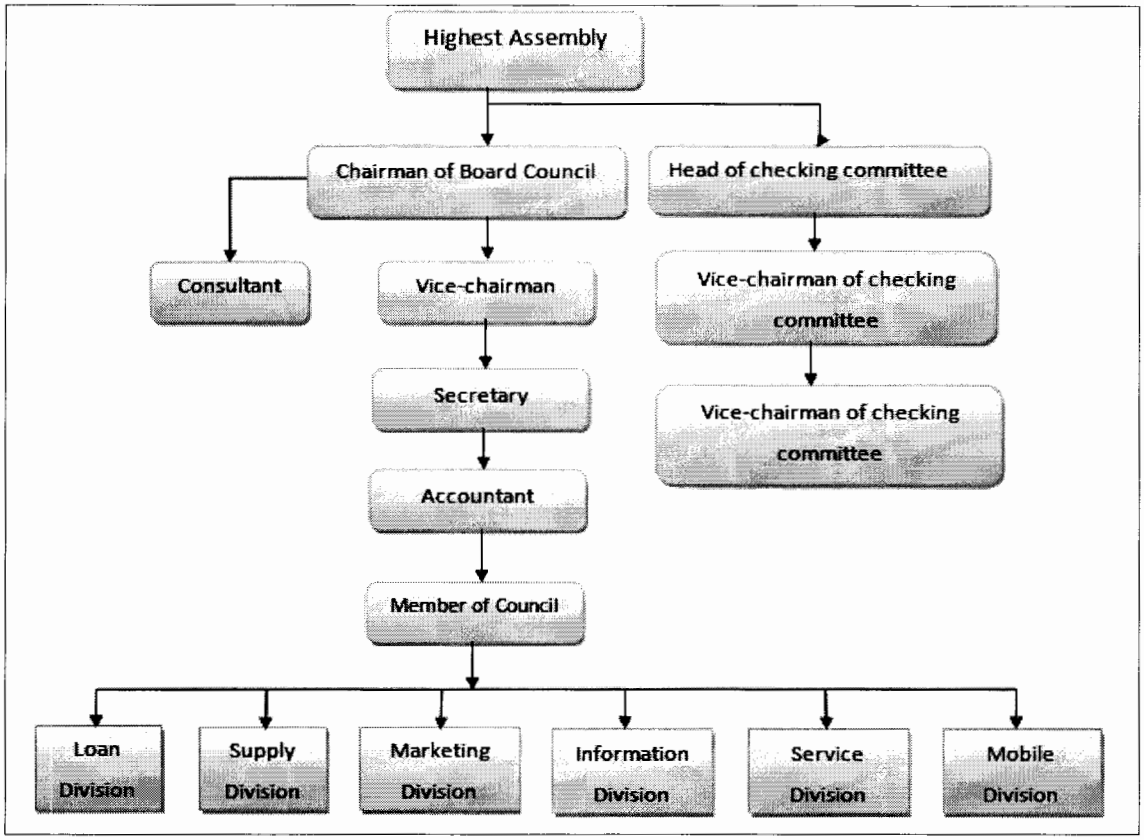

Figure 2.2 The Structure of the agricultural cooperative in Kampong Thom province.

Resource: PDA (2013)

2.4 The Conceptual of Human Resource Management

Human resource management (HRM), the management of work and people towards desired ends, is a fundamental activity in any organization in which human beings are employed. HRM is an inevitable consequence of starting and growing an organization (Boxall, 2009).

2.4.1 The Human Resource Management of the Agricultural Cooperative in Kampong Thom province

The Human Resource Management plays much role in order to organize the cooperative likewise contribute the staff obligation. Previously, almost documents of

the agriculture cooperative record distribute to everywhere cause more the hardness in controlling. The human resource management build up more the confidence in the staffs then recruitment and another procession to its member for whole province. It assists the examination of their current policies and practices in the cooperative. On one hand, it determines the urgent requirement, and then arbitrates how the human resource can be used to improve the cooperative's policies and practices in order to enhance the cooperative's performance and for empowerment to the communities village as well as the agricultural cooperative staffs. The principle intention of the human resource management aims to monitoring and evaluating the effectiveness of the agricultural cooperative management for such:

2.4.1 Recruitment and selection

2.4.2 Learning and talent development and management

2.4.3 Human resource planning

2.4.4 Provision of contracts

2.4.5 Provision of equal opportunities

2.4.6 Managing diversity

2.4.7 Motivating workers to achieve improved performance

2.4.8 Payment and reward of employees

2.5 The Management of Information System (MIS)

Management Information Systems can be used in various forms in organizations and businesses. Some cases such as activities, problem solving, organizational and follow up business opportunities with using it will be possible. Management Information Systems is a useful tool that provided organized and summarized information in a proper time to decision makers and enable making accurate decision for managers in organizations or in other words, it's a system that receives data from different units and produce information and provide timely and accurate information for different levels of managers for making optimal decision (Maryam, 2013). In a general view, provide the information needed to make decisions. This work will be done via describes the condition of phenomena, explaining events, predicting events, proposed solutions, and eventually evaluate present activities (Sevda, 2013).

A management information system is used to organize information and documentation service that systematically collects, stores, processes, analyzes reports and disseminates information and data. A management information system use to integrated users-machine system provides the information, support the operation and management, then utilize the system analysis and decision making.

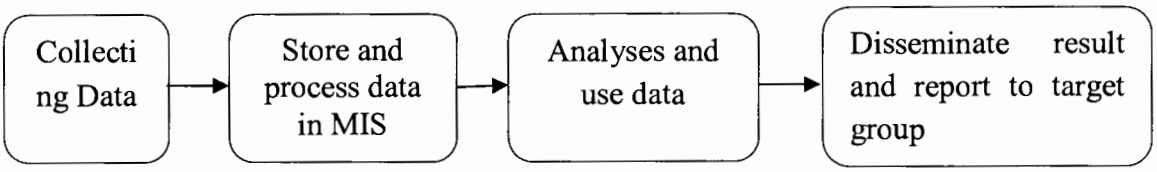

Figure 2.3 The Management Information System processing

Resource: Kunwar (2011)

2.5.1 Functions of management information system

2.5.1.1 Input: Facts or data from outside the system

2.5.1.2 Processing: Transform the data to information

2.5.1.3 Output: Information that need to be used outside the system

2.5.1.4 Storage: A place to store data for future reference

2.5.1.5 Control : Control the evolving of information system

2.5.2 Computer Based Information System (CBIS)

The Computer-Base Information System CBIS is an information system that uses computer technology to perform the intended tasks. Itis based on computer hardware and software technology for processing and disseminating information. The CBIS follow the procedure of system step which from Input-Processing- Output with the component of hardware software database telecommunication network user intranet and internet combine gather to manage and collecting data in order to be the sufficiency information system. It is consisting of many components. Such as:

2.5.2.1 Hardware is the computer component with plenty kinds of physical elements. Hardware can be a single PC, a single main frame or networks of computers. It also includes physical device to control the process of input and output like keyboard, mouse and modem.

2.5.2.2 Software is the computer program in order to make collection ofthat enable a user to interact with the computer or have the computer perform specific tasks.

2.5.2.3 Database is a collection of informationthat is organized so that it can easily be accessed, managed, and updated all the information.Database use to manage or store the data to set up the effectiveness of data control.

2.5.2.4 Internet is the computer connecting network system.

2.5.2.5 Intranet is the network system using internet to connect in the organization.

2.5.2.6 Telecommunication is a computer technology sending signal or data over long distance by connecting or transferring by computer system.

2.5.2.7 User is the most important phase of CBIS.

2.5.2.8 Procedure is the policy strategy method and the main principle of using CBIS.

2.3.5 The Effectiveness of the Management Information System for Agricultural Cooperative

Evaluating and managing the effective delivery of information technology services is an information system control which has been brought into sharper relief recently. The intent of this study is to help agricultural cooperative to be better utilize their information systems by helping officer understand the fundamental purpose of these systems. It assists to analyze the processes with eyes toward how data is created, transferred, analyzed and used within the cooperative. From this understanding, the user can then design, build and implement information systems that accurately reflect the flow of the performance processes in their organization, adjust quickly to support critical functions and provide efficient and effective value added services to members and employees to maximize the profitability of the cooperative.

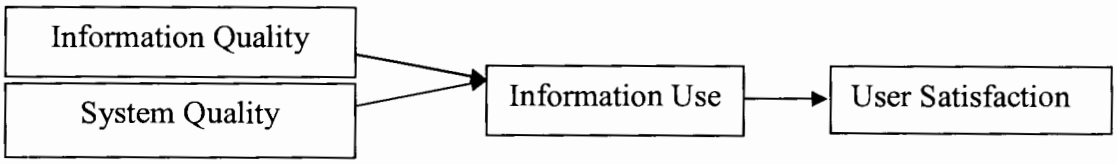

Figure 2.4 Research Model of Management Information System

Resource: Kunwar (2011)

There are several benefits for development information system for such:

2.3.5.1 To understand the problem to realize the present issue.

2.3.5.2 To study the feasibility to define the problem and to study the possibility study of system thinking.

2.3.5.3 To analysis to define the demanding of the contemporary new system.

2.3.5.4 To design of the new information system to conform of the requirement of user and administration sector.

2.3.5.5 To develop the system also experiment and address the program.

2.3.5.6 To adjust the new development system in order to replace the pervious system.

2.3.5.7 To monitor, evaluate and maintenance of the information system.

2.6 PHP Language Application

2.6.1 The Meaning of PHP

The PHP stands for the Hypertext Preprocessor. PHP is an HTML-embedded web scripting language. PHP started out as a small open source project that evolved as more and more people found out how useful it was. RasmusLerdorf unleashed the first version of PHP way back in 1994 (Rasmus, 1994). It is act as a server side scripting language that is embedded in HTML code. It is used to manage dynamic content, databases, session tracking, even build entire e-commerce sites. By integrated with a number of popular databases, including MySQL, PostgreSQL, Oracle, Sybase, Informix, and Microsoft SQL Server.

2.6.2 Common uses of PHP

2.6.2.1 PHP performs system functions, i.e. from files on a system it can create, open, read, write, and close them.

2.6.2.2 PHP can handle forms, i.e. gather data from files, save data to a file, thru email can send data, and return data to the user.

2.6.2.3 PHP can add, delete, and modify elements within database thru PHP.

1) Access cookies variables and set cookies.

2) Using PHP, can restrict users to access some pages of website.

3) It can encrypt data.

2.6.3 Characteristics of PHP

Five important characteristics make PHP's practical nature possible:

2.6.3.1 Flexibility

2.6.3.2 Familiarity

2.6.3.3 Simplicity

2.6.3.4 Efficiency

2.6.3.5 Security

"Agricultural Cooperative" Script in PHP:

To get a feel for PHP, first start with simple PHP scripts. Since "Agricultural Cooperative" is an essential example, first we will create a friendly little "Agricultural Cooperative" script.

As mentioned earlier, PHP is embedded in HTML. That means that in amongst normal HTML (or XHTML if you're cutting-edge) you'll have PHP statements like this:

```
<html>
<head>
<title> Agricultural Cooperative </title>
<body>
<?php echo " Agricultural Cooperative";?>
</body>
</html>
```

It will produce following result: Agricultural Cooperative

All of the PHP present in the web page is processed and stripped from the page; the only thing returned to the client from the web server is pure HTML output. All

PHP code must be included inside one of the three special markup tags ate are recognized by the PHP Parser.

<? php PHP code goes here ?>

<? PHP code goes here ?>

<script language="php"> PHP code goes here </script>

2.7 The HTML application

HTML (Hypertext Markup Language) is the set ofmarkupsymbols or codes inserted in a file intended for display on a World Wide Webbrowserpage. The markup tells the web browser how to display a web page's words and images for the user. Each individual markup code is referred to as an element (but many people also refer to it as atag). Some elements come in pairs that indicate when some display effect is to begin and when it is to end (Margaret, 2006).

HTML consists of two components are meaning and command or tag.

The basic structure of the HTML is:

<HTML>

<HEAD>

<TITLE> Agricultural Cooperative in Kampong Thom Province</TITLE>

</HEAD>

<BODY>

The command or messages browse on website.

</BODY>

</HTML>

2.8 The Relational Database

The Relational Database is the collection of data items organized as a set of formally-described table from which data can be accessed or reassembled in many different ways without having to recognize the database table. The standard of user or the program application interface to a relational database is the structure query language as the SQL (Margaret, 2006).

2.8.1 Relational database structure

The database and the database structure are defined in the installation process. The structure of the database depends on whether the database is Oracle Database orMicrosoft SQL Server (Rainer, 2013). A database that can be perceived as is a set of tables and manipulated in accordance with the relational model of data. Each database includes:

2.8.1.1 A set of system catalog tables that describe the logical and physical structure of the data.

2.8.1.2 A configuration file containing the parameter values allocated for the database.

2.8.1.3A recovery log with ongoing transactions and achievable transactions.

Table 2.1 Relational database components

Component	Description
Data dictionary	A repository of information about the application programs, databases, logical data models, and authorizations for an organization. The only way to recover a data dictionary is to restore it from a backup.
Container	A data storage location, for example, a file, directory, or device that is used to define a database.
Storage partition	A logical unit of storage in a database such as a collection of containers. Database storage partitions are called table spaces in DB2 and Oracle, and called file groups in SQL Server.
Database object	An object that exists in an installation of a database system, such as an instance, a database, a database partition group, a buffer pool, a table, or an index.
Table	A database object that holds a collection of data for a specific topic. Tables consist of rows and columns.

Table 2.1 Relational database components (Continued)

Component	Description
Column	The vertical component of a database table. A column has a name and a particular data type for example, character, decimal, or integer.
Row	The horizontal component of a table, consisting of a sequence of values, one for each column of the table.
View	A logical table that is based on data stored in an underlying set of tables. The data returned by a view is determined by a select statement that is run on the underlying tables.
Index	A set of pointers that is logically ordered by the values of a key. Indexes provide quick access to data and can enforce uniqueness of the key values for the rows in the table.
Relationship	A link between one or more objects that is created by specifying a joint statement.
Join	An SQL relational operation in which data can be retrieved from two tables based on a join condition specifying join columns.

Resource: Morgan Kaufmann (2014)

2.8.2 The MySQL Database System

A database is a structured collection of data. It may be anything from a simple shopping list to a picture gallery or the vast amounts of information in a corporate network. To add, access, and process data stored in a computer database, you need a database management system such as MySQL Server. Since computers are very good at handling large amounts of data, database management systems play a central role in computing, as standalone utilities, or as parts of other applications (Michael, 2010).

2.8.2.1 MySQL is the most popular Open Source SQL database management (http://www.mysql.com/).

2.8.2.2 MySQL is a database management system. A database is a structured collection of data. To add, access, and process data stored in a computer database, it needs a database management system such as MySQL Server. MySQL databases are relational. A relational database stores data in separate tables rather than putting all the data in one big storeroom. The logical model, with objects such as databases, tables, views, rows, and columns, offers a flexible programming environment. Setting up rules governing the relationships between different data fields, such as one-to-one, one-to-many, unique, required or optional, and"pointers"between different tables. The SQL part of"MySQL"standsfor"Structured Query Language". SQL is the most common standardized language used to access databases (http://www.mysql.com/).

2.8.2.3 MySQL software is Open Source

2.8.2.4 Open Source means that it is possible for anyone to use and modify the software. MySQL software is the free software that can download from the Internet and use it without paying anything.

2.8.2.5 The MySQL Database Server is very fast, reliable, scalable, and easy to use.

2.8.2.6 The MySQL gives more convenient to in find and information or data from. MySQL Server can run comfortably on a desktop or laptop, alongside other applications, web servers, and so on, requiring little or no attention. Its connectivity, speed, and security make MySQL Server highly suited for accessing databases on the Internet.

2.8.2.7 MySQL Server works in client/server or embedded systems.

2.9 The Relevant Research

John L. Adrian, Jr., and Thomas Wade Green, Agricultural Cooperative Managers, Managers of agricultural cooperatives were contacted to determine their knowledge/ capabilities and perspectives of the cooperative environment with special emphasis given to the importance of agricultural cooperative principles to the operation and success of the business, division of responsibility between management and the board of directors, and business decision making in the areas of financial analysis plus selected scenarios (Adrian, 2001). Managers showed strong adherence to

traditional cooperative principles and basic decision areas. Self-assessments were positive and consistent with performance measures. The opportunity exists to improve manager knowledge/capabilities related to cooperative principles, division of responsibility between managers and the board, and financial analysis (Mark, 2003).

Thai government is much involved in supporting cooperatives through Cooperative Promotion and Cooperative Auditing Departments. Non-government institutions like the Cooperative League of Thailand and the Credit Union League of Thailand also play important roles, develop training centers, strengthen the internal auditing system, clarify the structure of government by creating a specific Department devoted to Agricultural Cooperatives and promote the cooperation between all stakeholders and particularly between government and NGOs. The financial system is in Thailand where cooperatives have several possibilities to get resources to develop their activities.

The development of cooperatives in Thailand is a long story which mainly started from government impulsion. According to Cooperative Promotion Department, the strategy at the start consisted in beginning in a few locations as pilot operations with small scale projects (The Federation of Saving and Credit Cooperatives of Thailand Limited, 2015: Website).

Cooperative Network works closely with its national co-op partners including Credit Union National Association, Farm Credit Council, National Cooperative Business Association, National Council of Farmer Cooperatives, National Rural Electric Cooperative Association, and National Rural Telecommunications Cooperative, to achieve grassroots success in legislative and regulatory activities at the federal level. Each interaction has a trickle-down effect on state regulations, where Cooperative Network continues to be a national leader in cooperative advocacy (William, 2013).

The types of services offered can be grouped into 4 main categories: enhanced access to and management of natural resources, access to input and output markets, improved access to information, knowledge and capacity building, and enhanced voices in policy making. In particular agricultural cooperatives can function more efficiently by using ICTs and providing a series of benefits to members.

CHAPTER 3
THE PROCEDURE OF THE STUDY

The Management Information System for Agricultural Cooperative in Kampong Thom province divides into:

3.1 Study the former of management information system

3.2 Analysis and design the new information system

3.3 Design the database structure

3.4 Develop and design the system

3.5 Evaluate the effectiveness of the system

3.1 Study the former of management information system

The previous study of the farmer association management in Cambodia is to reduce the poverty reduction strategy (Chanrith, 2008). Collective action mitigates transaction costs and regulates markets to increase values of goods and services catered by members. In the past in order to reach the information the officer always use the copied form of insert the data to computer have to use many long time.

According to Chandler (2000), in the 1960s 'agricultural cooperatives' were established and sponsored by the state. In 1975-1979, during the Khmer Rouge period, cooperatives were 'forced collective labor'. In the 1980s, cooperatives took the form of 'solidarity groups'. Currently, farmers' organizations (FOs) cover a wide variety of forms. Julie et al. (2005) classify five categories of FOs operating in Cambodia: farmer groups, associations, communities, cooperatives and federations. Despite variations in working definitions, these ACs constitute a common aim: to better help each other through 'collective bargaining power' (see Tath, 2006 for a detailed history of agricultural cooperatives in Cambodia).

Julie et al. (2005), put the number of ACs in Cambodia at 13,017. The bulk of the ACs are farmer groups (80.5%), followed by farmer communities (13.6%) and farmer associations (5.2%) (Table 3.1)

Table 3.1 Over 60% of these organizations were formulated after 2000

Fos	Number	Percent
Farmer Groups	10,487	80.5
Farmer Communities	1,769	13.6
Farmer Associations	662	5.2
Agricultural Cooperatives	9.3	0.7
Farmer Federations	6	0.05
Total	13,0	100

Resource: Julie et al. (2005)

The agricultural cooperatives in Kampong Thom are small in terms of membership size. Around 70% of them have fewer than 30 members, about 20% have between 30 to 100 members, and only 10% have a membership greater than 100. The members always change due to the irrelevant law to support the farmer. Most of the farmers as well as the agricultural cooperative officer inadequate awareness how to reach actual information transforms of share, budget, and member. Almost all agricultural cooperative are technically and/or financially supported by NGOs or government and few farmer groups are formed by the private sector such as British American Tobacco and the CP Group (Neou, 2006). Most of them are not legally registered, have untrained managers/leaders and have difficulty accessing services of government or credit institutions.

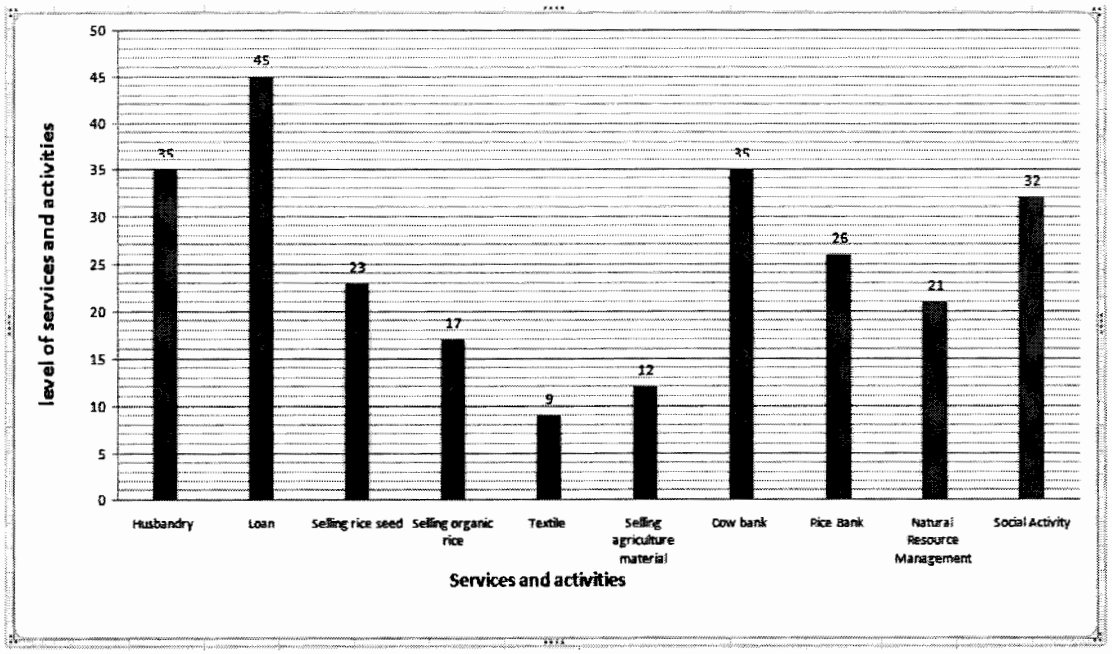

Figure 3.1 The sub-ACs in Kampong Thom province

Resource: KTPDA (2013)

Statement of the problem

The main recordings of data are mostly process on the computer (stand alone) or use many types of equipment in order to assist the record. Most of the records are always lost of confuse. Without using the program of software application tool to manage the data, most of them on the paper and write record. As the previous challenge many of documents were misplaced or disoriented. The traditional way is to manage the files in the main obstacle to its members and relevant sector to find data or information.

3.1.1 The computer is almost unavailable, slow and easy to damage the data. The main recordings are specific on the Microsoft Word or Excel as well as the hard copy.

3.1.2 To seek the recording data have to browse only one neither the computer nor the others impossible to reach the purpose information.

3.1.3 The most impossible of the information management are certainly difficult to transfer collect or report the data.

3.1.4 The members of officers hard to handle the information awareness or catch up the rapid finding.

3.2 Analysis and design the newer information system

Development of the management information system of agricultural cooperative evaluates of the news information management control through the web application and then connect to the internet browser. The officers record the data can apply as user then register and log in into the database software application. The system controller can find, modify, or check out the report of diversity of the members, transaction of share, sharebudget, commission, land property, debt and contact address browse on the internet register.

3.3 Design the Database Structure

3.3.1 Design of Use Case Diagram and Activity Diagram

Upon the analysis of the system and study of the relevant information and dataset are setting up the Use Case Diagrams and Activity diagram.

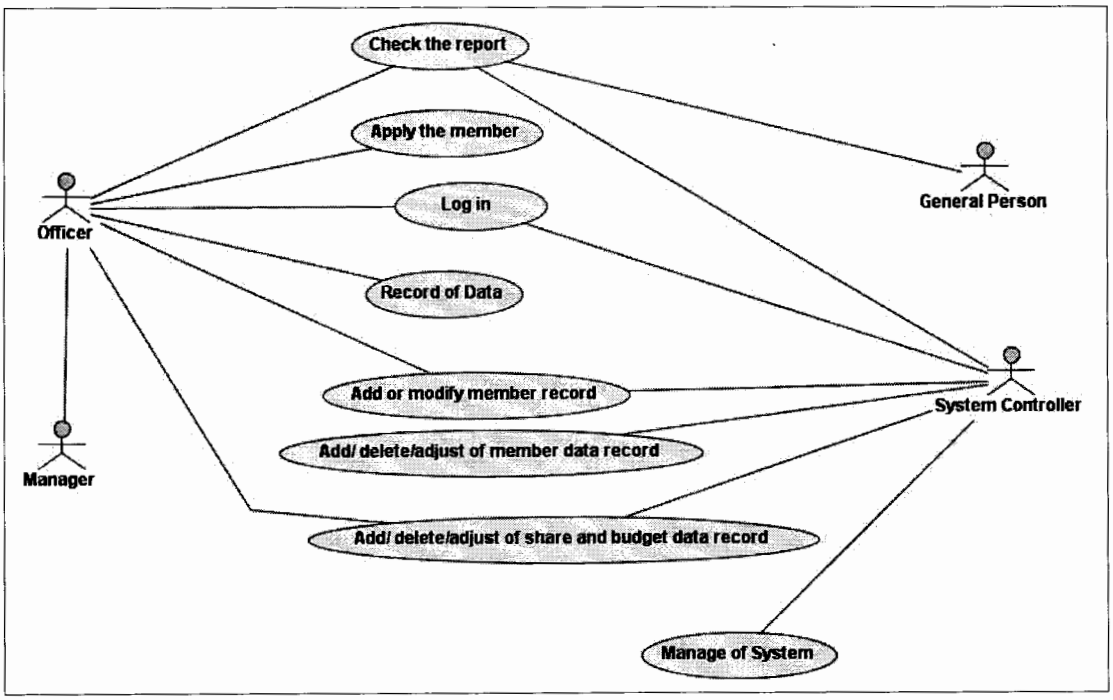

Figure 3.2 Use Case Diagram of information system for Agricultural cooperative in Kampong Thom province.

By the figure 3.2 Use Case Diagram of information system for Agricultural cooperative in Kampong Thom province consist:

3.3.1.1 Use Case applies to check the report. The reports of the agricultural cooperative in Kampong Thom province subsist of member report, budget and share report, activities, and commission, land property, debt and contact report.

3.3.1.2 Use Case to register into the system. A new user have to apply the member form in order to be a regular member which they can see all the report and activities of the ACs.

3.3.1.3 Use Case to record the data of member, share and budget of every month.

3.3.1.4 Use Case manages the data as adding, deleting and modifying of every data store and data input.

3.3.1.5 Use Case pageants the data such as monthly, quarterly and annually report of member, report the amount of female member, report of share, report of budget, report activities and report the household to present to manager. The information system further makes a job announcement, the product of each cooperative. The sub-agricultural cooperative precondition is to report to headquarter through email or electronic message, then the server control obligate to update the entire document for a week. Bearing on the system, specifically there are 4 actors:

1) Actor as manager competent the document freely.

2) Actor as the officer requisite to register to record the data of the member share and budget and minister of the task.

3) Actor as system controller capable to, and

4) Actor as general person can see the report without register however report from headquarter then the actor privilege to report or update the data.

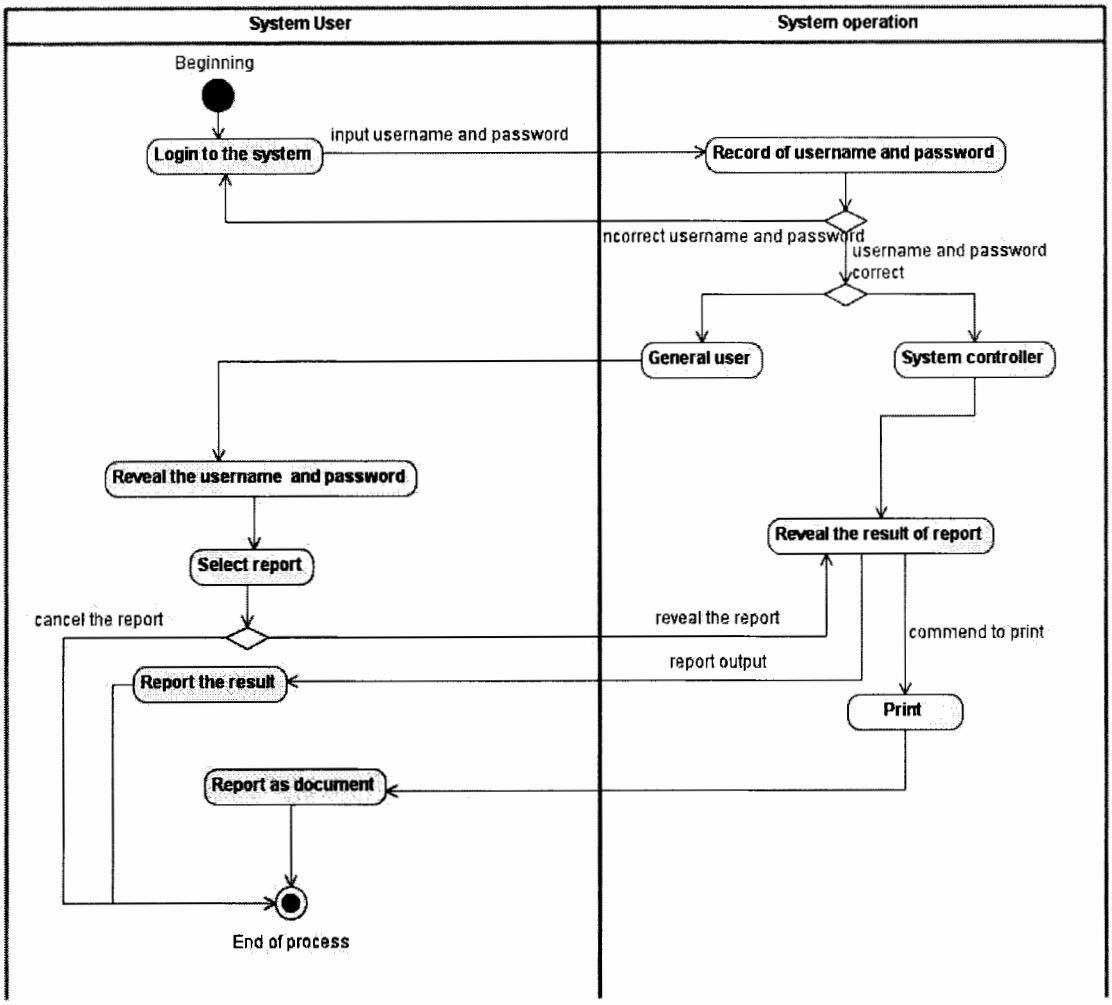

Figure 3.3 Activities diagram of system process of agri_coop

By the Activities diagram of system process of agri_coop is divided into two phases; the system user and system operation. The user must to insert username and password to see the system interface. The system operates the process to check out the request. If the username and password of user is correct, user able to check and print out document or report of the entire agricultural cooperative in Kampong Thom province. In case the user login has no, the system will inform on the system interface. User is able to logout in case to terminate the process.

3.3.2 The modeling of the relational database diagram

Base on the analysis and design of the development of the rational database structure present by class diagram to produce a conceptual data model of a information system. It illustrates the logical structure of databases.

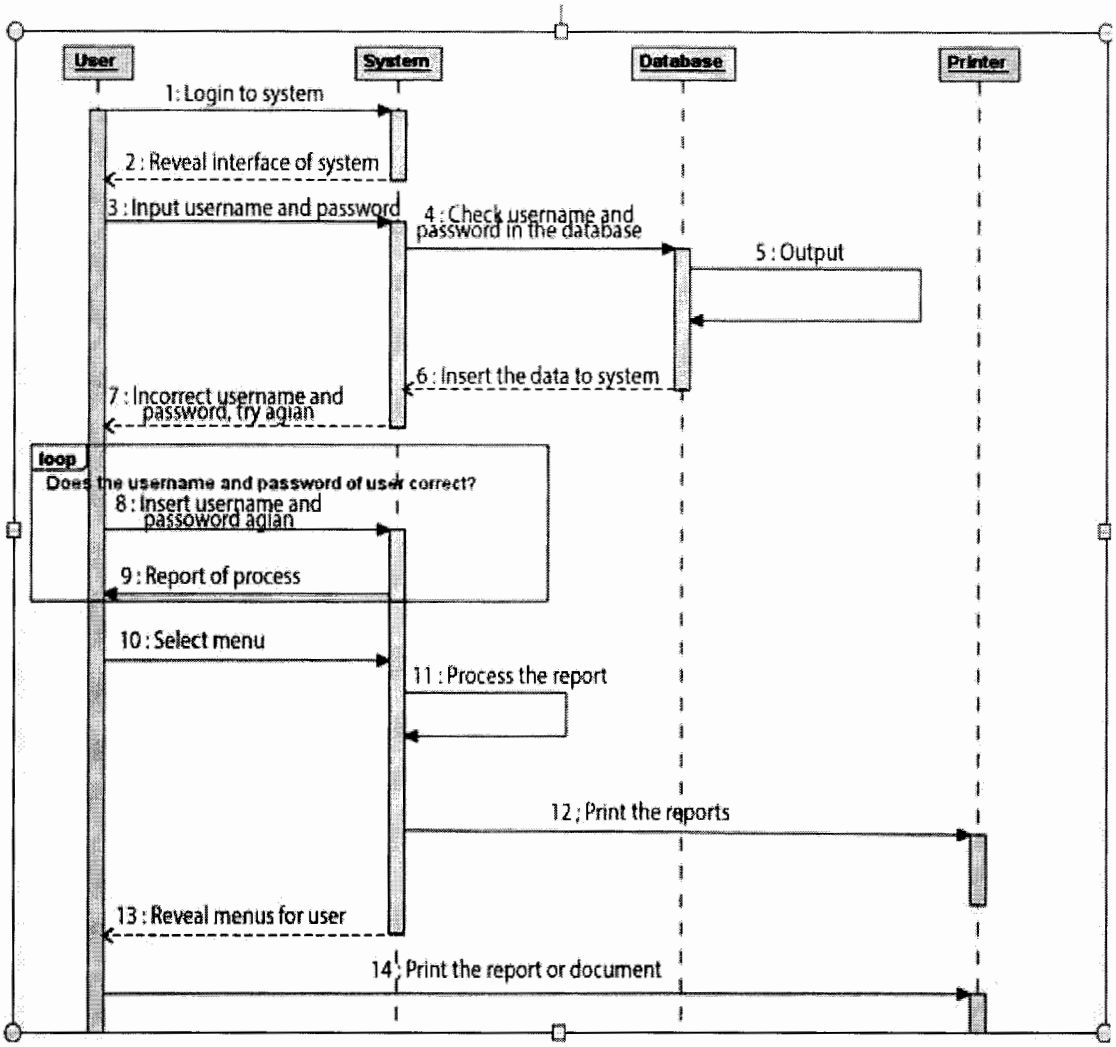

Figure 3.4 Sequence diagram of the system operation

The concluded resemblance sequence diagram of the system operation of agricultural cooperation in Kampong Thom province. Hereby, the system operation:

3.3.2.1 User login to system

3.3.2.2 Fill username and password

3.3.2.3 In case the information is correct, user able to check out another menus

3.3.2.4 In case the information is not correct, system inform to re-check

3.3.2.5 Re-insert the username and password

3.3.2.6 User check document or printout the reports

3.3.2.7 Logout from system to terminate the operation

Table 3.2 The entity of the Agricultural Cooperative Management in Kampong Thom Province.

No.	Field	Description
1	Province	Collect of the province data
2	District	Collect of the district data
3	Commune	Collect if the commune data
4	Village	Collect of the village data
5	ACs's headquarter	Collect of the agricultural cooperative' headquarter
6	Sub-ACs	Collect of the Sub-AC's in Kampong Thom province
7	Intomember	Collect of the member data report
8	Intoshare	Collect of the share data report
9	Intobudget	Collect of the budget data report
10	Intoactivity	Collect of the activity announcement and report
11	Users	Collect the data of system user
12	users_level	Collect the privilege users to reach the data
13	csv_import	Collect the sub-ACs inserted to the system

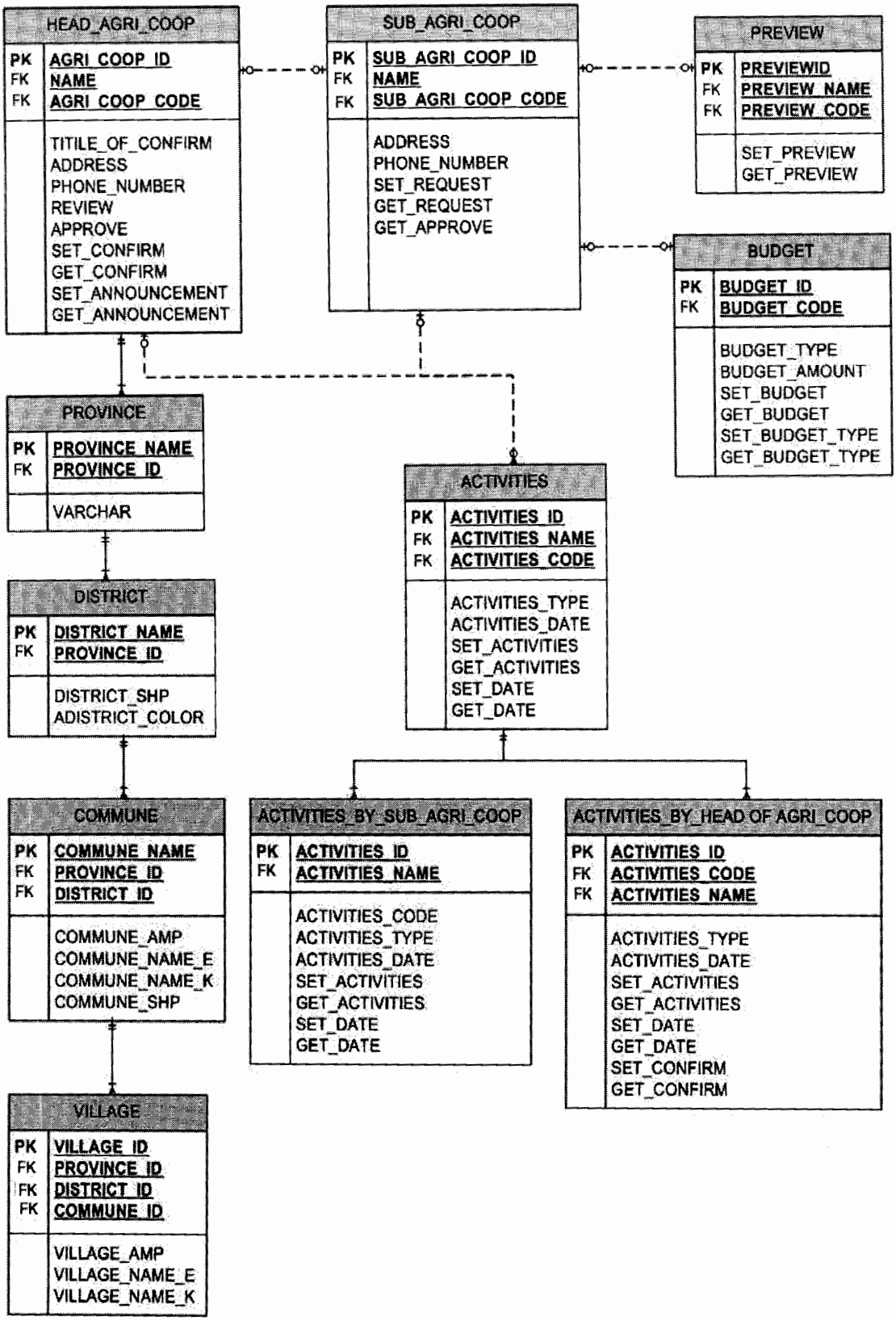

Figure 3.5 The entity diagram relationship of information system structure of agricultural cooperative in Kampong Thom province

Throughout the figure 3.5 the signal of entity diagram relationship

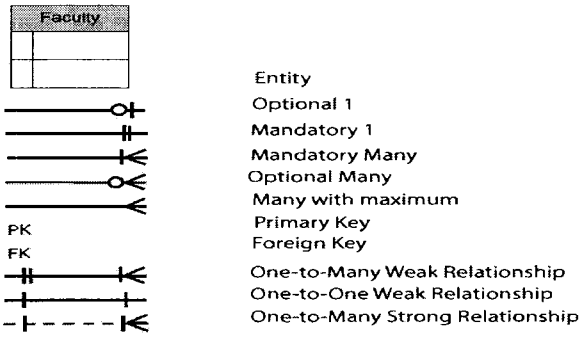

Figure 3.6 The signal of entity diagram relationship

Table 3.3 Structure of the province

No.	Field	Type of data	Parameter of data	Key	Description
1	province_id	Int	11	Pk	province
2	province_code	varchar	5	-	province code
3	province_name	varchar	150	-	province name
4	geo_id	Int	5	-	zone code

Table 3.4 Structure of district

No.	Field	Type of data	Parameter of data	Key	Description
1	district _id	int	11	Pk	district
2	district _code	varchar	5	-	district code
3	district _name	varchar	150	-	district name
4	province_id	Int	5	-	province code
5	province_name	varchar	150	Fk	province name
6	geo_id	Int	5	-	zone code

Table 3.5 Structure of commune

No.	Field	Type of data	Parameter of data	Key	Description
1	commune _id	int	11	Pk	commune
2	commune _code	varchar	5	-	commune code
3	commune _name	varchar	150	-	commune name
4	no_of_ commune	int	3	-	commune number
5	district _id	int	20	-	commune id
6	province_name	int	5	Fk	province name
7	geo_id	int	5	-	zone code

Table 3.6 Structure of village

No.	Field	Type of data	Parameter of data	Key	Description
1	village _id	int	11	Pk	village
2	village _code	Varchar	5	-	village code
3	village _name	Varchar	150	-	village name
4	no_of_village	Int	3	-	village number
5	citizen _id	Varchar	20	-	citizen id
6	commune_id	Int	5	-	commune id
7	district _id	Int	5	-	commune id
8	Province_name	Int	5	Fk	province name
9	Geo_id	Int	5	-	zone code

Table 3.7 Structure of ACs's headquarter

No.	Field	Type of data	Parameter of data	Key	Description
1	ACs _id	int	11	Pk	ACs
2	ACs _code	varchar	5	-	ACs code
3	ACs _name	varchar	150	-	ACs name
4	ACs_alley_name	varchar	100	-	ACs alley
5	ACs_street_name	varchar	100	-	ACs name
6	commune_id	Int	5	-	commune id
7	district _id	Int	5	-	commune id
8	Province_name	Int	5	Fk	province name
9	Geo_id	Int	5	-	zone code

Table 3.8 Structure of sub-ACs

No.	Field	Type of data	Parameter of data	Key	Description
1	sub-ACs _id	int	11	Pk	sub-ACs
2	sub-ACs _code	varchar	5	-	sub-ACs code
3	sub-ACs _name	varchar	150	-	sub-ACs name
4	sub-ACs _alley_name	varchar	100	-	sub-ACs alley
5	sub-ACs _street_name	varchar	100	-	sub-ACs name
6	ACs _id	int	11	-	ACs id
7	village _id	int	11	-	village id
8	commune_id	Int	5	-	commune id
9	district _id	Int	5	-	commune id
10	Province_name	Int	5	Fk	province name
11	Geo_id	Int	5	-	zone code

Table 3.9 Structure of Intomember

No.	Field	Type of data	Parameter of data	Key	Description
1	id_intomember	int	10	Pk	level of report
2	name_intomember	Varchar	500	-	list of member report
3	ref_intomember	Int	5	-	password of report

Table 3.10 Structure of Outtomember

No.	Field	Type of data	Parameter of data	Key	Description
1	id_ outtomember	int	10	Pk	level of report
2	name_ outtomember	Varchar	500	-	list of member report
3	ref_ outtomember	Int	5	-	password of report

Table 3.11 Structure of Intoshare

No.	Field	Type of data	Parameter of data	Key	Description
1	id_intoshare	int	10	Pk	level of report
2	name_ intoshare	varchar	500	-	list of share report
3	ref_ intoshare	int	5	-	password of report

Table 3.12 Structure of Outtoshare

No.	Field	Type of data	Parameter of data	Key	Description
1	id_outtoshare	int	10	Pk	level of report
2	name_ outtoshare	varchar	500	-	list of share report
3	ref_ outtoshare	int	5	-	password of report

Table 3.13 Structure of intobudget

No.	Field	Type of data	Parameter of data	Key	Description
1	id_ intobudget	int	10	Pk	level of budget
2	name_ intobudget	varchar	500	-	list of into budget report
3	ref_ intobudget	int	5	-	password of report

Table 3.14 Structure of Outtobudget

No.	Field	Type of data	Parameter of data	Key	Description
1	id_ outtobudget	int	10	Pk	level of budget
2	name_ outtobudget	varchar	500	-	list of into budget report
3	ref_ outtobudget	int	5	-	password of report

Table 3.15 Structure of intoactivity

No.	Field	Type of data	Parameter of data	Key	Description
1	id_ intoactivity	int	10	Pk	level of activity
2	name_ intoactivity	varchar	500	-	list of into activity report
3	ref_ intoactivity	Int	5	-	password of report

Table 3.16 Structure of Outtoactivity

No.	Field	Type of data	Parameter of data	Key	Description
1	id_ Outtoactivity	int	10	Pk	level of activity
2	name_ Outtoactivity	varchar	500	-	list of into activity report
3	ref_ Outtoactivity	int	5	-	password of report

Table 3.17 Structure of Users

No.	Field	Type of data	Parameter of data	Key	Description
1	Id	int	11	Pk	user password
2	username	varchar	15	-	Username
3	password	varchar	35	-	Password
4	Hash	varchar	32	-	Insert password
5	Email	varchar	100	-	Email
6	id-level	int	5	-	the privilege of use
7	lastconnect	timestamp	5	-	last login
8	user_ip	varchar	11	-	ip of computer login

Table 3.17 Structure of Users (Continued)

No.	Field	Type of data	Parameter of data	Key	Description
9	user_join	datetime	15	-	date of apply
11	Status	Enum('pending','changing'email,'confirmed')	35	-	confirm the status
12	Random	varchar	32	-	insert password
13	action status	enum('normal', 'warning')	100	-	recent status

Table 3.18 Structure of Users Level

No.	Field	Type of data	Parameter of data	Key	Description
1	Id	int	5	Pk	member's password
2	level	int	5	-	password to use system
3	level_name	varchar	25	-	confirm the status
4	prefixcolor	varchar	35	-	color of member log in status
5	Suffixcolor	varchar	35	-	color of member log in status

Table 3.19 Structure of csv_import

No.	Field	Type of data	Parameter of data	Key	Description
1	Id_csv	int	10	Pk	the level of files import
2	csv_subj	varchar	190	-	list of imported files
3	csv_encode	varchar	32	-	password of imported file

3.4 Develop and design the system

The study of the collecting data has been finished with the adequate of information. The developer has designed the information system for agricultural cooperative in Kampong Thom province. The system management was designed into;

3.4.1 Design the main menu according to the privilege of user which divided into 4 grades such as:

3.4.1.1 The system controller beside of manage the system but also add modify delete then define the right of officer's data.

3.4.1.2 The manager able to check the reports with the officer without register.

3.4.1.3 The officers can be registered to system to record and manage and check the reports.

3.4.1.4 The general person can see the report from the sub_ACs.

3.4.2 Design forms as the main menu

3.4.2.1 Member menu specific for the officers

3.4.2.2 Member record menu of ACs and sub_ACs by recoding the data of member from sub_ACs to report updating by the system controller.

3.4.2.3 Share menu to record the share data from sub_ACs to report updating by the system controller.

3.4.2.4 Budget menu to record the budget report of sub_ACs.

3.4.2.5 Data management menu use to record the detailed data report of sub_ACs.

3.4.2.6 The statistic report of transforming of share, member budget and activity. There are majority of report such as; monthly, quarterly and annually report. The procedure of the report regularly update by system user and system controller.

3.4.3 To see the report, the client identifies the report of sub_ACs without login into the system. The client can see the report by graph and table.

3.4.4 System controller have the privilege able to search, add, modify, delete the data such name of agri_coop, amount of member, amount of female member, amount of share, amount of share budget, share price, land property, debt in percent,

commission in percent, activities or service of each agricultural cooperative, donor or sponsor and contact.

3.4.5 User able to check, add, modify of personnel data gather with searching on general information of sub-agricultural cooperative such name of agri_coop, amount of member, amount of female member, amount of share, amount of share budget, share price, land property, debt in percent, commission in percent, activities or service of each agricultural cooperative, donor or sponsor and contact.

Figure 3.7 The information system of agricultural cooperative of Kampong Thom province.

3.5 Evaluatethe effectiveness of the system

3.5.1 The evaluation method

The intent of system evaluation is to collect information about the project as a whole, the functions of the system, the expected user activities, the system architecture, and any other details that are helpful in guiding performance testing to achieve the specific needs of the project (Barber, 2007).In order to check on the efficiency of system operation for Information System for Agricultural Cooperative in Kampong Thom Province for entire of effectiveness measurement of developed system uses Black Box Testing (Bhasin, 2014)on five categories of system.

3.5.1.1 The capacity of the program

3.5.1.2 The legitimated operation of the program

3.5.1.3 The effectiveness contentment and satisfaction of system operation.

3.5.1.4 The security of system

3.5.1.5 The manifest of the effectiveness and reporting.

The arithmetic mean of a set of data is found by taking the sum of the data, then dividing the sum by the total number of values in the set. A mean is commonly referred to as an average. The arithmetic mean of a set of values is the ratio of their sum to the total number of values in the set. Thus, if there are a total of"n"numbers in a data set whose values are given by a group of"x"-values, then the arithmetic mean of these values, represented by 'm', can be found using this formula (Sarkissian, 2012).

$$\overline{X} = \frac{\sum_{i=1}^{n} X_i}{N} \tag{3.1}$$

Meaning

X	represents average
Xi	represents the value of each individual item in the list of numbers being averaged
N	represents the number of terms
n	represents the number of terms

The standard deviation is a statistic that tells you how tightly all the various examples are clustered around the mean in a set of data. When the examples

are pretty tightly bunched together and the bell-shaped curve is steep, the standard deviation is small. When the examples are spread apart and the bell curve is relatively flat, that tells you have a relatively large standard deviation. The standard deviation is a numerical value used to indicate how widely individuals in a group vary. If individual observations vary greatly from the group mean, the standard deviation is big; and vice versa.

$$SD = \frac{\sqrt{\sum_{i=1}^{n}(X_i - \overline{X})^2}}{N} \qquad (3.2)$$

Meaning

SD	represents Standard Deviation
X	represents each value in the population
Xi	represents the value of each individual item in the list of numbers being averaged
N	representsthe number of terms
N	represents the number of terms

CHAPTER 4
RESULT OF STUDY

Through the study of system development for agricultural cooperative management in Kampong Thom province using the Black Box Testing to evaluate the factual of the system, and then check out the system error.

Black Box Testing is used when code of the module is not available (Bhasin, 2014; Laurie, 2006).There are three categories of Black Box Testing to command;

(1) System testing is testing conducted on a complete, integrated system to evaluate the system compliance with its specified requirements.

(2) Functional testing Functional testing involves ensuring that the functionality specified in the requirement specification works.

(2.1) Stress testing – testing conducted to evaluate a system or component at or beyond the limits of its specification or requirement.

(2.2) Performance testing – testing conducted to evaluate the compliance of a system or component with specified performance requirements.

(2.3) Usability testing – testing conducted to evaluate the extent to which a user can learn to operate, prepare inputs for, and interpret outputs of a system or component.

(3) Acceptance testing is formal testing conducted to determine whether or not a system satisfies its acceptance criteria (the criteria the system must satisfy to be accepted by a customer) and to enable the customer to determine whether or not to accept the system.

The study uses functional and system testing, and acceptance testing operates by black box testing to client or customer regard as system user and administrator or system controller. There are two types of respondents; computer specialist and system user.

As the result of system checking shows the data analysis to check out effectiveness of system analysis using the average measurement, then the standard of data analysis consists of;

4.1 The result of study

4.2 The result of information system development

4.3 The result of system evaluation

4.4 Summary the result of system evaluation

4.1 The result of the study

The information system for agricultural cooperative management in Kampong Thom province is played much role to foster the collaboration of community NGOs and the public state. The system would assist to contribute knowledge sharing information and change the perception of local people understanding the significance of participation. The system gives more benefit to agri_coop authority local people and relevant sectors in order to improve the population standard of living. The result of the information system could share more information about agriculture for such as technique, amount of member, amount of female member, amount of share, amount of share budget, share price, land property, debt in percent, commission in percent, activities or service of each agricultural cooperative, donor or sponsor and contact and natural resource management as well as fostering decentralization strategy of the government. The majority of agricultural cooperatives members are aware how to make collaboration and communication way with the relevant sectors in order to improving the standard of living and empowering the community development campaign.

Table 4.1 Number of respondents participated in the study

Location	Level	Total of Members (persons)	Sample Size (persons)
Agricultural Cooperative in Kampong Thom province	1	8	3
	2	8	5
	3	25	15
	4	42	15
	5	17	12
Total		100	50

There are total 100 members were selected for the study with the sample respondents are 50 people in four districts among 7 communes, 25 villages total 15 sub-agricultural cooperative. Recently, the selected agricultural cooperatives are the active on the very much activities patron and saving group. The majority of the agricultural cooperatives are being supported by the Royal Government of Cambodia, MAFF and NGOs.

Table 4.2 The information of the respondents

Variables	Categories	Frequency	Percentage (%)
Sex (n= 50)	Male	32	64
	Female	18	36
Age(n= 50)	18-25	7	14
	26-35	20	40
	36-45	13	26
	46- Up	10	20
Education (n= 50)	Illiterate	15	30
	Primary School	16	32
	Secondary	9	18
	High School	8	16
	High Diploma up	2	4
Share (n= 50)	1-5	26	52
	6-10	15	30
	11-15	6	12
	Over 16	3	6
Computer Literacy (n= 50)	Internet, Word, Excel	6	12

Table 4.1 show that selected respondent 64 percent is male and 36 percent is female. Respondent educations are illiterate are 30 percent, primary school are 16 percent, secondary school 18 percent, high school 16 percent, and high diploma are 4 percent. Gather with holding share from 1-5 are 25 percent, 6-10 are 30 percent, 11-15 are 12 percent, over 16 are 4 percent. Among of the respondents are 12 percent aware how to use foundation computer usability.

Table 4.3 Degree of the importance of MIS for Agricultural Cooperative is in Kampong Thom province.

Variables	Highly Important (%)	Very Important (%)	Important (%)	Least Important (%)
Performance of Management	-	40	56	4
Share information	45	38	12	5
Data Storage	25	36	27	12
Public Diversification	15	21	36	28

Table 4.3show that performance of information system management and data storage are very important level, highly important sharing information and important of public diversification.The development of the system is plays much role to catch up the actual need for agri_coop management in Kampong Thom province.

Table4.4 Respondents' perception on agricultural cooperative in Kampong Thom province.

Content of service	Level of Satisfaction (%)				
	1	2	3	4	5
1. Loan and saving	0	16	30	54	0
2. Selling agricultural material	4	34	30	28	4

Table4.4 Respondents' perception on agricultural cooperative in Kampong Thom Province (Continued)

Content of service	Level of Satisfaction (%)				
	1	2	3	4	5
3. Poultry bank	8	30	28	18	16
4. Selling rice and organic rice	4	28	42	24	2
5. Produce rice seed	10	24	38	18	10
6. Produce animal feed	50	24	18	2	6
7. Purchase of cashew nut	34	32	16	14	4
8. Selling service (table canvas tent)	28	38	16	4	14
9. Textile	40	12	28	18	2
10. Mineral water and furniture	86	2	10	2	0
11. Environment conservation participation	2	6	20	42	30
12. Technical information, technical advising	2	10	10	72	6
13. Agriculture Equipment for production (pump, power tiller)	20	26	6	30	18
14. Market (transportation, trading, information on market	8	24	10	30	28
15. Subsidies (from projects, NGOs, government agencies or donors)	0	16	30	54	0

Table 4.4 shows those respondents' perceptions on agricultural cooperative are in Kampong Thom province on the trend interval of important and very important on the remarkable rank. Among of understanding through the perception, technical information and technical advising is very important (74 %), and then environment conservation participation and loan and saving (54 %)are significant note than others.

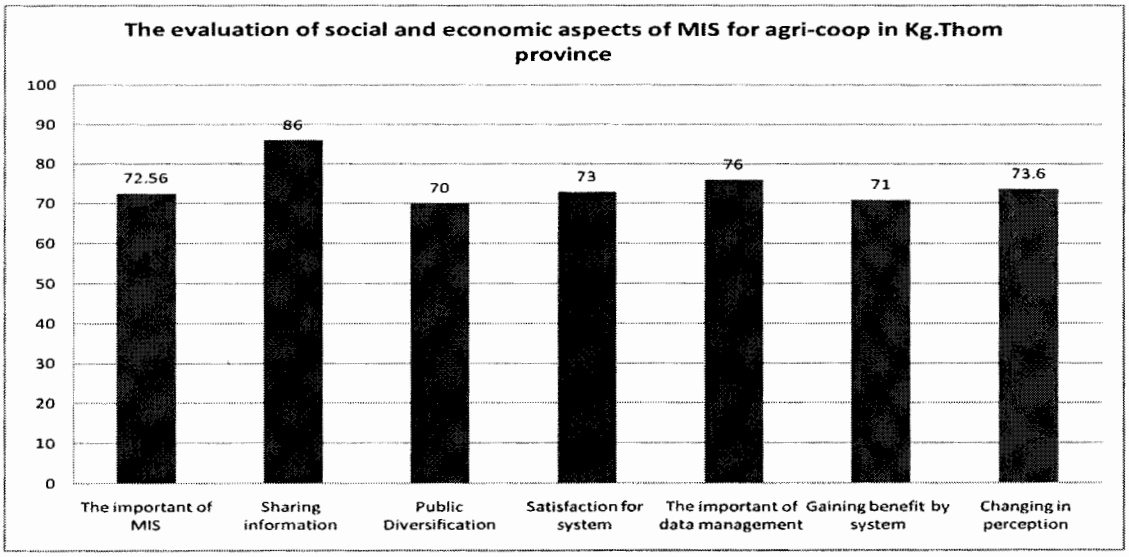

Figure 4.1 The evaluation of social and economic aspects of MIS for agri_coop in Kg.Thom province

Through the figure 4.1 shows that sharing information is on the high peak demand playing much role for long progress on agri_coop management. Beside of this, the important of data management point is 76.0, the important of MIS score is 72.56, changing in perception score is 73.6, public diversification point is 70.0, satisfaction for the system score is 73.0, and gaining benefit by system point is 71.0. By this information people will get information for all aspects included social and economic aspects gather with offer more opportunities for relevant sector for decision making in every picture of service and supporting.

Management Information System (MIS) for agricultural cooperative has been developed especially for the agricultural cooperative management under the control of Kampong Thom Agriculture Extension office, Kampong Thom Provincial Department. The system would improve operational and managerial control leading to a decrease in cost while maintaining or even increasing productivity. It was designed to meet the information needs of modern agricultural management. Systems provide the modern-day manager and officer or the relevant sector with the information and data management and human resource management such as name of agri_coop, amount of member, amount of female member, amount of share, amount of share budget, share price, land property, land property on value, debt in percent, commission in percent,

livestock, monthly income, monthly expense, varieties of crop plantation, labor force, activities or service of each agricultural cooperative, donor or sponsor and contact.

Systems cover finance and administration and production and processing (eg, planning and administration of field operations, production control, assert administration). The information systems can be adapted to suit any specific need of a particular project.This system analyzed the operational activities in the organization. In this way, it is a subset of the overall planning and control activities covering the application of humans, technologies, and procedures of the organization within the field of scientific management and human decision making.

This system moves beyond pure data collection and the determination of trends aspect of agri_coop in Kampong Thom province.

(1) The ratio between the number of farms and the various categories of extension staff members.

(2) The ratio between the amount of farmland and the various categories of extension staff members.

(3) Amount of extension financial operating resources allocated per year to selected farmer problems or concerns.

(4) Amount of extension financial resources, both salary and operating expenses, allocated per year to selected extension approaches to solving different farmer problems or concerns.

The management information system for agricultural cooperative in Kampong Thom province have been fostering the decentralization for agricultural cooperative management, Both members and non-members of cooperative shared a variety of information sources on dairy farming and related subjects. Groups of farmers obviously used a wide range of information sources. The Public information sources were information sources from outside the community and operated by professional staff of various institutions. Although they were supposed to be the main scientific and technical support services for the farmers, they were rarely used. The information exchanges between the dairy farmers and the public information sources were generally weak, limited and led, or initiated, by the dairy officers. The main reasons for the lack of extension services provided by the public agricultural directorates and their staff at the community levels were the lack of finance, personnel and mobility. Moreover, the

staffs were too busy with the paperwork. On the other hand, the majority of the dairy farmers were unaware of the existence of these institutes and their activities.

The analysis tried to contribute to the extant literature focusing on the cooperative sector and, specifically, on the management of agricultural cooperatives. The analysis encompassed the coherence among the tools of the planning and management information system, in that Kampong Thom province called Kampong Thom Agricultural Extension office. The goal of MIS is to enable managers to make better decisions by providing quality information. In the modern days of information technology [IT], managers make use of computers and a vast variety of database. The key to building and using effective information system is that managers need to know how to apply technology to solve problems and make decisions.

4.2 The result of information system development

As the previous experience, the document management by collecting and reporting data and activities specific on the hard copied have to spend several times to search bereft of files, miserable modifying document. Development of the information system offer benefits for agricultural cooperative management in Kampong Thom province produces more marvelous convenience for data management and data storage. The system would use generally for the Kampong Thom Provincial Department of Agriculture particularly, the Agriculture Extension office to fostering on decentralization on management and general information related to agri-coop. Moreover, to reduce the gap between government official and farmer are keeping more closely. The system uses for administration work on the agricultural cooperative management and sharing benefit to common people and poor. It could certain strengths of the cooperative including high participation of the members, high level of benefits and satisfaction of the members to the service and activities are organized by the head and sub agriculture cooperative.

Development of system proprieties to the situation of the modern technologies rely on demanding in sharing information and data management. System works on internet access which entirely data and information are evangelize to public able to printout.

System information control on searching, adding, modifying, deleting the data such name of agri_coop, amount of member, amount of female member, amount of share,

amount of share budget, share price, land property, land property on value, debt in percent, commission in percent, livestock, monthly income, monthly expense, varieties of crop plantation, labor force, activities or service of each agricultural cooperative, donor or sponsor and contact.

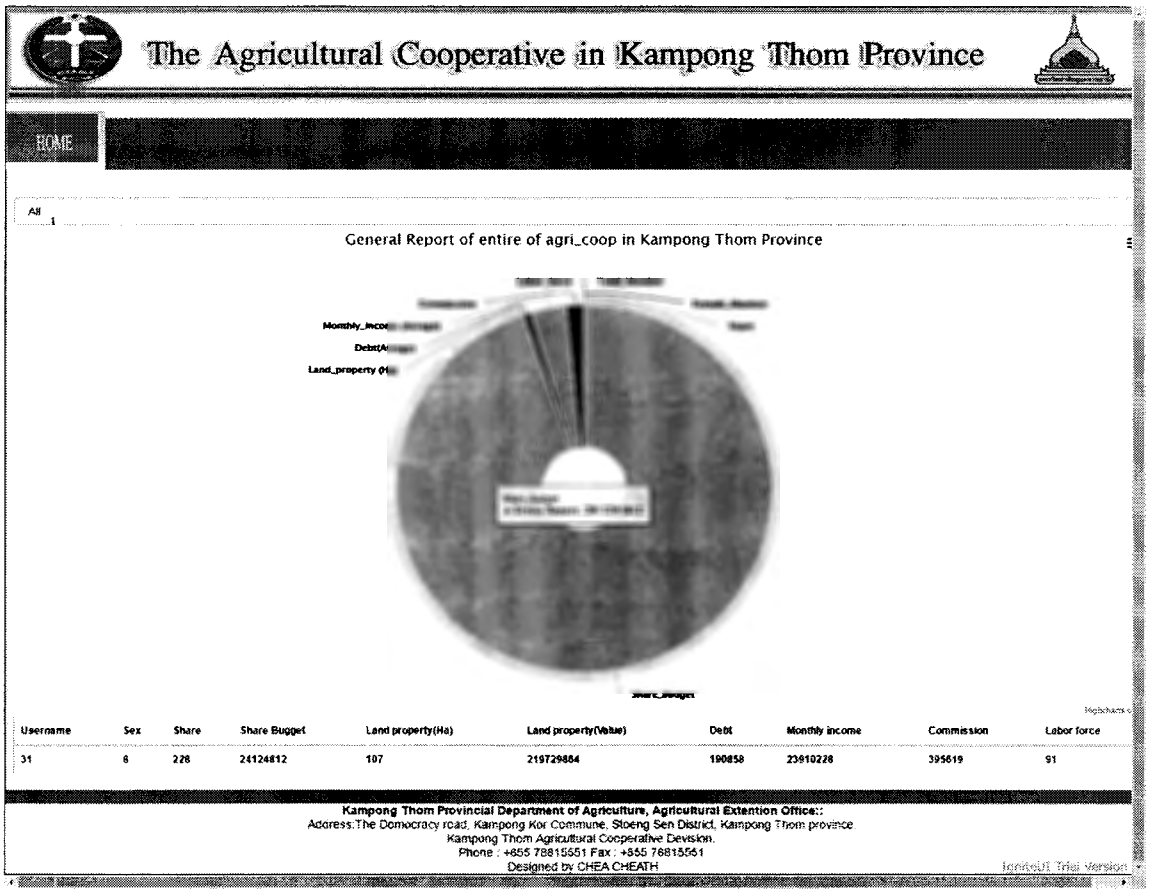

Figure 4.2 The system report on agricultural cooperative

The figure 4.2 shows that the information system operates the entire information included total member, total female member, share, share budget, debt, commission, labor force, activities, monthly income and monthly expend. It will be grouped by, calculate, and sum up all data input, and then report as table and graph. The reports are able to print out and save as image. Otherwise, it able to search on individual information of sub_agri_coop in Kampong Thom province by select the button selected, and then selects the interested one. The report will appear as the information of head of agricultural cooperative are total member, total female member, share, share budget,

debt, commission, labor force, activities, monthly income and monthly expend.. This system share more benefit on data collection, share interested information to stakeholders or relevant sectors.

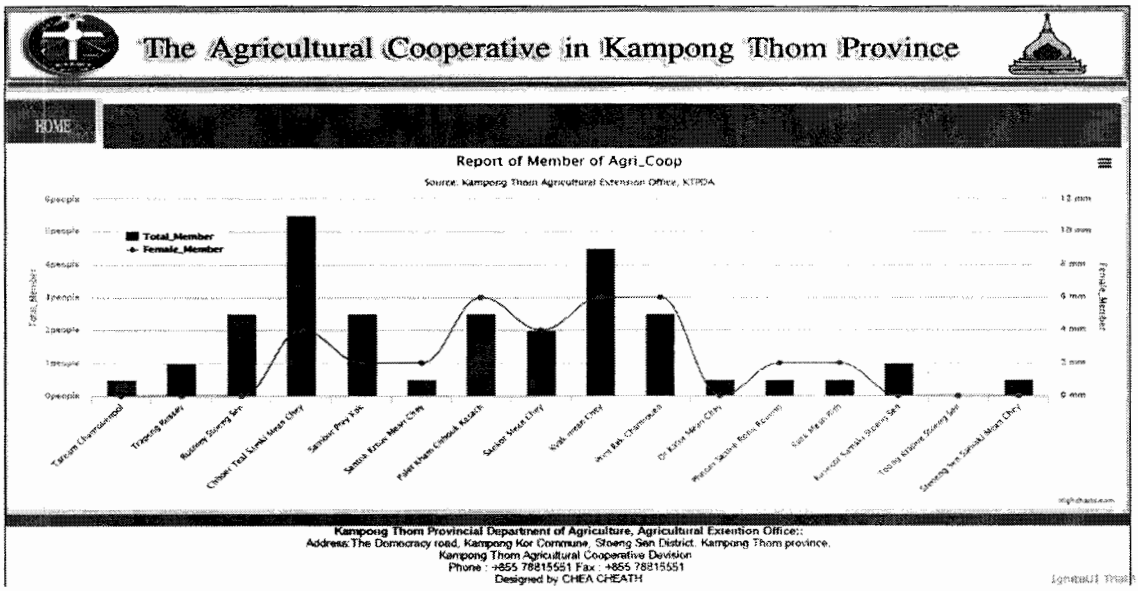

Figure 4.3 The member report on agricultural cooperative

The figure 4.3 shows that the information system operates the entire of member information. It will be calculate, and sum up all data input as graph. The reports are able to print out and save as image. The graph is dynamic with the trend of member will be go up depend on member log in. In the initial step, member must select one of agri_coop. The graph will be show the number of each agri_coop depend on the amount of member is login.

4.3 The result of system evaluation

4.3.1 The result of system evaluation for computer specialist

The evaluation of system efficiency of the information technology for agricultural cooperative in Kampong Thom province is evaluated the capacity of system;

(1) Functional requirement test

(2) Functional test for computer specialist

(3) Usability test for computer specialist

(4) Security test for computer specialist

(5) Result and report for computer specialist

The system evaluation is evaluated by officer in charge of Agricultural Extension office and computer programmer for 10 people as computer specialist (Appendix, Name Respondent of System Evaluation). The satisfaction questionnaire using the evaluation grade;

9.00- 10.00 : Very good

7.00- 8.99 : Good

5.00- 6.99 : Fair

3.00- 4.99 : Poor (Low, the system have to improve)

1.00- 2.99 : Very poor (Very low, the system is not available to use)

The evaluation paper by the expertise as the table below:

4.3.1.1 Functional requirement test

Table 4.5 The functional requirement test for computer specialist

Satisfaction	$\overline{X}$	SD	Meaning
1. System capacity	6.90	0.74	Fair
2. Data searching capacity	6.93	0.60	Fair
3. High speed of collecting data capacity	7.17	0.67	Good
Average	7.00	0.67	Good

Table 4.5 shows that the possibility of the system average 7.00 that the functional requirement of system can be used in regular for publicly interests. The validation of the system is suitable to use for agricultural cooperative in Kampong Thom with the appropriated capacity and performance. Gather with accepted speed on data searching capacity and proper of collecting data, the system is satisfied to use.

4.3.1.2 Functional test for computer specialist

Table 4.6 The functional test for computer specialist

Satisfaction	$\overline{X}$	SD	Meaning
1. The correct data output	7.25	0.72	Good
2. The correct data record	7.33	0.68	Good
3. The correct data evaluation	7.12	0.52	Good
4. The correct for decision making	6.99	0.82	Good
5. The suitable report to the requirement	7.42	0.59	Good
Average	7.22	0.66	Good

Table 4.6 shows that the possibilities of the functional test system average point are 7.22 that the system is acceptable to use with satisfaction and respond to the recent requirement for the agricultural cooperative in Kampong Thom province. The correct of data record and the data are suitable for decision making with the report replied to the requirement.

4.3.1.3 Usability test for computer specialist

Table 4.7 The usability test and satisfaction

Satisfaction	$\overline{X}$	SD	Meaning
1. The contentment	7.44	0.60	Good
2. Page design and convenience searching	7.54	0.77	Good
3. The colorful of page	7.50	0.53	Good
4. Font pattern and size	7.35	0.46	Good
Average	7.45	0.59	Good

Table 4.7shows that the possibility of usability test and satisfaction for system user average is 7.45 with the high performance on searching, colorful page designed and

suitable font size. Each system's interface gives more comfort in reading and colorful. The result shows that system is acceptable satisfaction.

4.3.1.4 Security test for computer specialist

Table 4.8 The system security for computer specialist

Satisfaction	$\bar{X}$	SD	Meaning
1. The suitable for system user privilege	7.44	0.47	Good
2. The suitable for system security	7.40	0.48	Good
Average	7.42	0.47	Good

Table 4.8 shows that system security average 7.42. The system is in the command high security for pacification of file authorizations each time a file is created, the creator may specify which individuals or groups of individuals are permitted to access the file. For each file, the author may therefore specify authorizations and an access list to be associated with each authorization with privileged consistency check of the security management and administration control.

4.3.1.5 Result and report for computer specialist

Table 4.9 Result and output the report for computer specialist

Satisfaction	$\bar{X}$	SD	Meaning
1. The proper output and apply to requirement	7.39	0.46	Good
2. Correct of report and data output	7.51	0.45	Good
3. Easy to the understand the report	7.44	0.44	Good
Average	7.45	0.45	Good

Table 4.9 shows that the possibility on result and output the report of the system average 7.45, in the high commitment for user and system administrator to direct procedure output to log and print files. These files are then available to the data step for further refinement or analysis of the results.

Table 4.10 Result and output of the evaluation of system efficiency for computer specialist

No.	Result of assessment	Average on Quantities	Average on deviate	Mean
1	Functional requirement test	7.00	0.67	Good
2	Functional test	7.22	0.66	Good
3	Usability test	7.45	0.59	Good
4	Security test	7.42	0.47	Good
5	Result and report	7.45	0.45	Good
Average		7.30	0.57	Good

Table 4.10 shows that the average number of result and output of the evaluation of system efficiency and capacity of the system specialist is 7.30. The system is suitable for data management, data storage, system security, usability and collecting data with the high performance on data output feedback the requirement for data management.

System controller able to search, add, modify, delete the data such name of agri_coop, amount of member, amount of female member, amount of share, amount of share budget, share price, land property, debt in percent, commission in percent, activities or service of each agricultural cooperative, donor or sponsor and contact.

4.3.2 The result of system evaluation for system user

To intensify the system efficiency, the evaluation of system efficiency of the information technology for agricultural cooperative in Kampong Thom province is play much role to build up confident for user on the capacity, possibility and performance for system by evaluating on;

(1) Functional requirement test for system user

(2) Functional test for system user

(3) Usability test for system user

(4) Security test for system user

(5) Result and report for system user

The system evaluation is evaluated by representatives of 20 people (Appendix, Name Respondent of System Evaluation) of sub-agricultural cooperative member or

other respondents related to the agricultural cooperative for whole Kampong Thom province were selected to system user or client. The evaluation require respondent to check entire of system to feedback the accurately usability and publicity. Respondents were selected to evaluate the system capacity are from illiterate educated to high diploma in case of system user or client with the satisfaction questionnaire using the evaluation grade;

9.00–10.00 : Very good

7.00- 8.99 : Good

5.00- 6.99 : Fair

3.00- 4.99 : Poor

1.00- 2.99 : Very poor

The evaluation paper by the respondent as the table below:

4.3.2.1 Functional requirement test for system user

Table 4.11 The functional requirement test for system user

Satisfaction	$\overline{X}$	SD	Meaning
1. Satisfaction to system capacity	7.2	0.54	Good
2. Data searching capacity	7.26	0.50	Good
3. High speed of collecting data capacity	7.19	0.45	Good
Average	7.22	0.50	Good

Table 4.11shows that the possibility of the system average 7.22 that the system can be used in regular for publicly interests. The client satisfies with performance of the system, proper on data searching and acceptable speed on collecting data. The validation of the system is suitable to use for agricultural cooperative in Kampong Thom with the appropriated capacity and performance.

4.3.2.2 Functional test for system user

Table 4.12 Functional test for system user

Satisfaction	$\overline{X}$	SD	Meaning
1. The correct data output	7.38	0.54	Good
2. The correct data record	7.37	0.51	Good
3. The correct data evaluation	7.28	0.67	Fair
4. The correct for decision making	7.23	0.43	Good
5. The suitable report to the requirement	7.38	0.56	Good
Average	7.33	0.54	Good

Table 4.12shows that the possibilities of the functional test system average point 7.33 that the system is acceptable to use with satisfaction and respond to the recent requirement for the agri_coop in Kg.Thom province. The correct of data output is 7.38, data record is 7.37, correct data evaluation is 7.28, supporting on decision making is 7.23 and report to the reality requirement is 7.38.

4.3.2.3 Usability test for system user

Table 4.13 The usability test and satisfaction of the system

Satisfaction	$\overline{X}$	SD	Meaning
1. The contentment	7.57	0.46	Good
2. Page design and convenience searching	7.43	0.47	Good
3. The colorful of page	7.55	0.48	Good
4. Font pattern and size	7.61	0.49	Good
Average	7.54	0.48	Good

Table 4.13 shows that the possibility of the system usability average is 7.54 with the high performance on properly contentment 7.57, colorful page is 7.55, page

designed convenience on data searching is 7.43 and suitable font size is 7.61. The result shows that system is acceptable satisfaction to use publicity.Several of contentment and information performs properly reply to necessary feedback to agri-coop's requirement.

4.3.2.4 Security test for system user

Table 4.14 The system security for system user

Satisfaction	$\overline{X}$	SD	Meaning
1. The suitable for system user privilege	7.39	0.47	Good
2. The suitable for system security	7.19	0.53	Good
Average	7.29	0.50	Good

Table 4.14 shows that the possibility of the system average 7.29. The suitable for system user privilege is 7.39, the user system security backup is 7.19. The system is in the command high security for pacification of file authorizations each time a file is created, the creator may specify which individuals or groups of individuals are permitted to access the file. For each file, the actor may therefore specify authorizations and an access list to be associated with each authorization with privileged consistency check of the security management and administration control.

4.3.2.5 Result and report for system user

Table 4.15 Result and output the report for system user

Satisfaction	$\overline{X}$	SD	Meaning
1. The proper output and apply to requirement	7.44	0.53	Fair
2. Correct of report and data output	7.43	0.56	Good
3. Easy to the understand the report	7.48	0.52	Good
Average	7.45	0.54	Good

Table 4.15 shows that the possibility of the system average 7.45 in the high commitment for user and client to direct procedure output to log and print files. Proper output and apply to requirement is 7.44, correct of report and data output apply to

reality requirement is 7.43 and easy to understand the report is 7.48. These files are then available to the data step for further refinement or analysis of the results. The result and output are feedback able to apply general report to manager and publicity.

Table 4.16 Result and output of the evaluation of system user efficiency

No.	Result of assessment	Average on Quantities	Average on deviate	Mean
1	Functional requirement test	7.22	0.50	Good
2	Functional test	7.33	0.54	Good
3	Usability test	7.27	0.48	Good
4	Security test	7.29	0.50	Good
5	Result and report	7.29	0.54	Good
Average		7.28	0.54	Good

Table 4.16 show the average number of the capacity of the system specialist with the score is 7.28. Functional requirement test is 7.22, functional test is 7.33, usability test is 7.27, security test is 7.29 and the result and report of system is 7.29. The system is suitable for data management, data storage, system security, usability and collecting data with the high performance on data output feedback the requirement.

User is able to check, add, modify of personnel data gather with searching on general information of sub-agricultural cooperative such name of agri_coop, amount of member, amount of female member, amount of share, amount of share budget, share price, land property, debt in percent, commission in percent, activities or service of each agricultural cooperative, donor or sponsor and contact.

On the prediction in recently, system to be able to handle the confusing on document management, reduce of difficulties on data complication. The information system is accurate of data storage, proper information data modification, high speed on data searching and internet access. Through the useful possibility of system entire of agricultural cooperative information would be breakout farmer, government and the relevant sectors. Otherwise, the state is under the obligation setting training on computer

literacy to selected people or people are holding duty in community, agri_coop representatives, and relevant agencies.

4.4 Summary of the system evaluation result

The conclusion for system evaluation of information system for agricultural cooperative in Kampong Thom province revealed that the system in high performance with accurate satisfaction for data output and storage data management. For such a useful system, it assists the government offices, farmers and NGOs'staff caught up the rapid data and information report with the high performance, security, usability and publicity.

The MIS for agricultural cooperative in Kg.Thomprovince helps recording various statements which are the snapshot of the management position of the organization and the main outputs of the information system. Existence of internal control system increases the efficiency of MIS through ensuring safeguarding of assets, reliability of accounting information, accuracy of activities or services information. Existence of effective internal control system also increases efficiency on security through the prevention of frauds. Good documentation management is increased the efficiency of information system for agri_coop management. The system gives priority a privilege to update, add, modify or delete the information by the user and system controller. Farmer and officers capable to search and collect data, then extend rapidly to the publicity. The system paves the way for the new researcher in the prospective conductive research. This can conclude that system efficiency for MIS is absolutely necessary for decision making in every functional areas of an agri_coop and every relevant organizations.

CHAPTER 5
CONCLUSION AND RECOMMENDATION

The development of the Information System for Agricultural Cooperative Management in Kampong Thom province aims to gain better efficiency information system management, contribute information and data storage. It assists to agricultural cooperative officers for suitable decision making, high speed searching and collecting data. The information is transparency, publicly and accountability. The monitoring helps to strengthen the governance of agri_coops by improving the transparency, strengthening the accountability relationship and building the performance culture within governments to support the policy making, budget decision making and management. The management information system for agri_coop aims to help and develop good-practice approaches to the country and share experience.

5.1 Conclude the evaluation on the system efficiency

5.2 Discuss about result of the study

5.3 Recommendation and Suggestion for the next system development.

5.1 Conclude the Evaluation on the System Efficiency

The MIS for Agricultural Cooperative Management played a very important role for poverty reduction campaign for the Agriculture Extension Office, KTPDA, vai the proper management system with the high accurate efficiency and satisfaction. Based on the key finding of research, the agricultural cooperatives member has gained various benefits including social, economic and institutional aspects. In general the farmers in the remote areas still deal with small-scales work, poorly equipped with absolute techniques and vulnerable to adverse change in the market. The system is an effective tool to assist the individual producers to enhance their socio-economic and political strengths. The development of the Information System for Agricultural Cooperative Management in Kampong Thom province analyzes for the system evaluation on the efficiency by the system specialist as below;

Table 5.1 The conclude evaluation on system efficiency

No.	Result of assessment	Computer specialist	System user	Average on Quantities	Average on deviate	Mean
1	Functional requirement test	7.00	7.22	7.11	0.16	Good
2	Functional test	7.22	7.33	7.27	0.18	Good
3	Usability test	7.45	7.27	7.36	0.12	Good
4	Security test	7.42	7.29	7.35	0.19	Good
5	Result and report	7.45	7.29	7.37	0.11	Good
Average		7.30	7.28	7.29	0.11	Good

Through the table above showed that the efficiency of system average point is 7.29, system on high performance. The evaluation on system efficiency of the functional requirement test is 7.11, functional test is 7.27, usability test is 7.36, security test is 7.35, and result and report of system is 7.37. System is properly performance usability for agricultural cooperative in Kampong Thom province.Given verification of system, black box testing was used to evaluate the capacity, performance and security of system. It certified that system operates properly, acceptably and trustworthy. Without exception of either, computer specialist and system user are satisfied to system operation. The whole quantity of system consumption appreciated to the essential of management information system, enhancement the computer literacy, sharing information, a great degree of contentment, fulfilling the need of high technology on management system for the future expectation.

5.2 Discussion on Result of the Study

The development of the Information System for Agricultural Cooperative Management in Kampong Thom province plays much role in management aspects effect to the good governess and the high standard of data storage and information output to the public. The result shows that there are majority of user and clients (more than 60 %) are concentrate and satisfy with speed performance capacity and security of

the system, and handling publicity. It offers the direct to agricultural cooperative member and private sector to promote or support under the law of the royal government of Cambodia. The public state has the effectively data management and sharing of information. On one hand, the system consequences for government to patch up the apparently setting on blueprint to guidance an actual commitment to feed up the need of farmers and poor people in the province. On the other hand, the system give more awareness of surely general agri_coop's information for the prototype to next researcher and documents are accessible rapid to catch up and save time. Otherwise, it is keeping on good relationship, sharing of participation, sharing benefit, techniques, knowledge, following up self-help method and to contribute to other as well.

5.2.1 High speed accessible in data collection and acceptable report given more convenience and satisfy to manager, officer, farmer and relevant public interests. The system is accessible for data report on table and chart. The clients could print the table or download the chart to make report.

5.2.2 Quickness in data searching for system operation capacity. It approaches to the recent requirement for high technologies in data searching. Clients comfort to search data, catch up every sub agricultural cooperative's information.

5.2.3 The publicity of information appeals the general. The entire of reports are suitable to adopt for the common use purposely on data report and each agri_coop's information. Throughout the system, information will be generally approaching in common demand and publicity.

5.2.4 System supports for decision making for direct sponsor or donor. System helps to share information of head of agri_coop and sub-agri_coop for entire of Kampong Thom province. It is path the way for direct support to the sub agri_coop accordance to its original potential resource, community development and poverty reduction strategy.

Agricultural productivity can arguably be improved by relevant, reliable and useful information and knowledge (Demiryürek, 2008). Management information system for agricultural cooperative in Kampong Thom province interacts with and influences agricultural productivity in a variety of ways. It can help to the farmer and officials to inform decisions making or making report regarding land management, labor movement, and livestock, capital and management task in the community.

Agricultural information is an important factor that interacts with other production factors. Productivity of these other factors, such as land, labor, capital and managerial ability, can arguably be improved by relevant, reliable and useful information. Information supplied by extension1, research, education and agricultural organizations helps farmers make better decisions. Therefore, there is a need to understand the functioning of a particular agricultural information system in order to manage and improve it (Demiryurek et al., 2008).

Rolls et al. (1999) analyzed the information systems in Czech agriculture. The information systems appeared to be the construct of the personal characteristics of the farmers. The farmers appeared to regard information as a social good to be exchanged and discussed within social networks.

The key to building and using effective information system is that managers need to know how to apply technology to solve problems and make decisions. The main function of the information system was assumed to be the generation and dissemination of dairy farming information. Although individual sources existed to exchange information in various forms and frequency, the analysis shows that primarily agri-coop sources helped officer and farmers for selected Kampong Thom agricultural extension office, organize them under an association, keep the records of their service and activities, stimulate them to keep more Kampong Thom agricultural extension office and obtain more benefit through financial incentives and other support services.

The accessibility, relevance and credibility of the information from other dairy farmers can explain its importance. This enhances the diffusion of information and technology within a cohesive, similar group and supports interaction between different groups. However, this information is mainly based on farmers' current knowledge and traditional practices which are not generally based on scientific application. Whether this independence and self-reliance for information may result in synergy or entropy for the whole system can only be a matter for speculation.

The information system analysis indicates that more interactive information sources are needed. This may stimulate conventional farmers to convert to the modern approaches of dairy farming. These changes could have been stimulated by more active experts working with selected local leaders if they had developed and improved relationships with public (especially extension and research) and private information

sources, organized common activities with them, used more mass media information sources, obtained information from all these sources and transferred information to the producers.

This study has analyzed the role of public policy and the state in focusing on agricultural cooperative in Kampong Thom province. Through a review of literature, analysis of primary and secondary data, the paper notes that the The RGC has since early 2000s facilitated the scaling up, conduct and integration of cooperatives in the development process through: (i) incorporation of cooperatives' relevance into relevant plans, strategies and programs namely: Poverty Eradication Action Plan, and programs, Agriculture Development Strategy and Investment plan; and Prosperity for all program. (ii) Consultative formulation of a Cooperative Development policy, amendment of Cooperative laws and regulations; promotion agricultural extension services, input supply, produce marketing, savings and credit services. (iii) Reform of warehouse receipt system and commodity exchange to increase efficiency of agricultural produce marketing and returns. (iv) Support to financial services cooperatives to increase capital provision; (v) provision of agricultural extension services and value addition support; (vi) sensitization and promotional activities to popularize cooperatives; (vii) capacity building of cooperatives focusing on leadership, business management and entrepreneurship, and (viii) integration of gender and environment concerns in cooperative development. Some institutional challenges which need to be addressed face government in fulfilling its policy commitments, including; inadequate skilled human and financial resources, and weak linkage between the government and cooperative movement.

5.3 Recommendation and Suggestion

The recommendation of this study aims to improve the agricultural cooperatives management performance for the better sharing, service, and activities aspect for the community development strategy. The system development processes really need more recommendation and suggestion to improve more appropriated and efficiency to the system. For such the benefit of information system give more close relationship between farmer and office to reach the technique, understanding and social activities however there are less people understand well about agricultural cooperative. Most of

people cannot use computer. The information system would offer the rapid for decision making and considering for direct support focusing on the potential priority of the service and activity. Otherwise, the system is the prototype for future researcher to study for the better agricultural cooperative management and interested people in order to improve the standard of living as well as the agricultural management for the social and economical aspects. The information system for agricultural cooperative management in Kampong Thom province plays much role on:

5.3.1 More suitable high speed data report

5.3.2 Convenience in searching and updating the data record.

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APPENDICES

APPENDIX A

System Installation Guide

System Installation Guide

An Information System for Agricultural Cooperative in Kampong Thom Province, Cambodia

1. The system installation for the operation's support

There is several majorities' procedure of the system installation for agricultural cooperative in Kampong Thom province. The system installation mainly inaugurates on the window 7.

2. The Relevant Software Application Tools to Operate on Window 7

2.1 Understanding of Appserv

What is AppServ?

AppServ is a full-featured of Apache, MySQL, PHP, phpMyAdmin.

2.2 The components of Appserv

- Package of AppServ
- Apache
- PHP
- MySQL
- PhpMyAdmin

AppServ have only special configuration when install, Apache configure httpd.conf, MySQL configure my.ini, PHP configure php.ini. AppServ can guaranty any package from AppServ can work stable like Official of Apache, PHP, MySQL Release.

3.2 Installation of Appserv

3.2.1 Double Click appserv-win32-x.x.x.exe to install AppServ on computer.

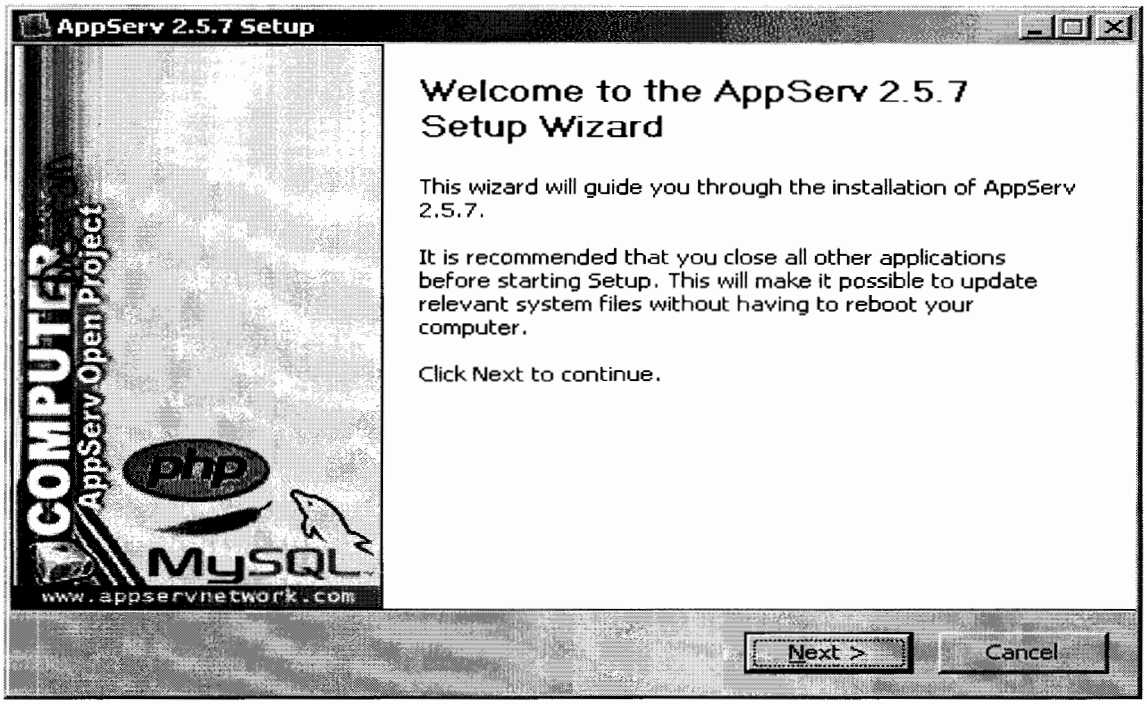

Figure A.1 AppServ Welcome Screen

3.2.2 License Agreement: AppServ distribution under GNU/GPL License. Actor must read license agreement before install. In case of agree for this license click Next to go to next step. In case of not agree click Cancel to cancel install.

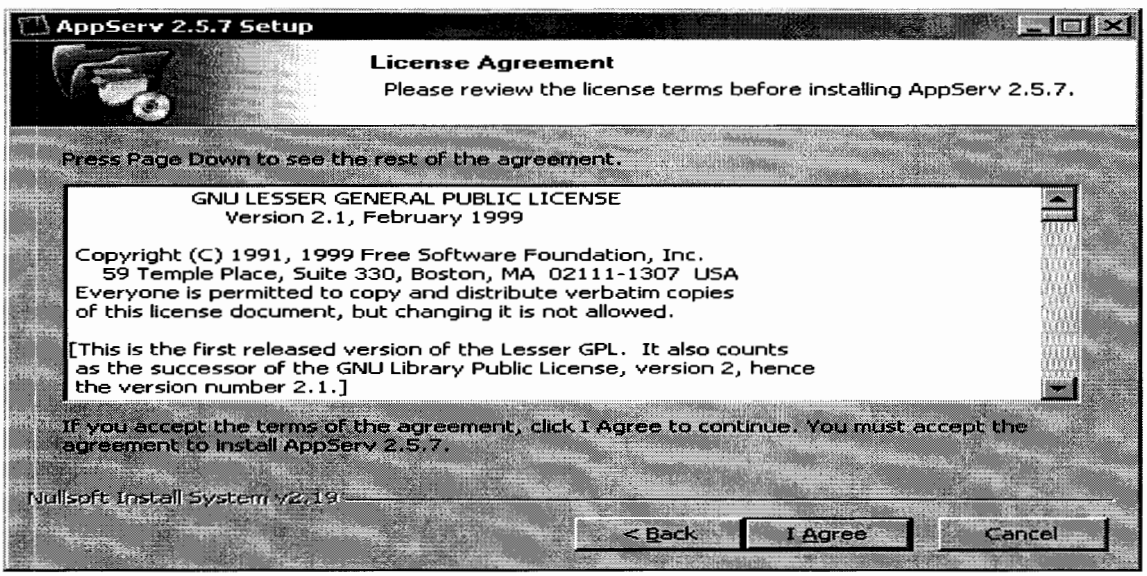

Figure A.2 GNU/GPL License Agreement screen.

3.2.3 Choose Install Location: AppServ default location is C:AppServ. If need to change destination click Browse button to change the destination for AppServ program and then click Next to go to next step.

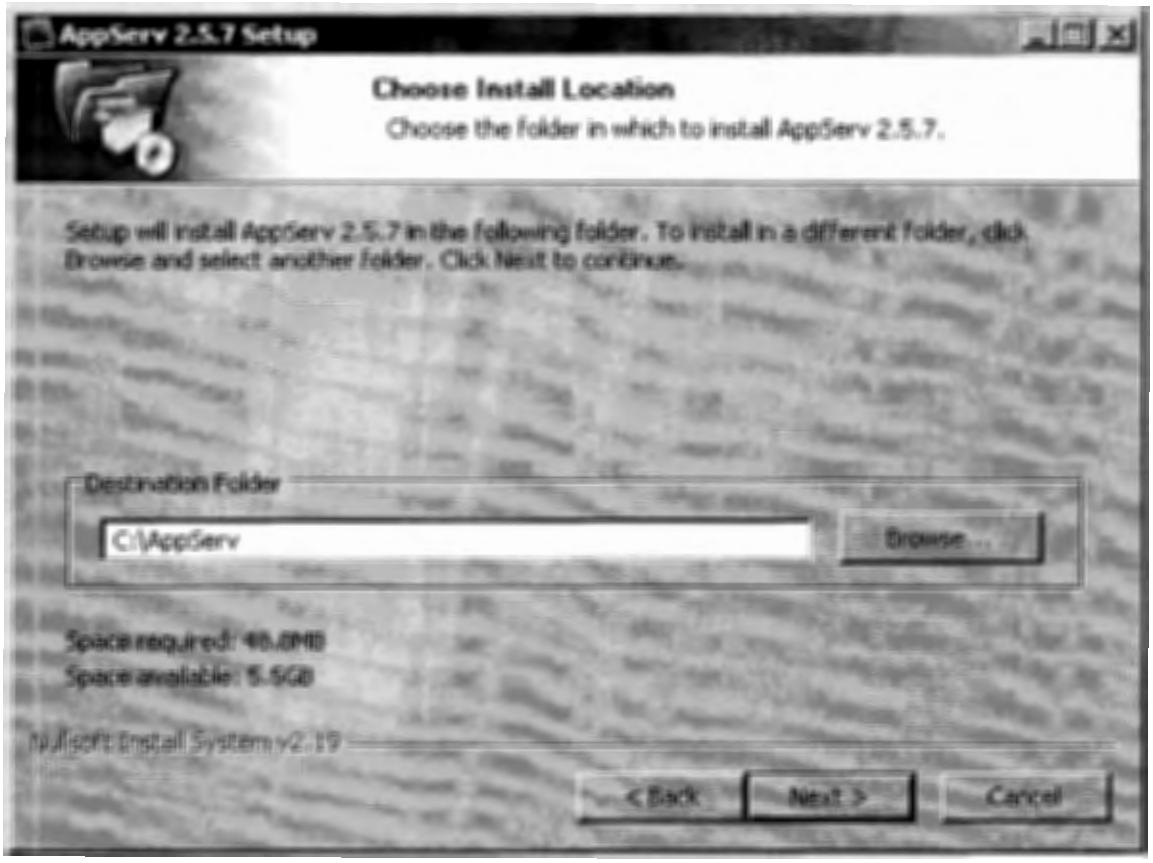

Figure A.3 Choose Install location screen.

2.3.4 Select Components: AppServ default package components it's checked all package.

If the actor needs to choose some package to install, It can click at check box.

- Apache HTTP Server is a Web Server.
- MySQL Database is a Database Server.
- PHP Hypertext Preprocessor is a PHP Programming processor.
- phpMyAdmin is a MySQL Database control via WWW.

If complete choosing it click Next to go next step.

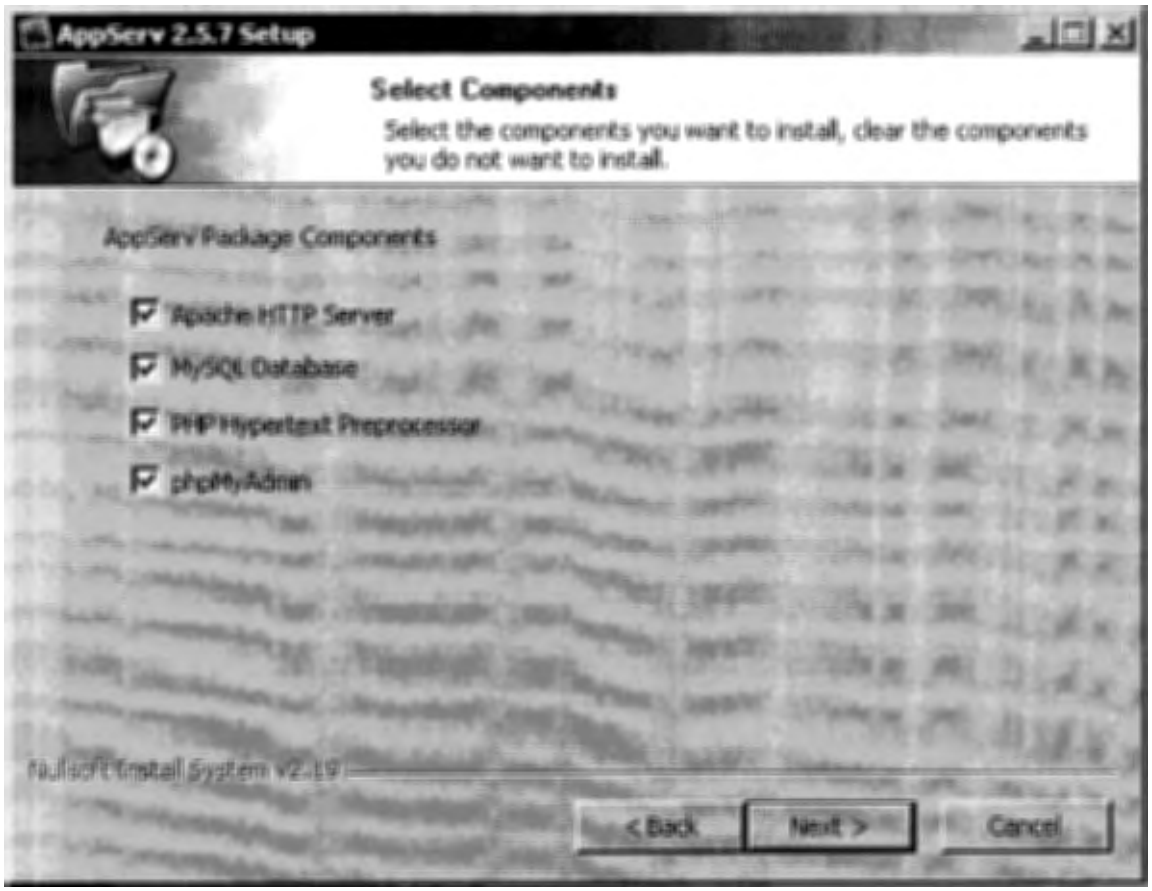

Figure A.4 Choose Package Components screen.

2.3.5 Apache Configuration: This screen for specify Apache configure.

Server Name actor must specify Server Name

e.g. www.appservnetwork.com.

Admin Email actor must specify Admin Email

e.g. root@appservnetwork.com

HTTP Port actor must specify HTTP port for Apache Web Server.

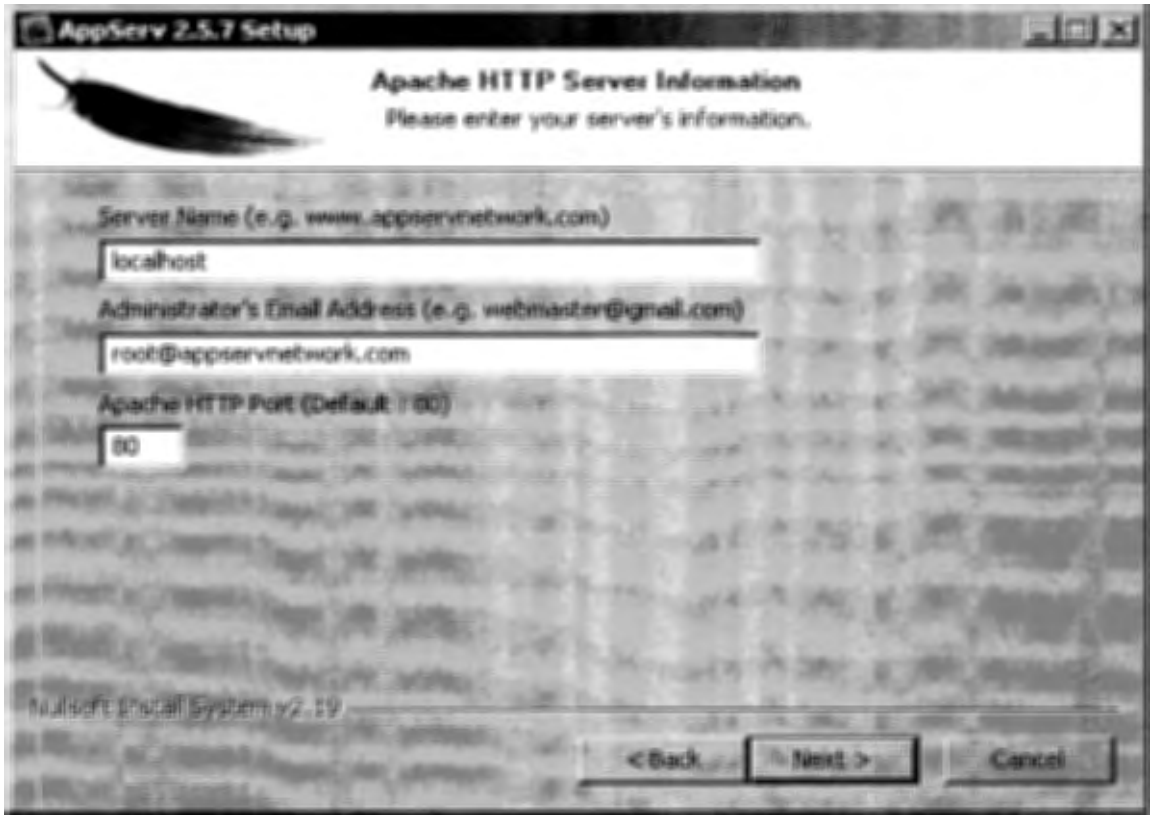

Figure A.5 Apache Web Server configure screen.

2.3.6 MySQL Configuration: Root Password:

Actor must enter root password for MySQL Database. Default user for this password is root. Character Sets Specify for data storage language and collations. Old Password, If actor have problem when actor coding PHP code with Old MySQL API. And found error Client does not support authentication protocol requested by server; consider upgrading MySQL client actor must check this option to avoid error. Enable InnoDB, If actor use InnoDB must check this option.

Figure A.6 MySQL Database configure screen.

2.3.7 Complete AppServ setup:

Setup asks for start Apache and MySQL immediately. Click Finish to end this setup and AppServ prompt to use.

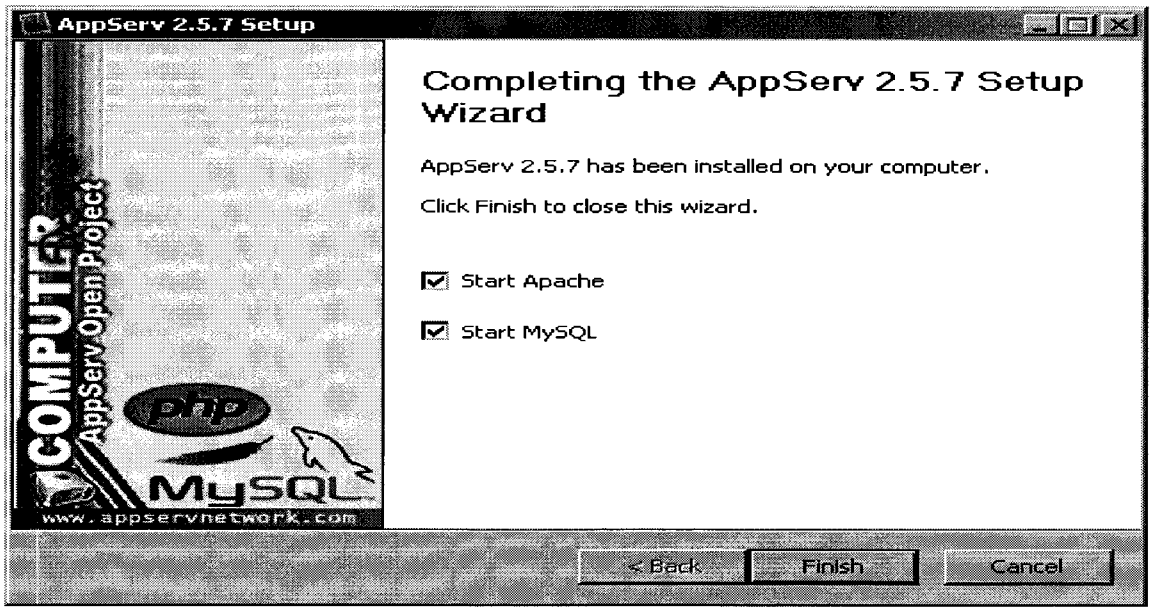

Figure A.7 Completed AppServ Setup screen.

2.4 Appserv Control Panel

The Appserv control panel gives user to complete control over all installed Appserv components. They can use the CP to start/stop different modules, launch the Unix shell, open Windows explorer and see all operations running in the background. To check the system installation browse URL.http://localhost.

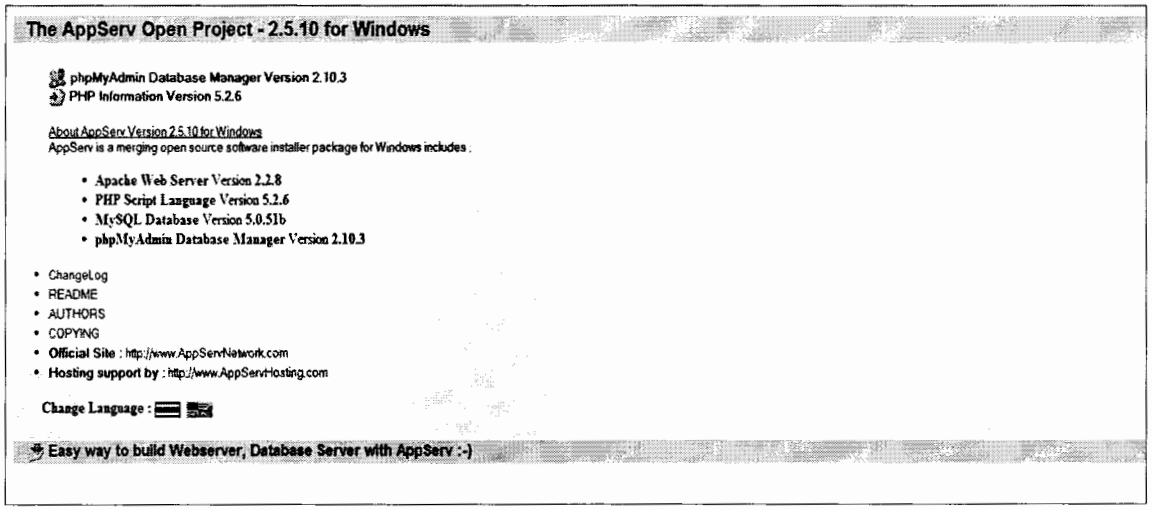

Figure A.8 The platform of Appserv control panel.

2.5 Testing of Appserv

Checking of the system operation by starting Apache web server.

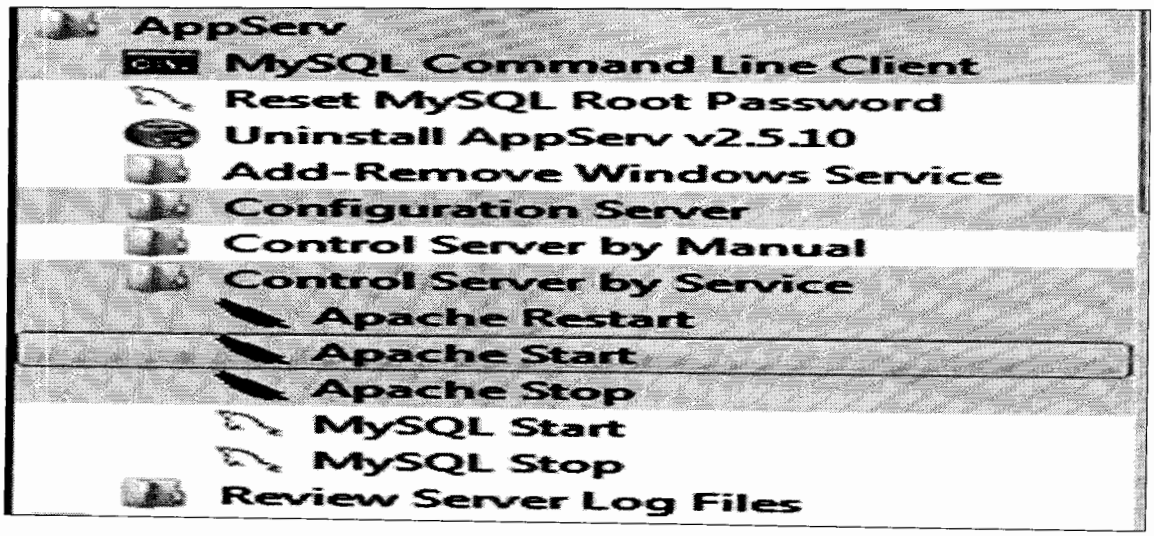

Figure A.9 The platform of starting Aphache

2.6 Accessible of MySQL

Checking of the system operation by starting MySQL.

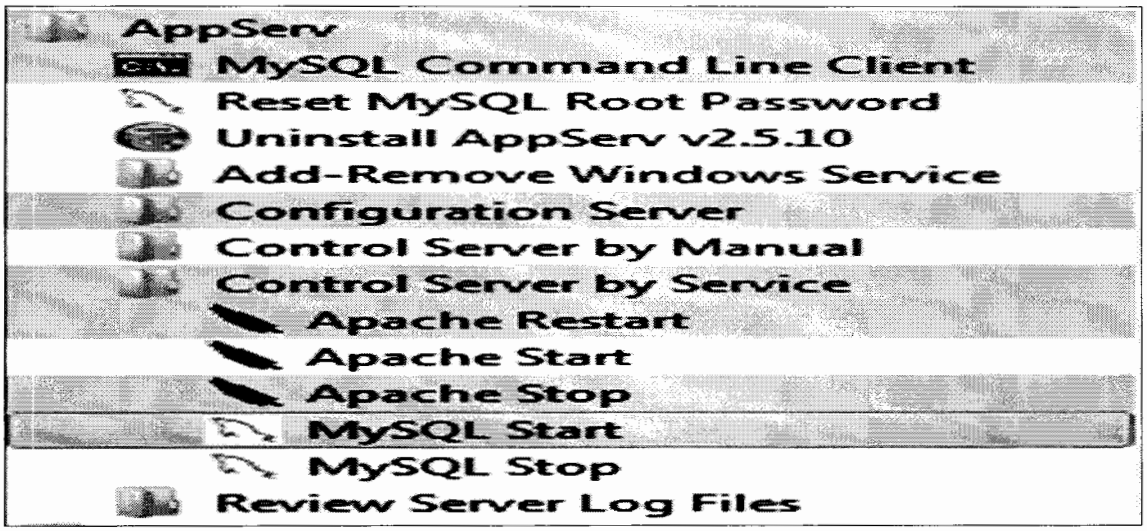

Figure A.10 The platform of starting MySQL

2.7 Creating of MySQL Database

After the accessible operation system and software application already installed for the full accomplishment to use. Then, the next process is to create the MySQL database.

Open browser on the Google Chrome, then writes http://localhost /phpmyadmin/ show as the figure below.

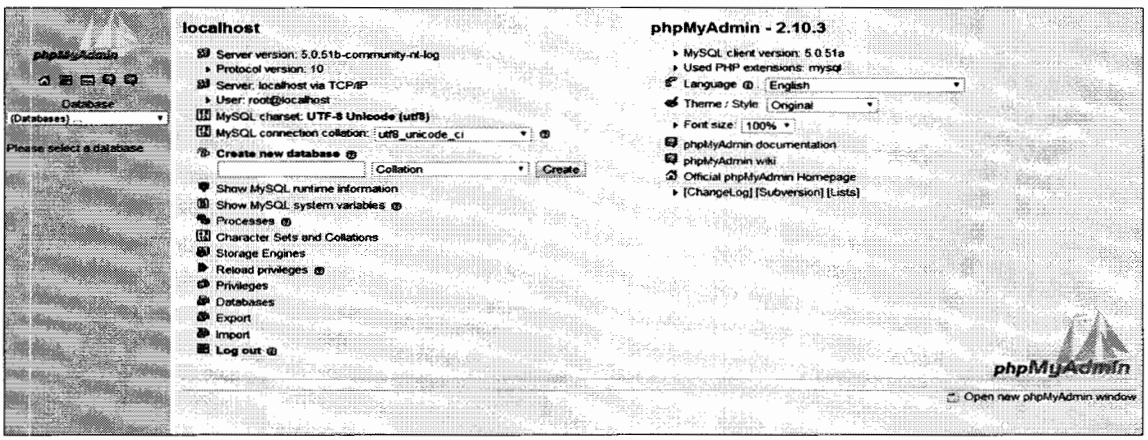

Figure A.11 Creating of MySQL database

To create database name join agriculture development defining MySQL connection collation as utf8_unicode_ci, Selecting English language then create database name.

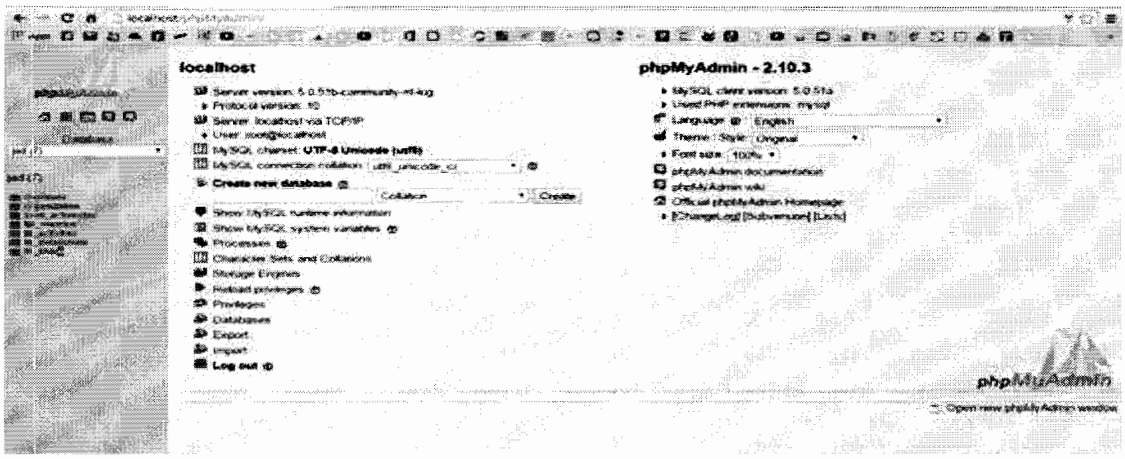

Figure A.12 Create of MySQL database (Continue)

Cut off the agricultural cooperative database folder to put in the web root and define in the folder include/config.php

```
$dbhost='localhost';//
$dbuser='root';// name of database user
$dbpass='-----!!----';//password to enter the database
$database=' agriculturalcooperative';// name of database
$baseurl=' http://localhost';// url name
$base_email='chea.cheath@yahoo.com';// email of system controller
$tel="Tel.0804747574";// phone number of system controller
$GLOBALS["persist"]=false;// release
```

To check the system operation by http://localhost/agri_coop

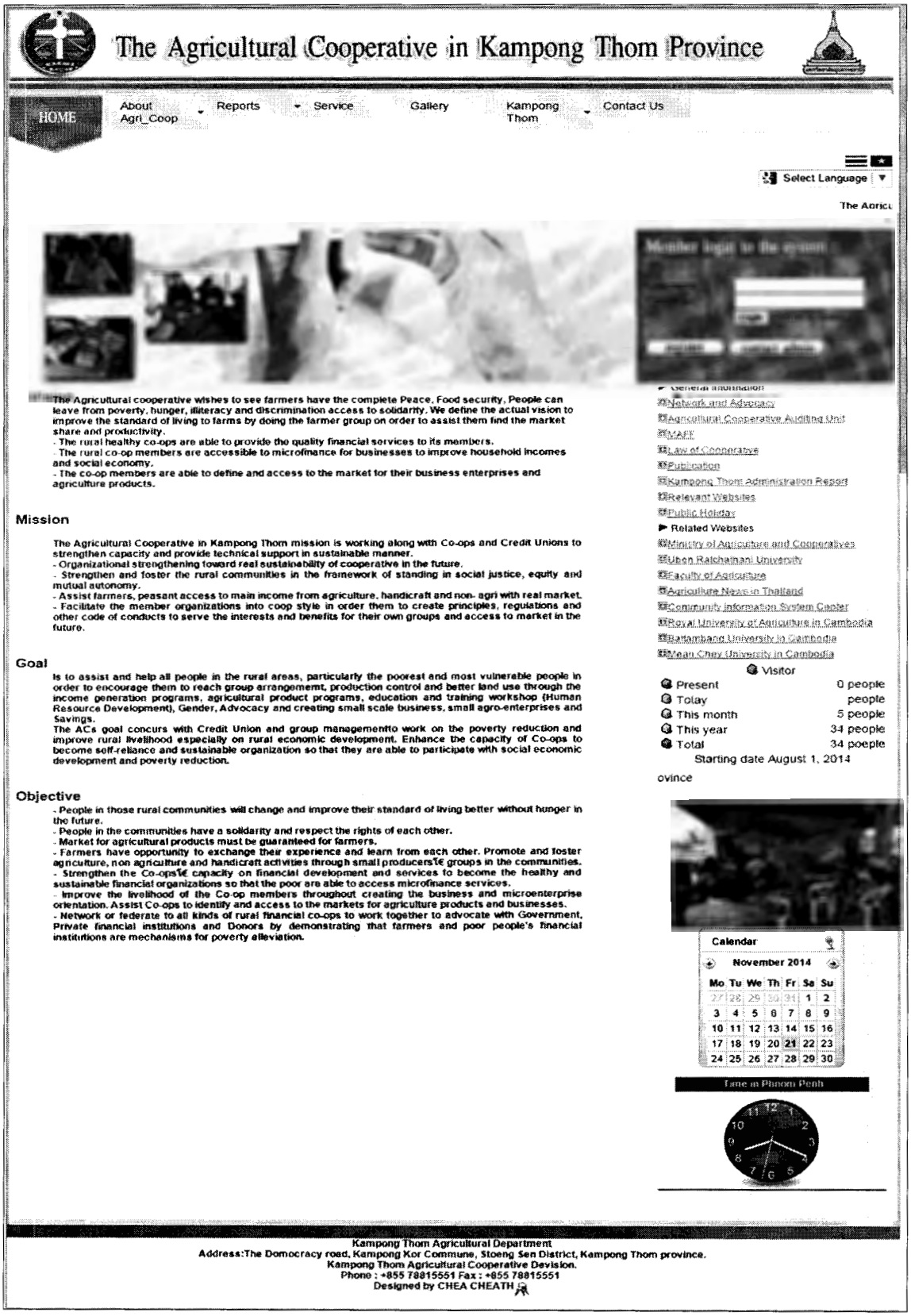

Figure A.13 The agricultural cooperative interface

APPENDIX B

User Guide

User Guide

The Information System for Agricultural Cooperative in Kampong Thom province there are 3 grade of system use:

1. General User can be entered to the system only see the report of every sub agricultural cooperatives without register.
2. The member of sub-agricultural cooperatives can see all the member of each cooperative but cannot make any operation on the others. They can add, delete and modify own data.
3. The manager can see every report with login.
4. Admin and system controller have privilege to manage all the operations of the system.

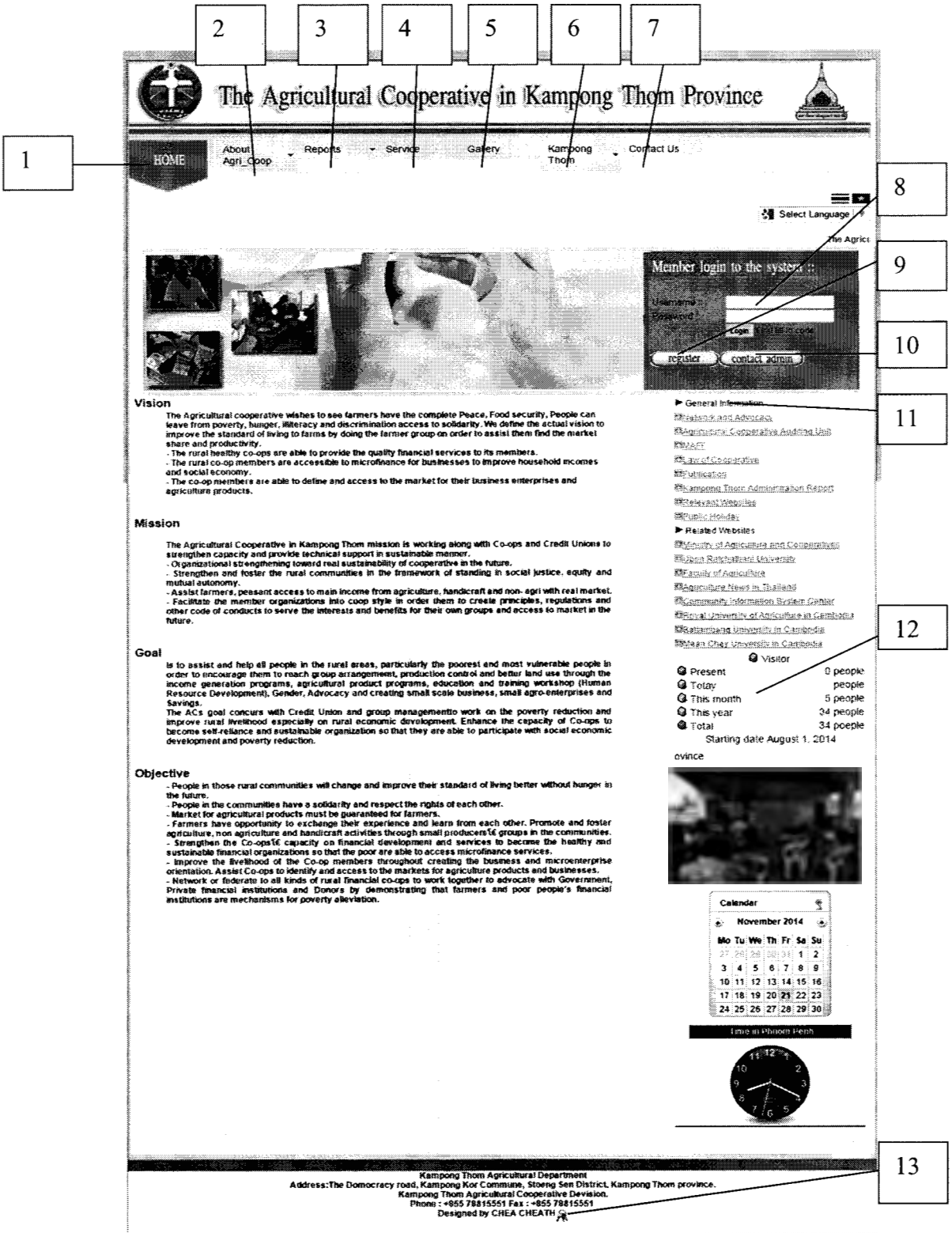

Figure B.1 Main interface of system for agri-coop

Describe the main menus of webpage:

1) Home of homepage
2) About Agricultural Cooperative
3) Report of share
4) Services and Sponsors
5) Gallery
6) Kampong Thom Province
7) Contact Us
8) User Login
9) New User Registration
10) Contact Admin
11) Relevant information
12) Webpage Visitor Count Admin
13) Describe the main menus of webpage:

1. User Login page

1.1 User Login

For the general interested people intent to be system user login privilege, first of all have to register. In order to escape from the overlap username, the applicant must use the citizen id by twelve numbers by regarding five last syllabuses of the username id to be the password.

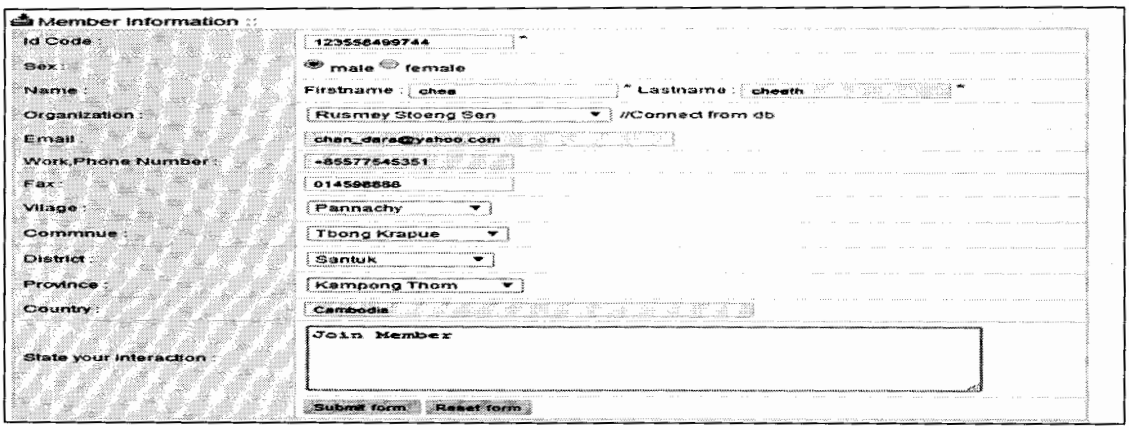

Figure B.2 New user login registration

1.2 Confirm of user registration

After Register the applicant already correct information will see as the below.

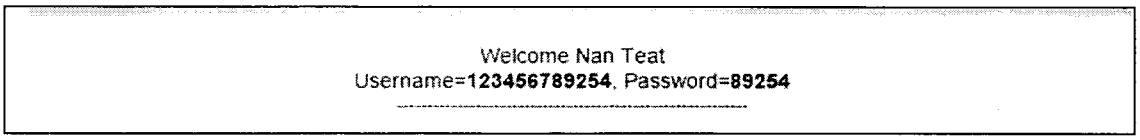

Figure B.3 The successful of user registration

1.3 User login

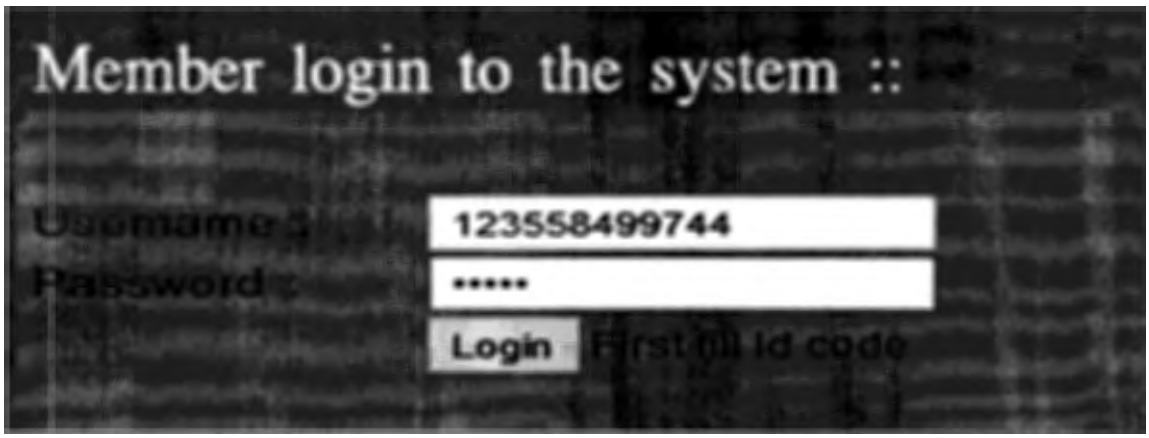

Figure B.4 System user login

After get the username or user_id and password, user can login, and then go to the member login to the system by fill in username and password.

After user succeed login in the system there are detailed agricultural cooperatives information:

1) Look on the inclusive agricultural cooperative
2) Modify of personnel information
3) Look on the personnel information
4) Look on the condition of agricultural cooperative

1.4 User log in succeed

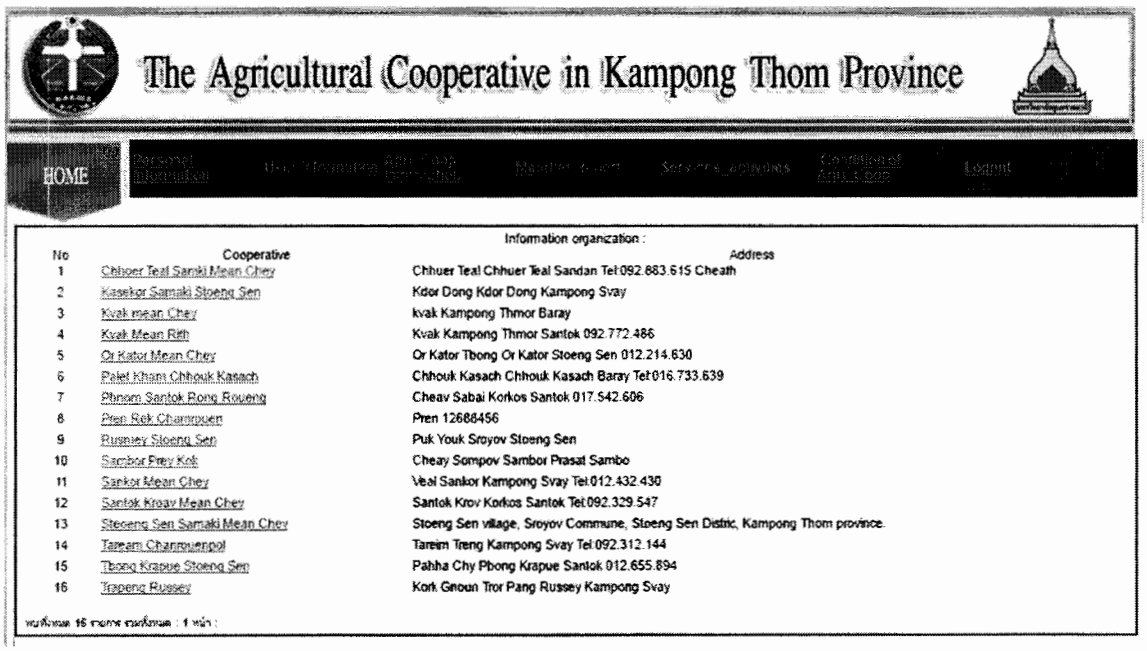

Figure B.5 User login interface

1.5 User can modify the personal data by click information member. The system reveals as below:

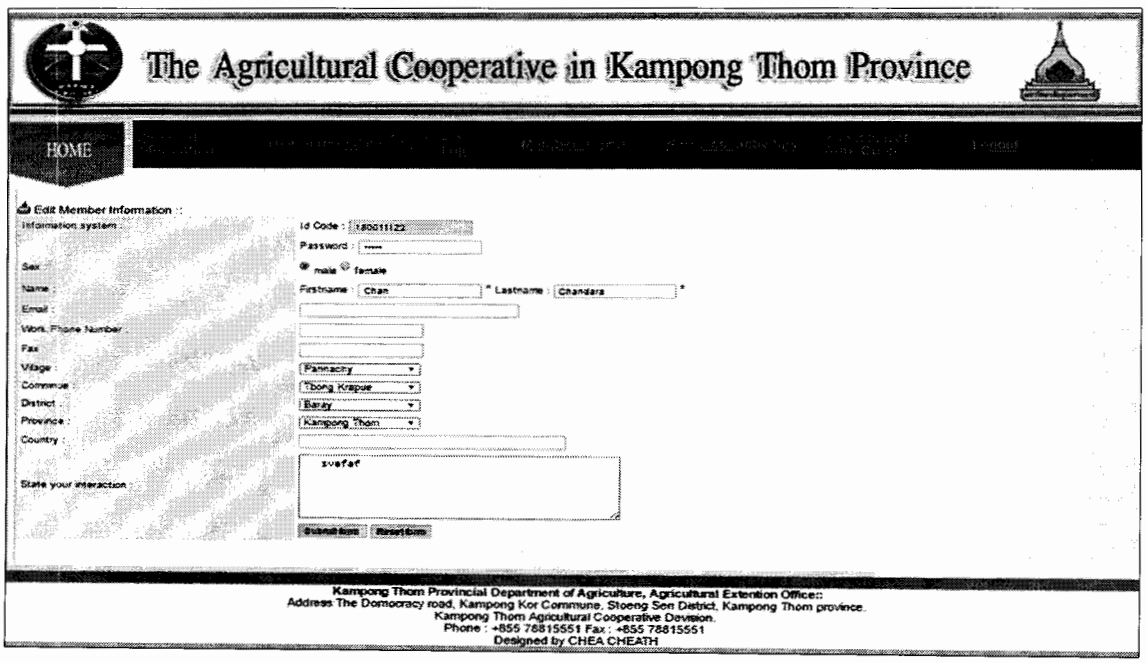

Figure B.6 User information modification

1.6 User have right to search out the personnel information

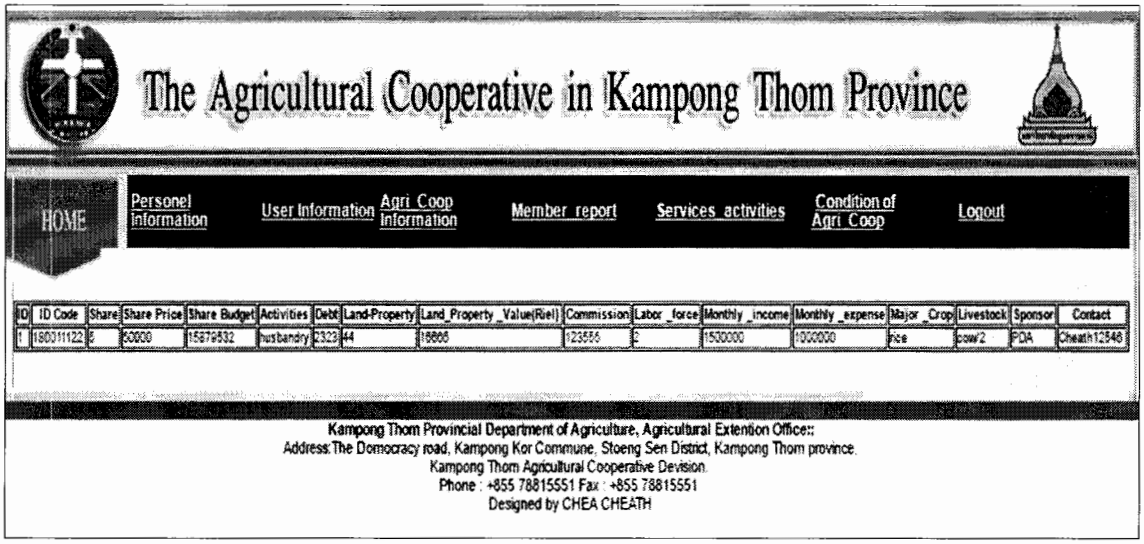

Figure B.7 User personal information

1.7 Agri_coop information

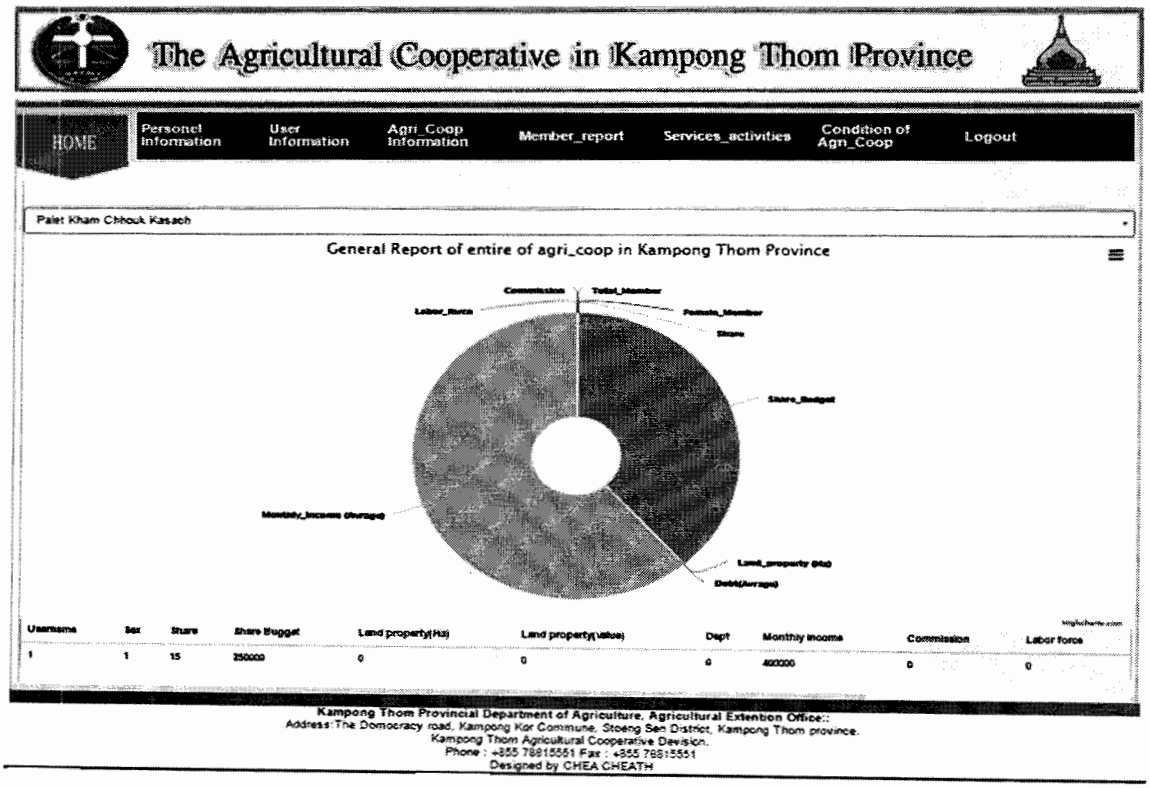

Figure B.8 Agri_coop information

1.8 Member report

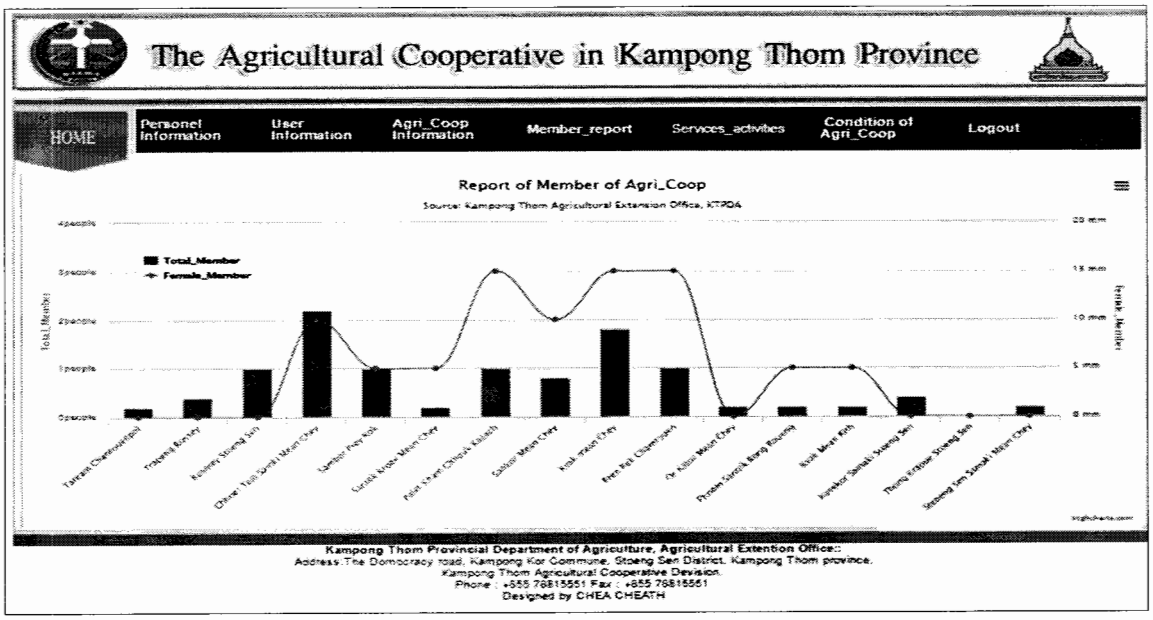

Figure B.9 Member report

1.9 Service report

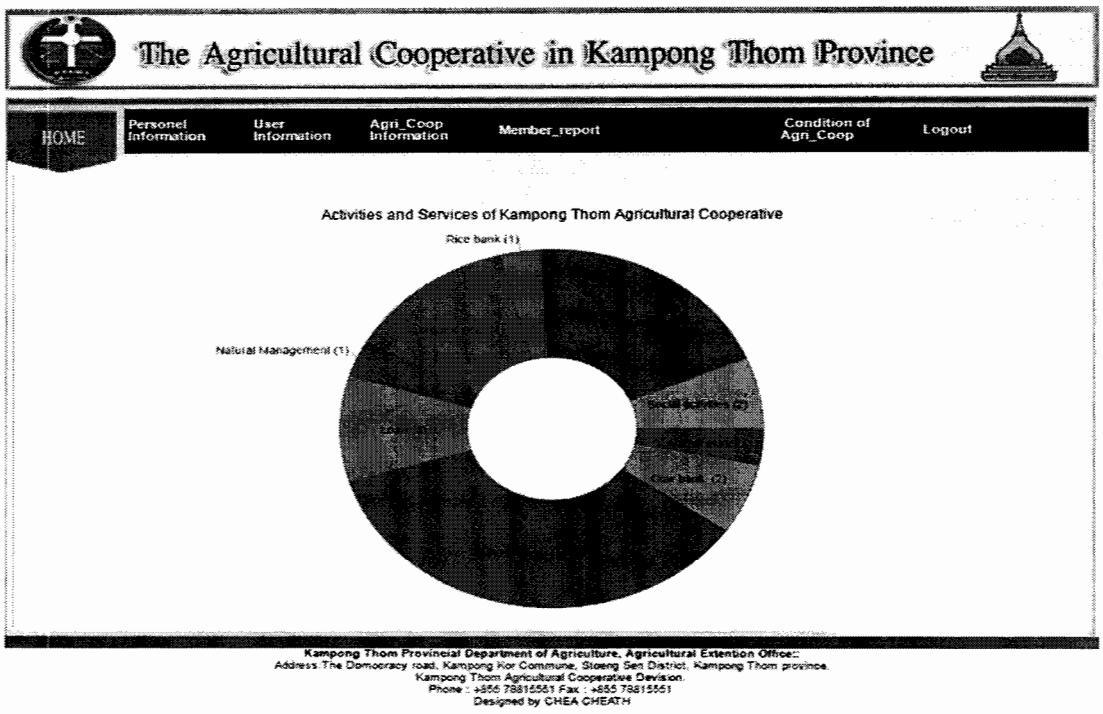

Figure B.10 Service report

1.10 Detailed condition of agri_coop

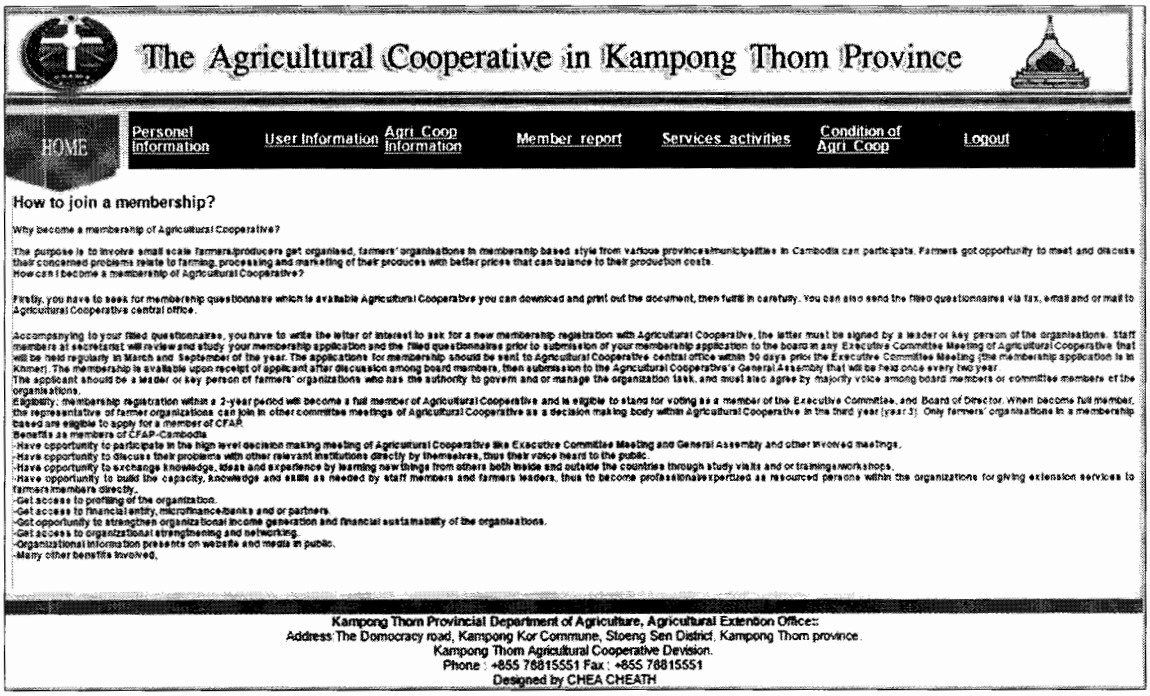

Figure B.11 Detail condition of agri_coop

1.11 Log out

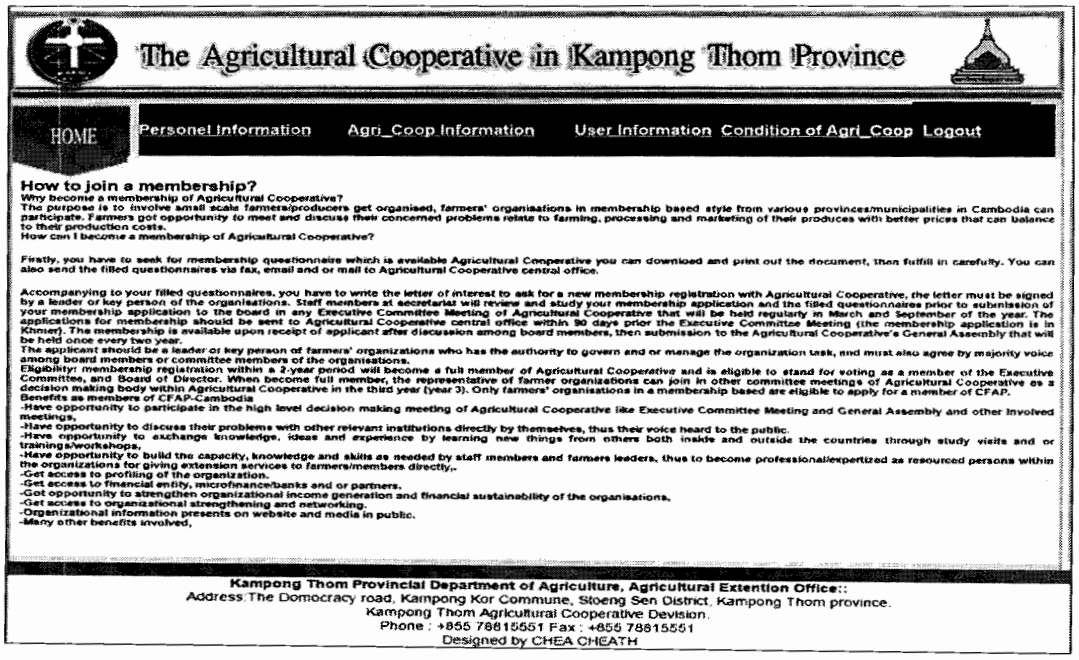

Figure B.12 Log out

2. Admin Login page

2.1 Admin Login

The information system for agricultural cooperative in Kampong Thom province is controlled by the officer of Agriculture Division is supervised by Department of Kampong Thom Agriculture Forestry and Fishery:

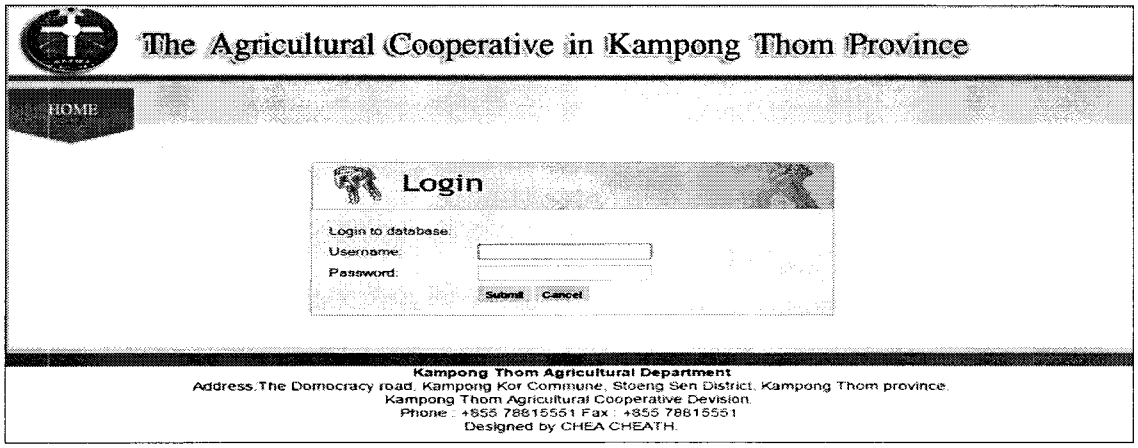

Figure B.13 Admin login interface

2.2 Admin Data Management Systems

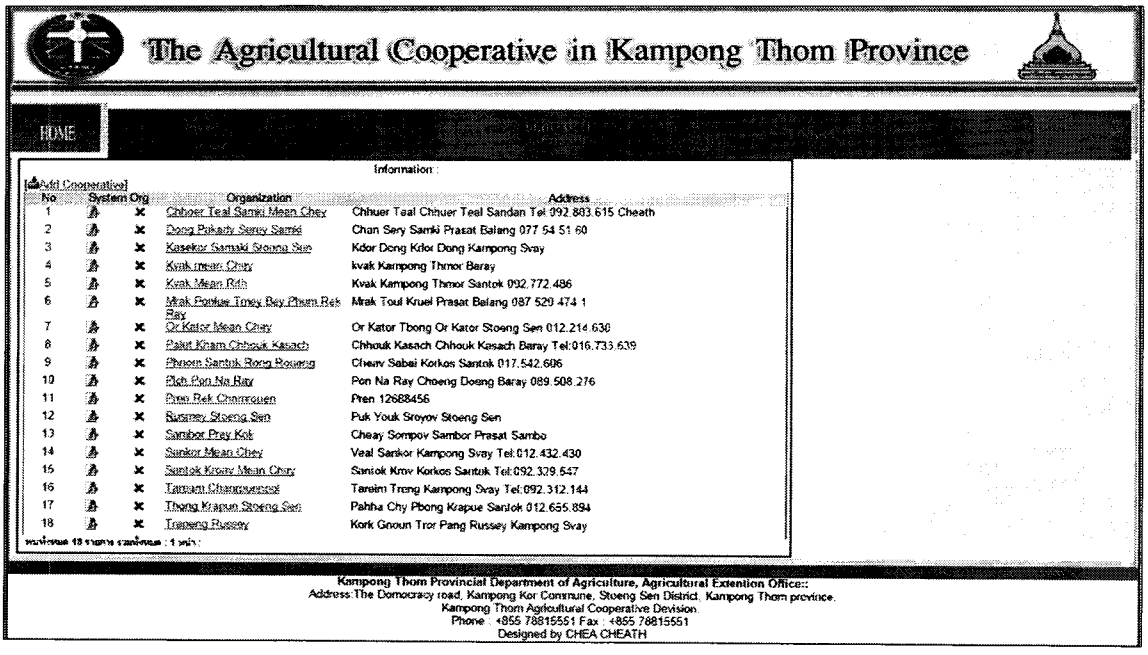

Figure B.14 Data management information

2.3 Add agri-coop

For the main menu there are organization, address, share, share price and share budget. User can modify the information on the signal modify. To fill in each of data the administrator and system controller have to follow as below;

Click on: Add agri-coop

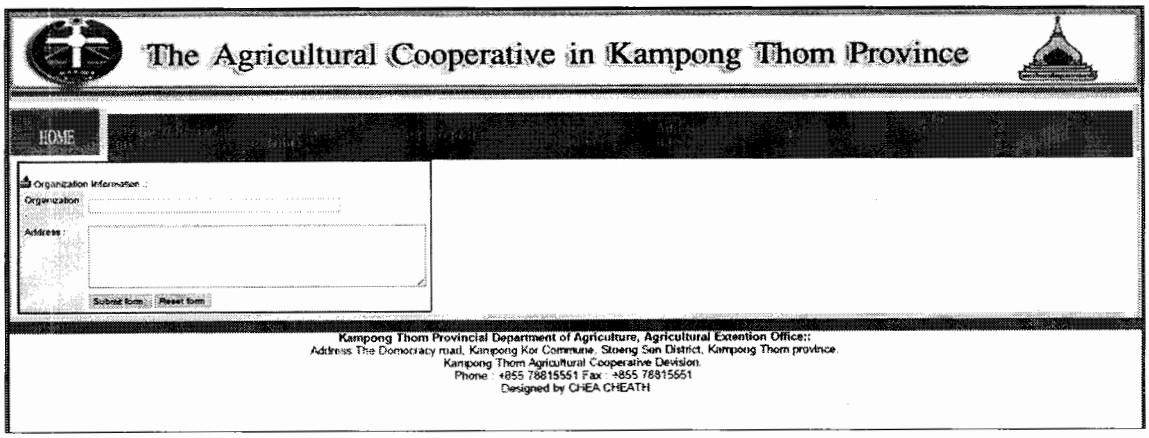

Figure B.15 Add cooperative

2.4 Modify of agri-coop information

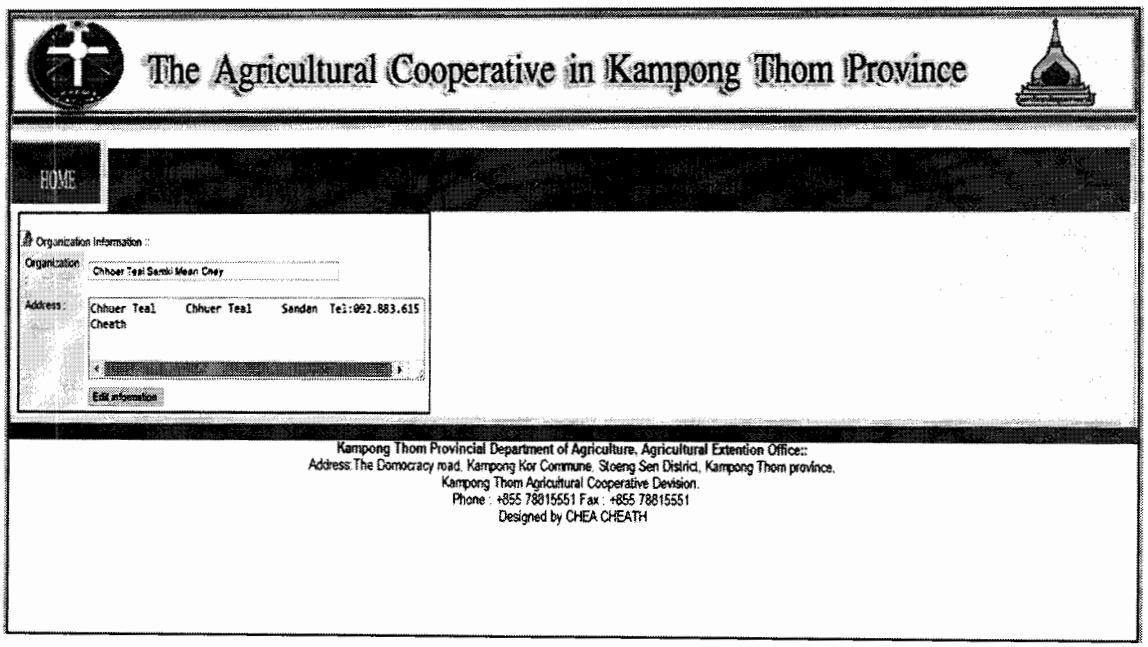

Figure B.16 Modify of agri-coop information

2.5 Detail of member of agri_coop

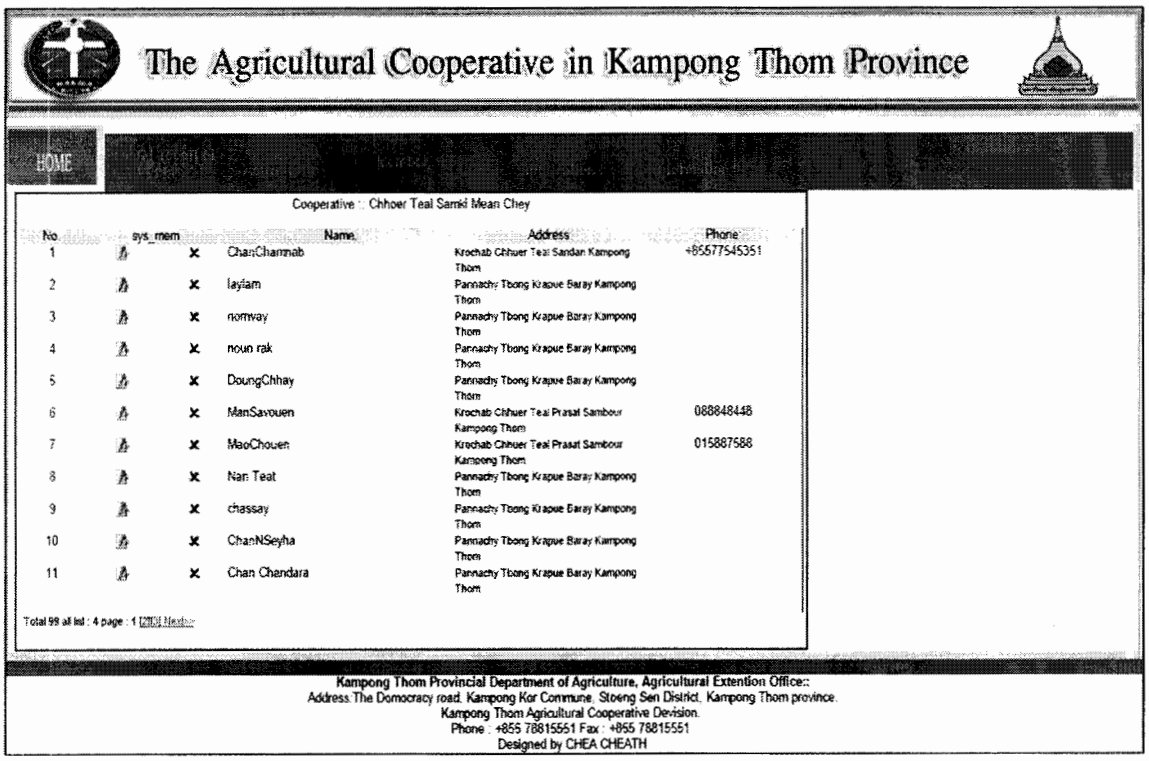

Figure B.17 Detail of member of agri_coop

2.6 Modify of member information

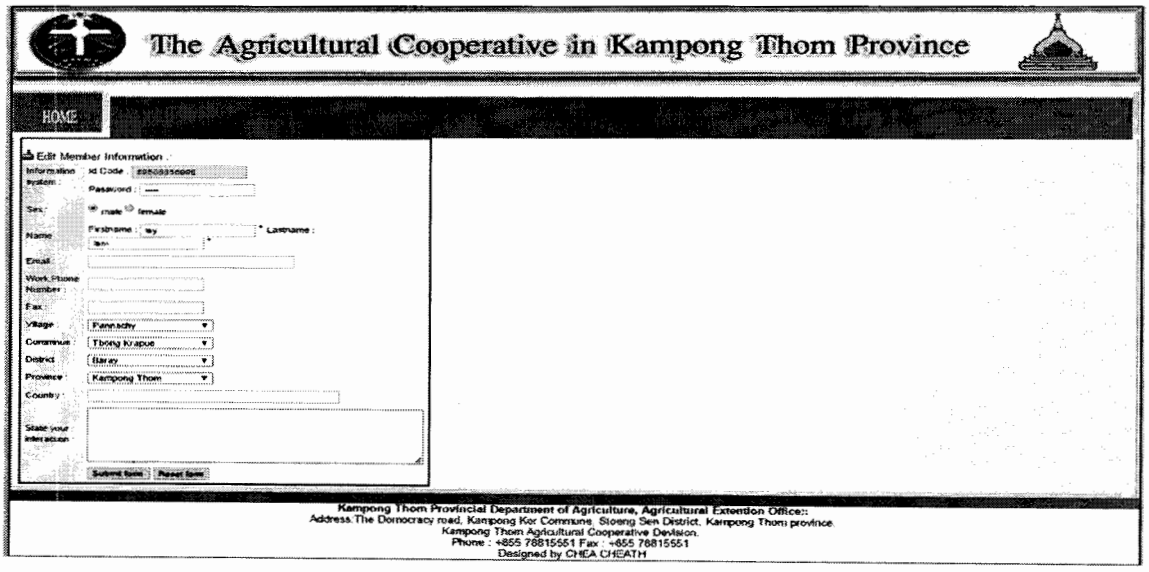

Figure B.18 Modify of member information

2.7 Report of agri_coop

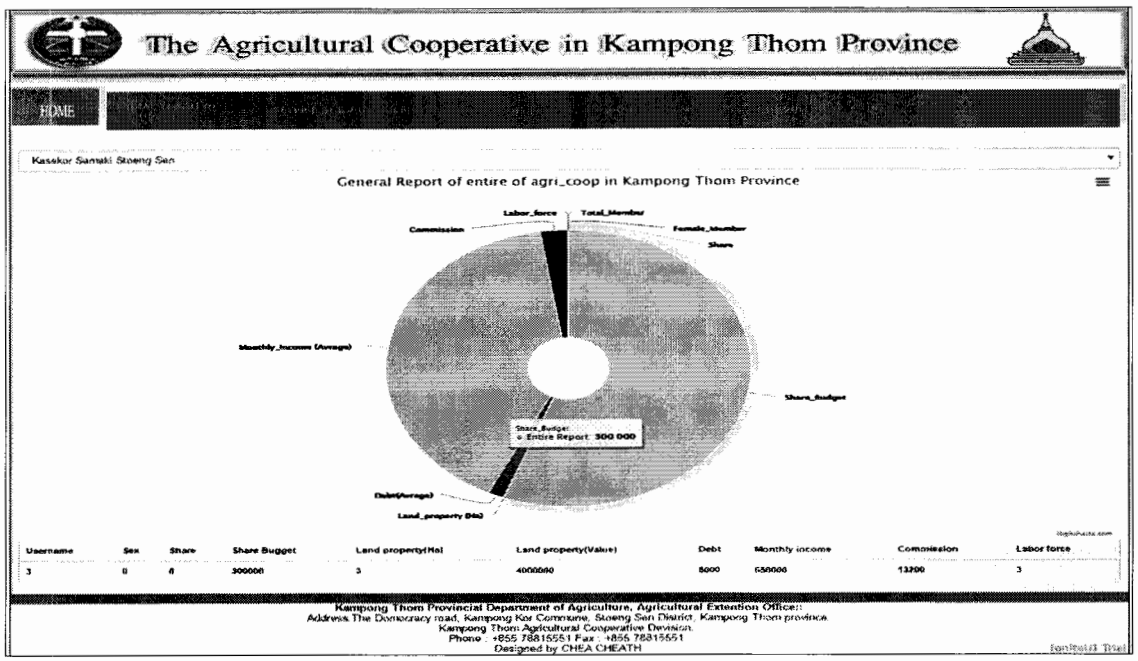

Figure B.19 Report of agri_coop

2.8 Report of service and activities of agri_coop

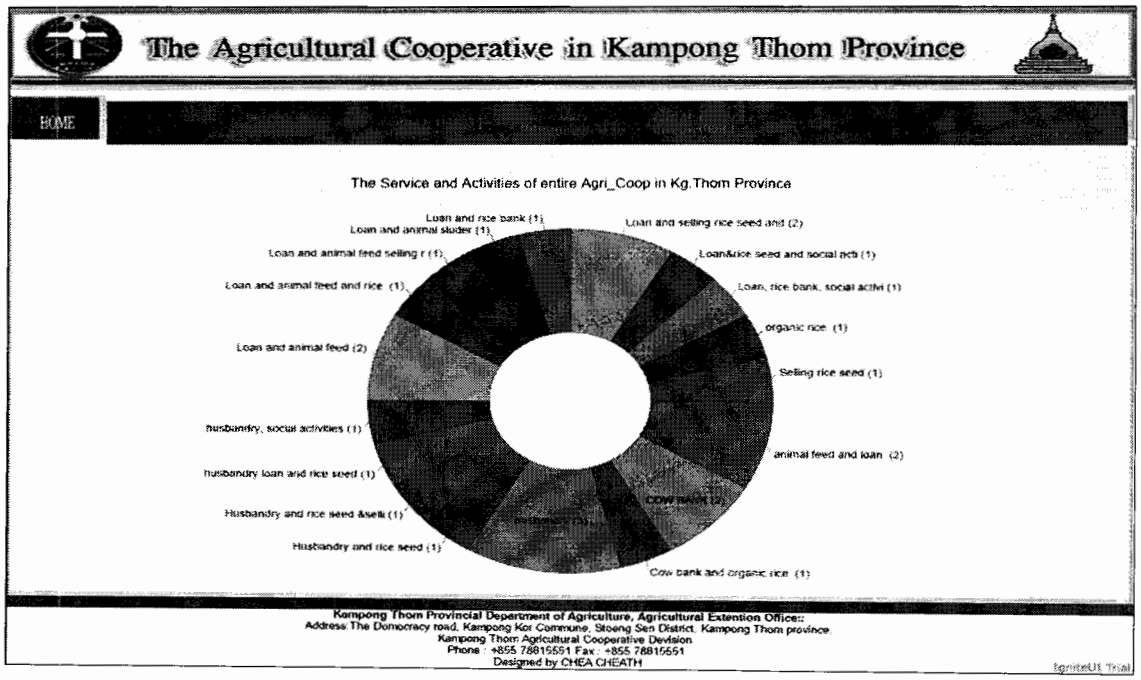

Figure B.20 Report of service and activities of agri_coop

2.9 Report of member of agri_coop

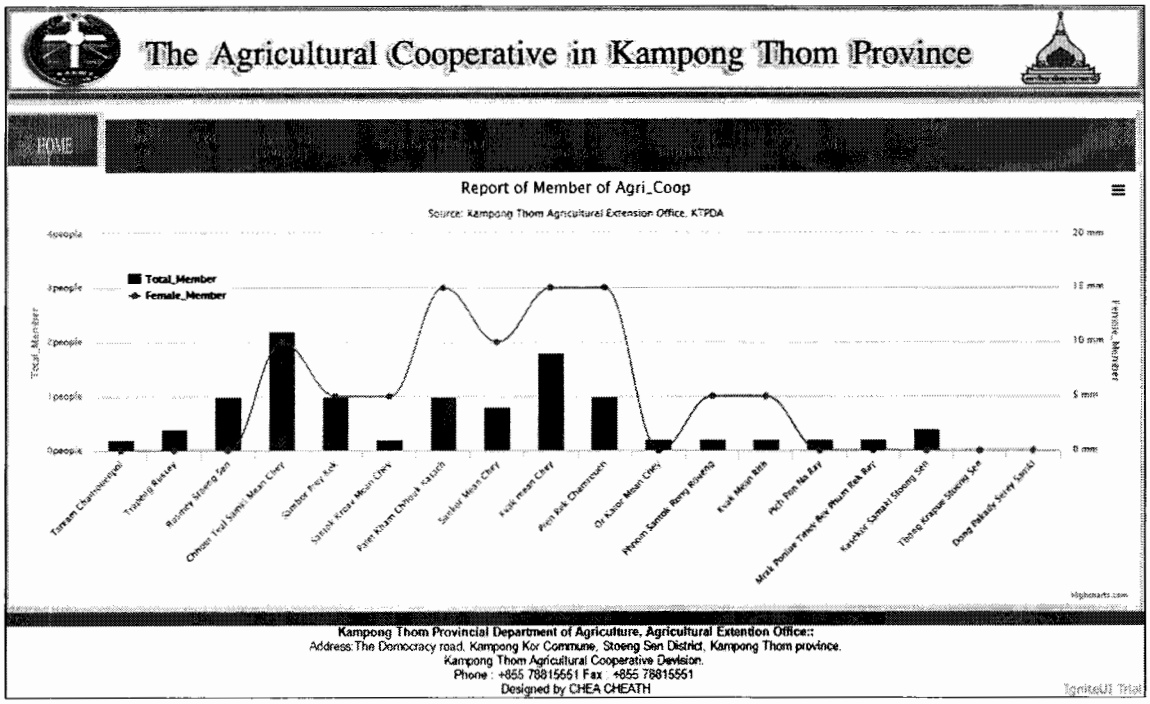

Figure B.21 Report of member of agri_coop

2.10 Add user information

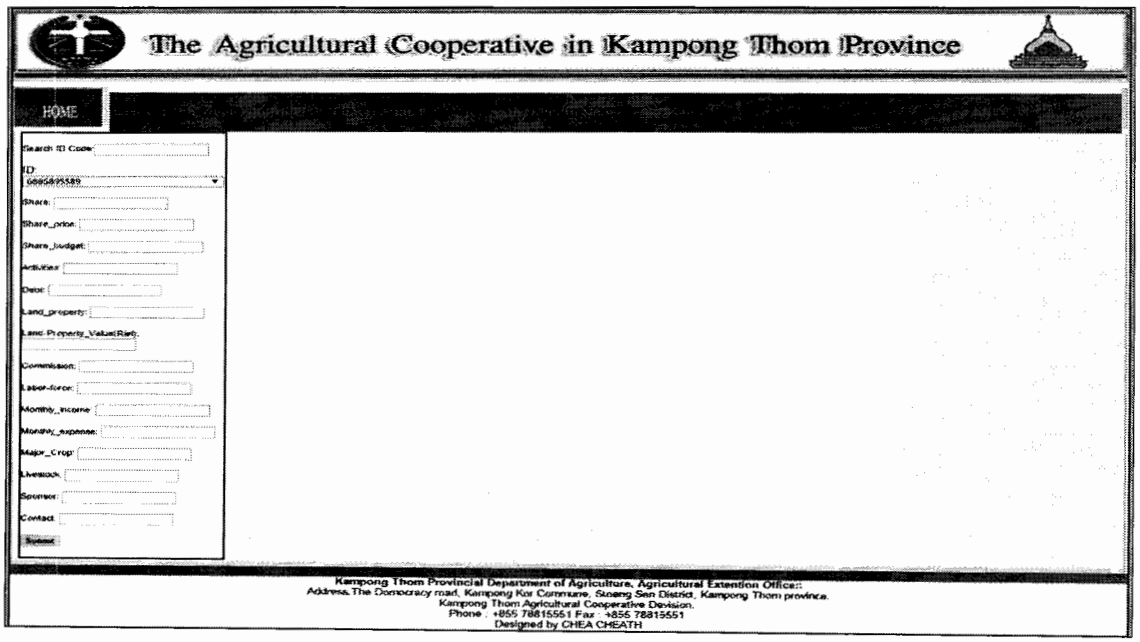

Figure B.22 Add user information

2.11 Show user information

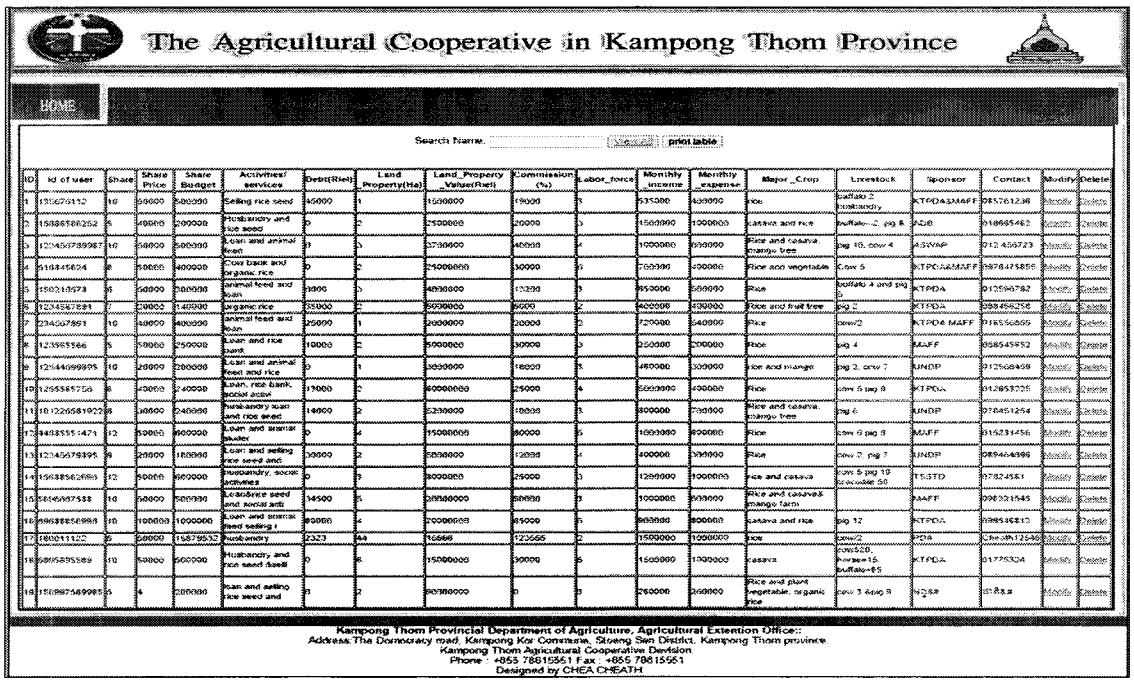

Figure B.23 Show user information

2.12 Modify of show user information

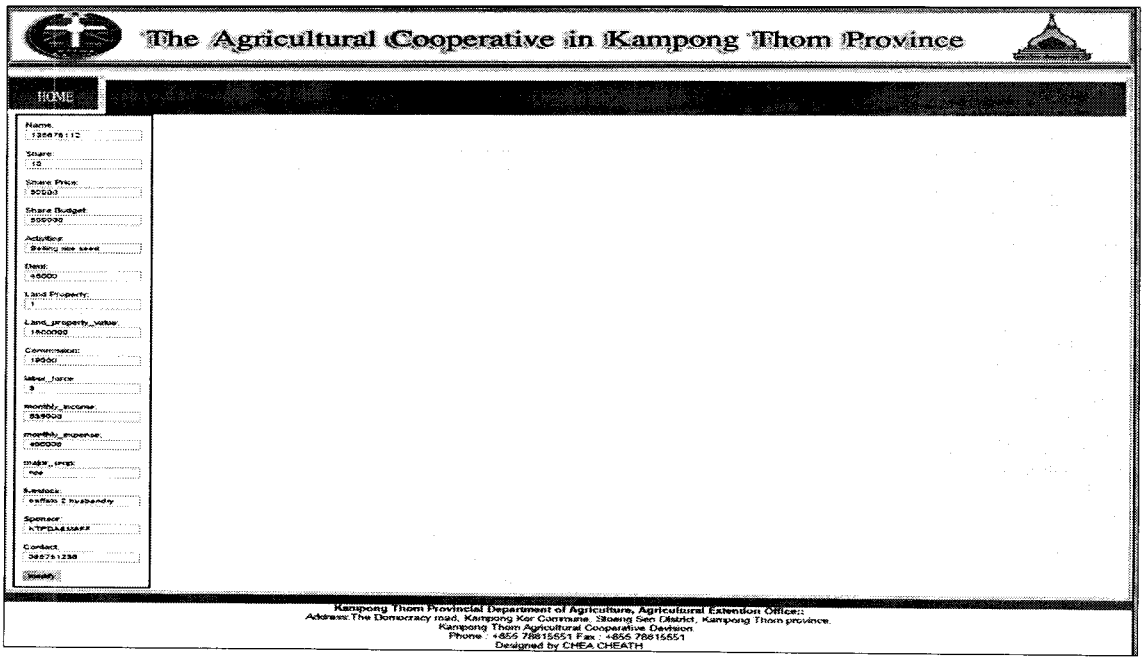

Figure B.24 Modify of show user information

2.13 Logout admin

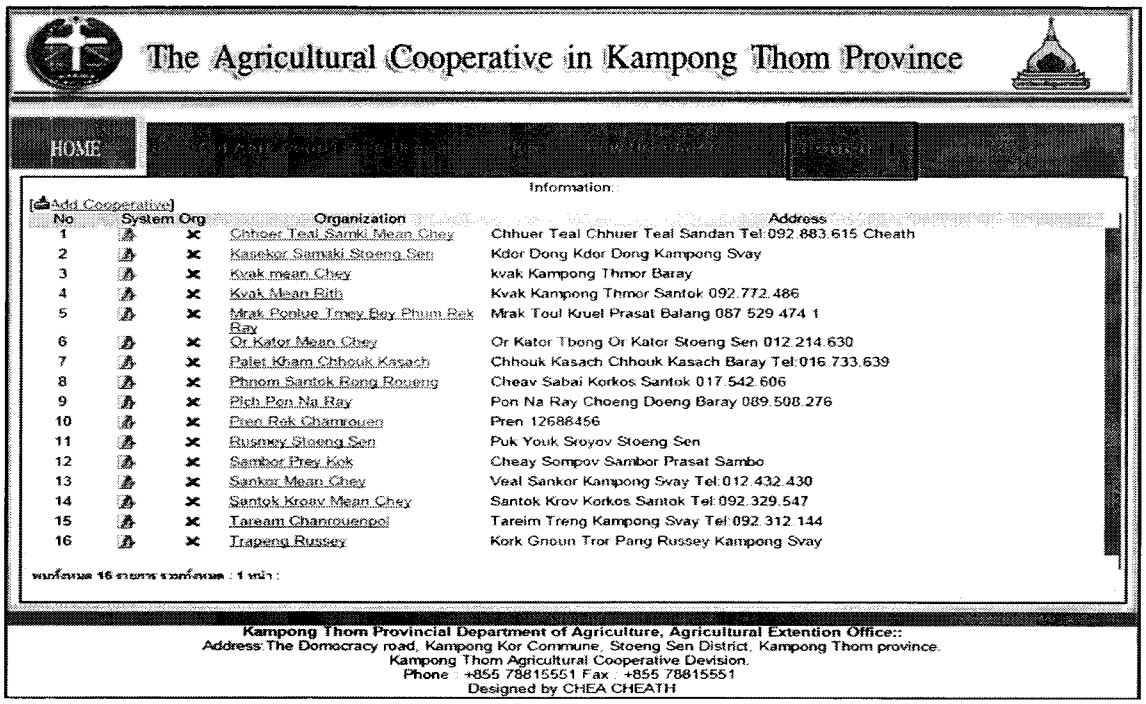

Figure B.25 Admin log out

APPENDIX C

The Report on Web Browser

The report on web browser

1. All the report have to check accordance the selected cooperative

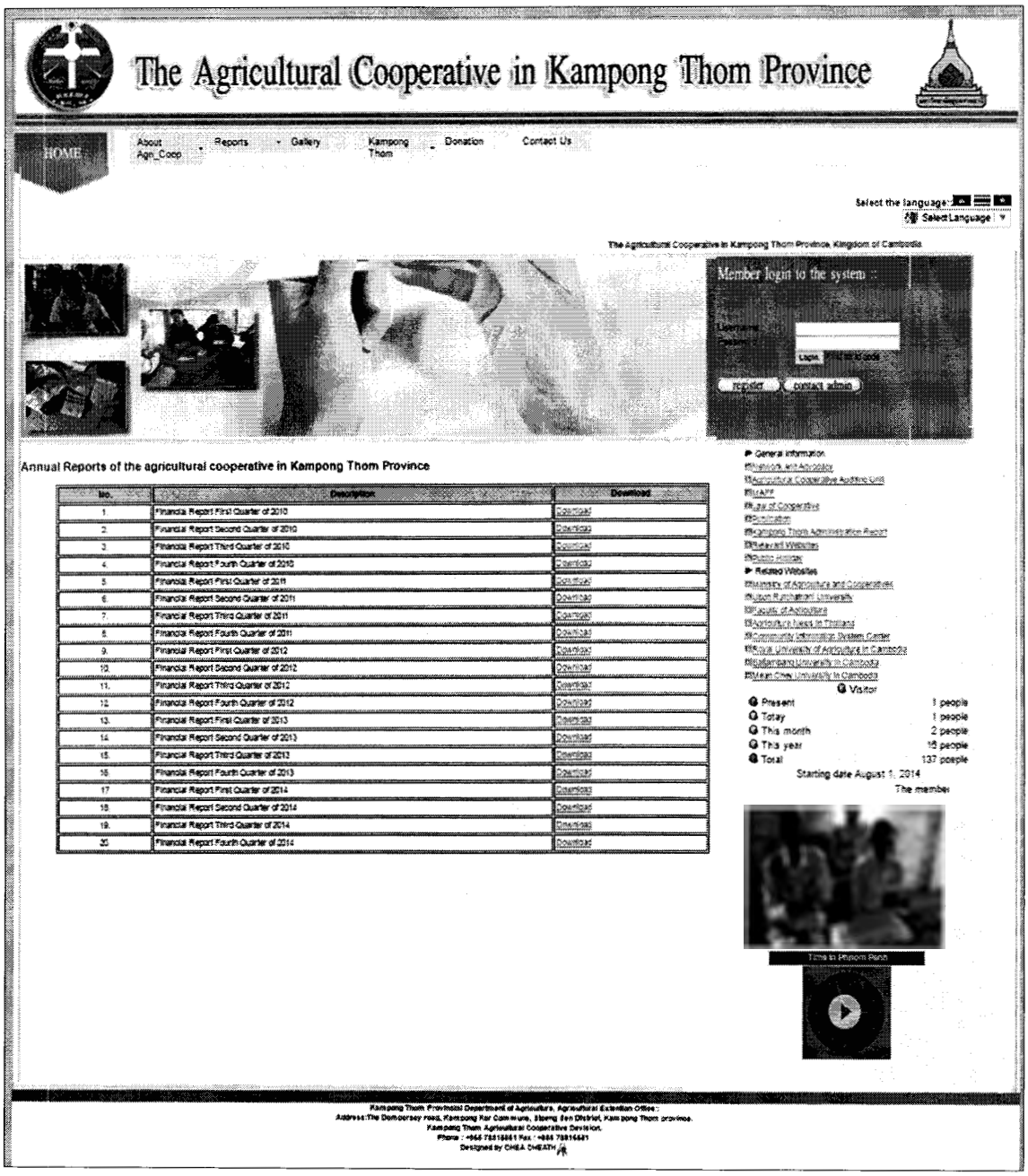

Figure C.1 Selection of the report of agri_coop

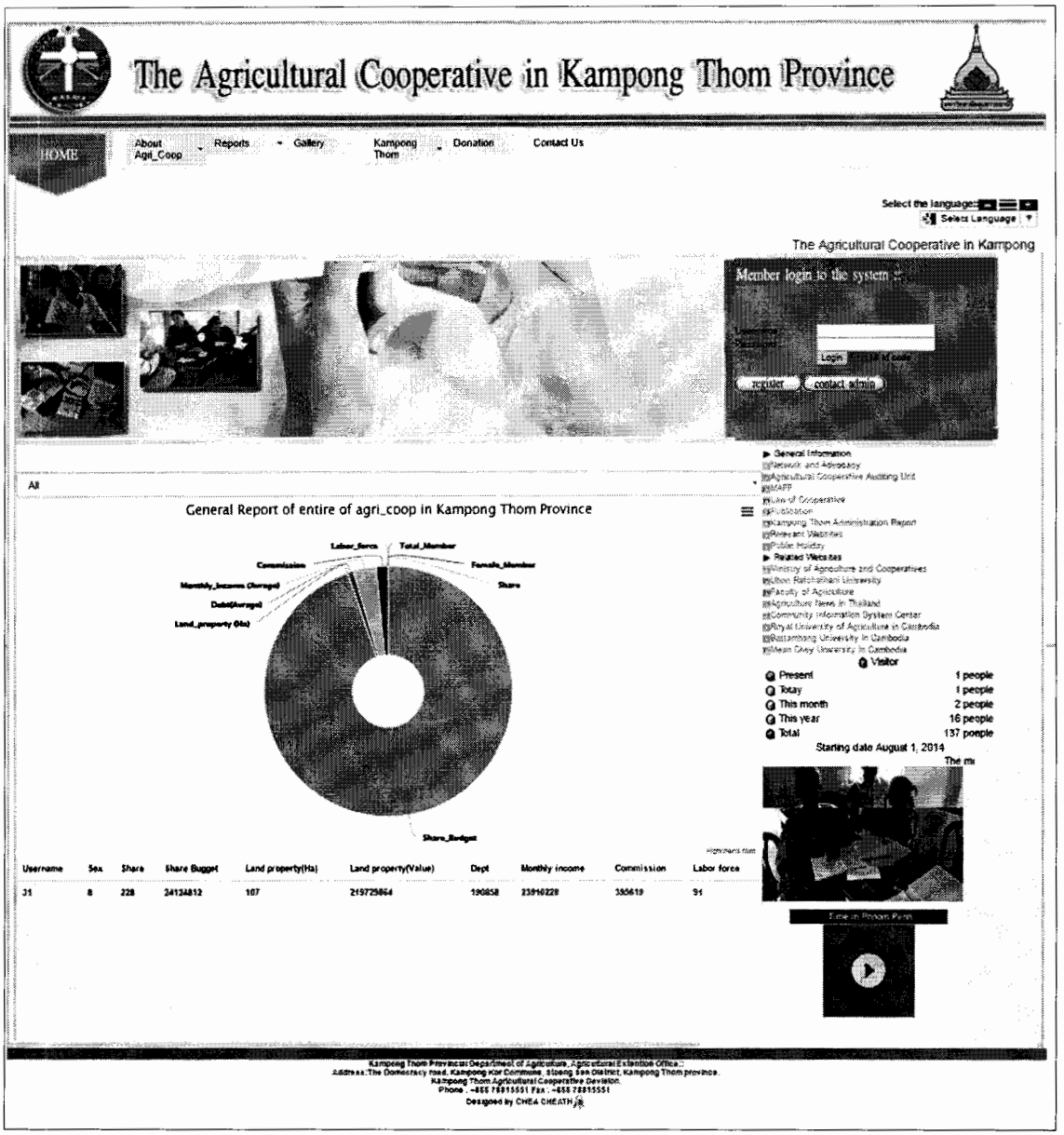

Figure C.2 Selection of data report of agri_coop

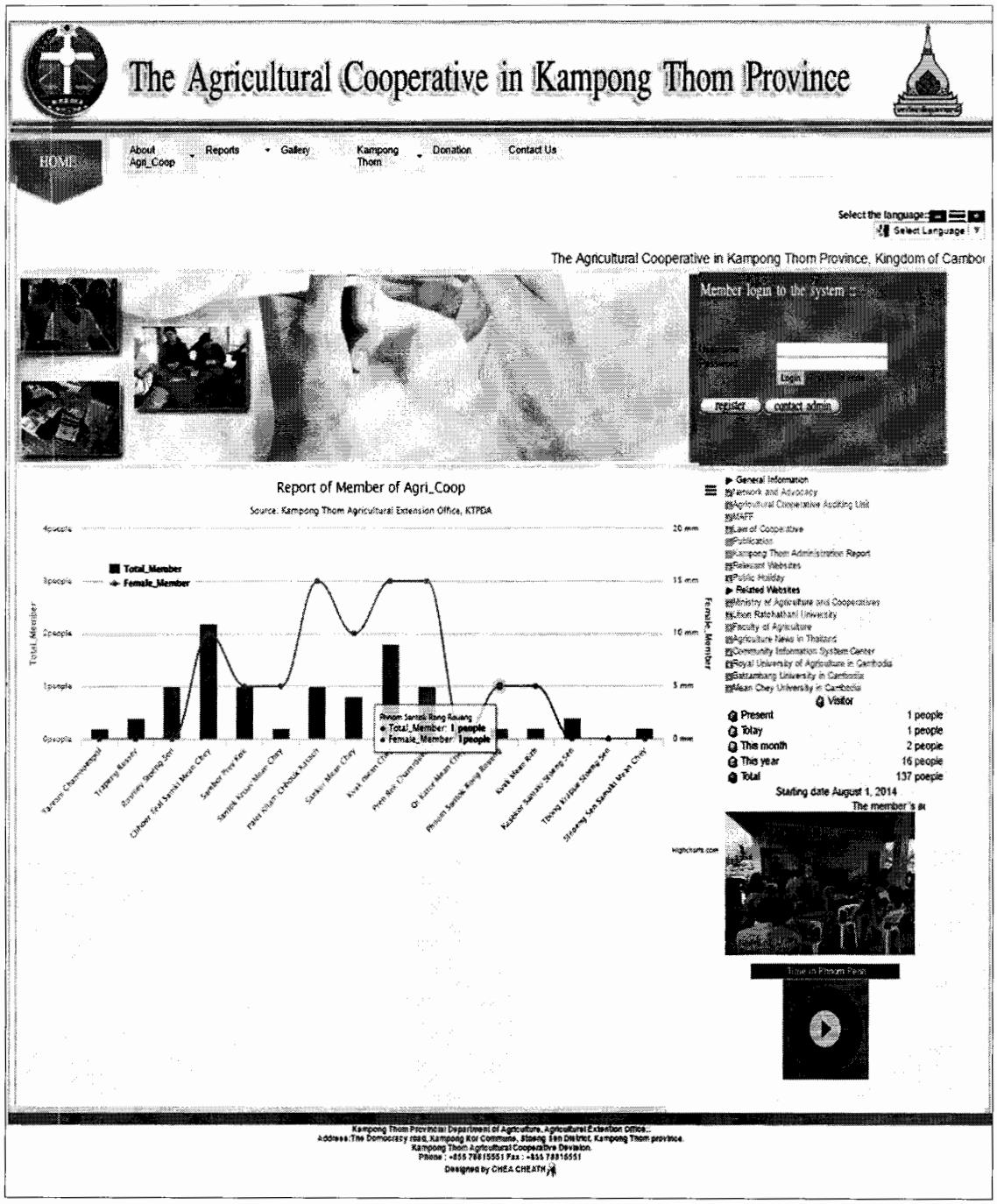

Figure C.3 Selection of member report of agri_coop

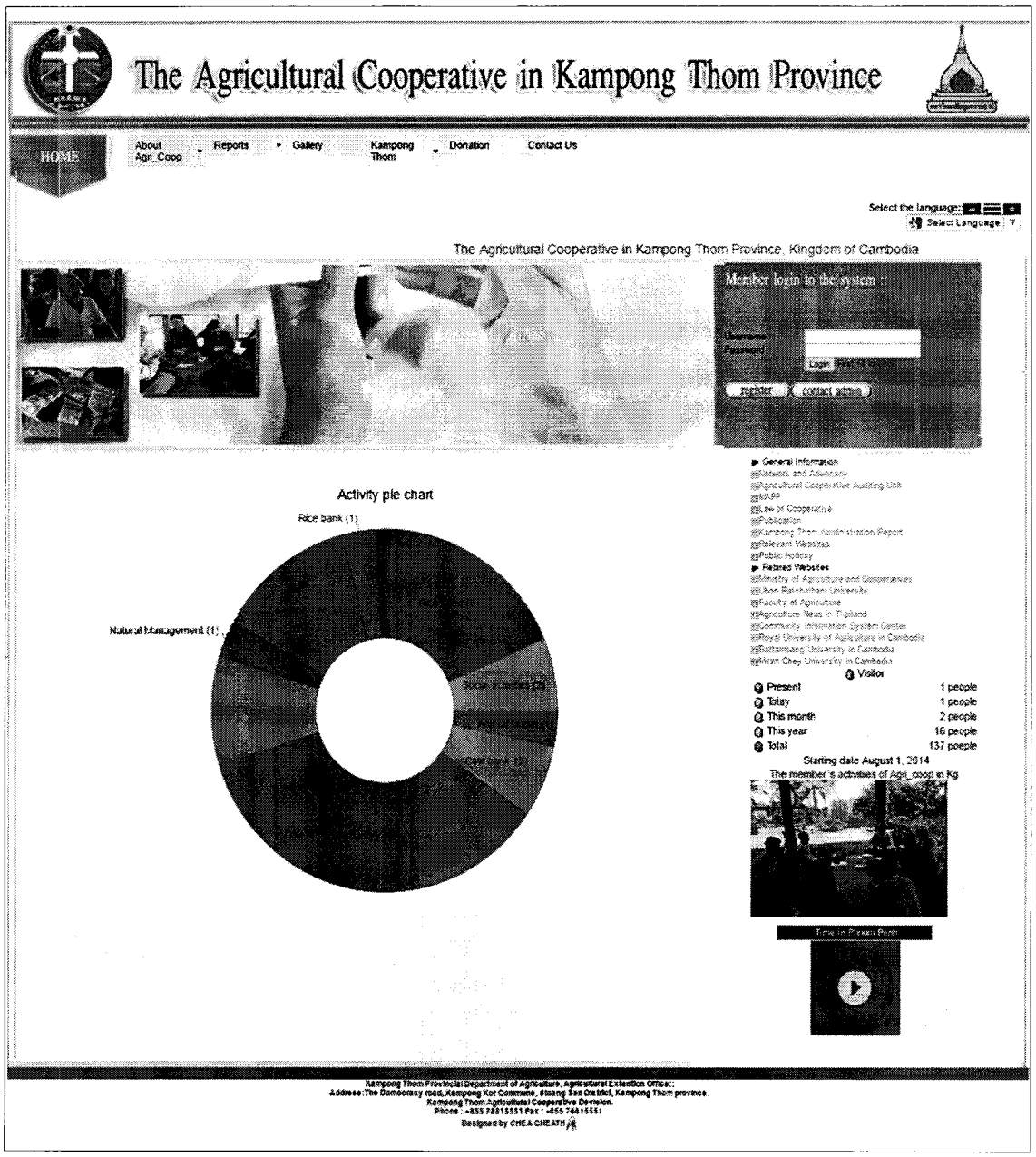

Figure C.4 Selection of service report of agri_coop

2. The main menu bar of the system

2.1 About Agricultural Cooperative

Figure C.5 About agricultural cooperative

2.2 Sub-Agricultural Cooperative

No	AC	Village	Commune	District	Contact
1	Tbong Krapue Stoeng Sen	Pahha Chy	Pbong Krapue	Santok	012.655.894
2	Kvak Mean Rith	Kvak	Kampong Thmor	Santok	092.772.486
3	Taream Chanrouenpol	Tareim	Treng	Kampong Svay	092.312.144
4	Kasekor Samaki Stoeng Sen	Kdor Dong	Kardy Dong	Kampong Svay	0
5	Tror Trong Kaserpol	Chhuer Teal	Chhuer Teal	Sandan	0
6	Kady SongKoem Kar Pasorm Pasay	Tropeng Veng	Sroyov	Stoeng Sen	092.800.877
7	Milhaphap Sat Phum	Kampong Kdie	Kampong Chen	Stong	012.235.944
8	Trapeng Russey	Kork Gnoun	Tror Pang Russey	Kampong Svay	0
9	Milhaphap Preah Stey	Sapan Trong	Chan na Krum	Stong	017.386.119
10	Rusmey Stoeng Sen	Puk Youk	Sroyov	Stoeng Sen	0
11	Sankor Mean Chey	Veal	Sankor	Kampong Svay	012.432.430
12	Choer Teal Samki Mean Chey	Chhuer Teal	Chhuer Teal	Sandan	092.883.615
13	Palet Kham Chhouk Kasach	Chhouk Kasach	Chhouk Kasach	Baray	016.733.639
14	Or Kalor Mean Chey	Or Kalor Tbong	Or Kalor	Stoeng Sen	012.214.630
15	Pich Pon Na Ray	Pon Na Ray	Choeng Doeng	Baray	089.508.276
16	Santok Kroav Mean Chey	Santok Krov	Korkos	Santok	092.329.547
17	Pren Rak Cham Rouen	Pren	Prey Koly	Stoeng Sen	097.978.553.4
18	Phnom Santok Rong Roueng	Cheav Sabai	Korkos	Santok	017.542.606
19	Mrak Ponlue Tmey Bey Phum Rek Ray	Mrak	Toul Kruei	Prasat Balang	87 529 474 1
20	Prey Mayey Krie Sonkem	Prey Mayey	Phan Yim	Prasat Balang	087 72 08 57
21	Dong Pakady Serey Samki	Chan Sery	Samki	Prasat Balang	077 54 51 60
22	Phum Prey Pros	Phum Prey Pros	Tbeng	Kampong Svay	097 837 338 0
23	Samki Chong da	Chong Da	Tbong Krapue	Santok	097 669 053 5
24	Sambor Prey Kok	Cheay Sompov	Sambor	Prasat Sambo	0
25	Tang KrorSao Samki MeanChey	Touek Andong	Tang Krosao	Prasat Sambo	0
26	Chouk Samki Mean Chey	Tropeng Sala	Chhouk	Prasat Sambo	0
27	Gnon Samaki Mean Chey	Gnon	Gnon	Sadan	097 500 872 2
28	Nipich Samki Mean Chey	Nipich	Nipich	Kampong Svay	062 660 344 4
29	Samki Samak Kroya	Kroya Tbong	Kroya	Prasat Balang	092 924 447
30	Sakream Amatha	Or Kayong	Sakram	Prasat Balang	088 582 770 4
31	Pnov Rong Roueng	Troey Or	Pnov	Santok	0
32	Kampong Svay Samak Chet	Kampong Svay	Kampong Svay	Kampong Svay	0
33	Yoeng	Kror Charb	A Cha Lak	Stoeng Sen	012 505 425

Figure C.6 Sub-Agricultural Cooperative

2.3 Agricultural Cooperative Structure

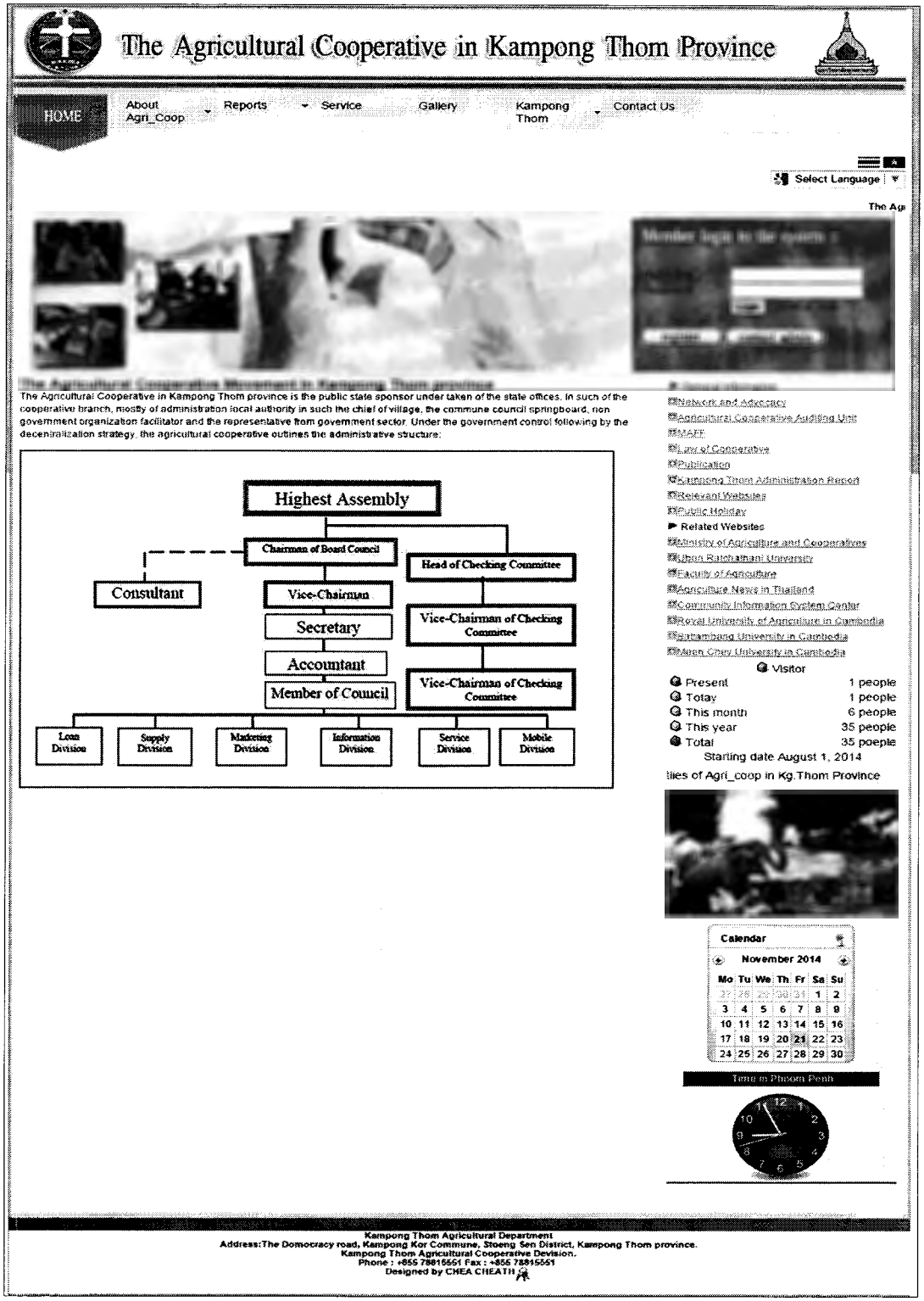

Figure C.7 Agricultural cooperative structure

2.4 How to join a member

Figure C.8 How to join member

2.6 Gallery

Figure C.9 Gallery

2.7 Donation

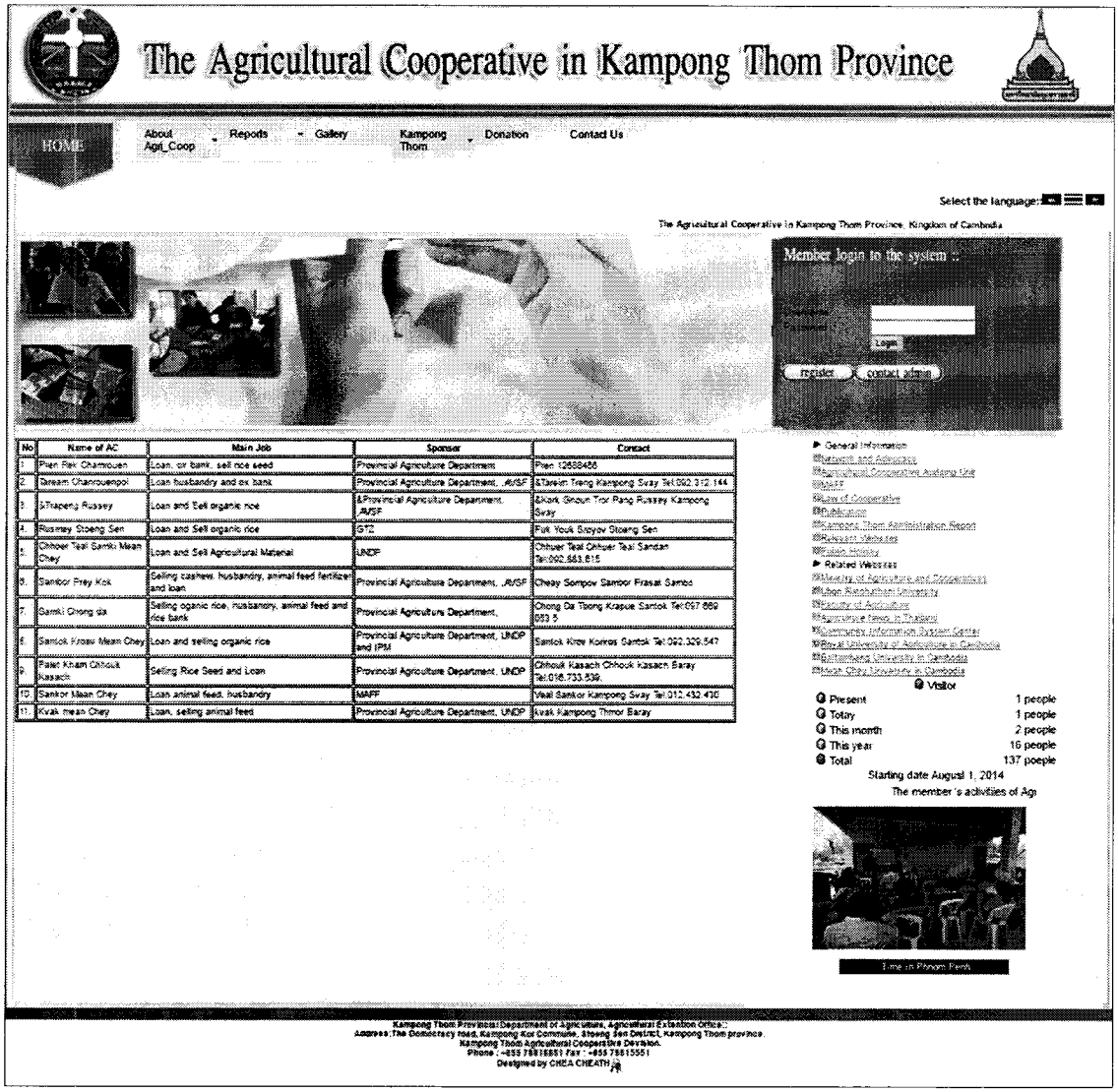

Figure C.10 Donation

2.8 The Fact about Kampong Thom province

Figure C.11 The fact about Kampong Thom province

2.9 Contact

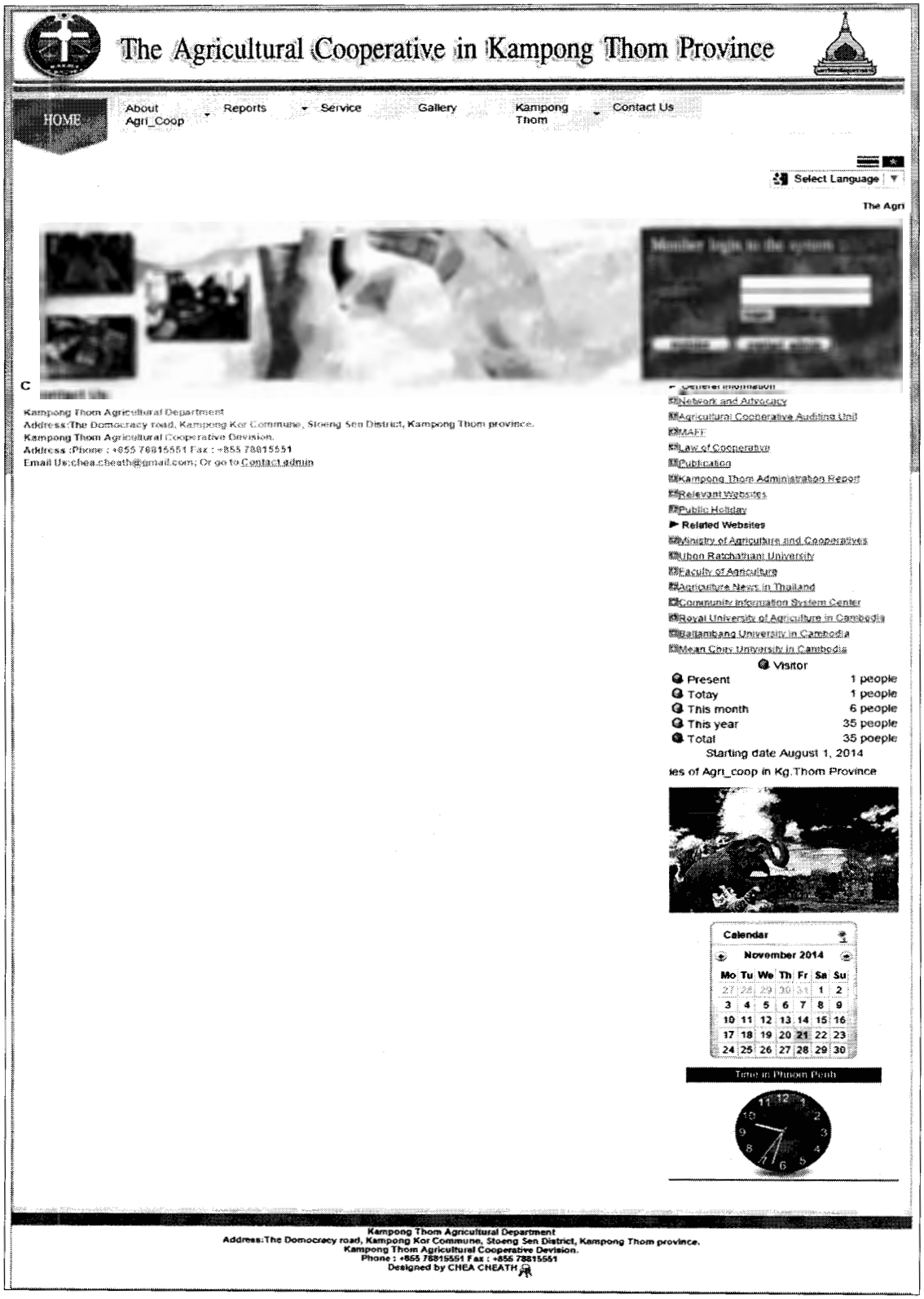

Figure C.12 Contact

APPENDIX D

Questionnaire Form Evaluates the Satisfaction of System Specialist for Agricultural Cooperative in Kampong Thom Province, Cambodia

Questionnaire Form Evaluates the Satisfaction of System Specialist for Agricultural Cooperative in Kampong Thom Province, Cambodia

Chea Cheath, Student Id: 5512600300

Agricultural Information Technology and Rural Development

Faculty of Agriculture, Ubon Ratchathani University

Questionnaire ..... Interviewer's name: .....

Date of interview: .....Time start: .....Time end: .....

This paper reports on a measuring and analyzing computer user satisfaction for the information technology for agricultural cooperative in Kampong Thom province, Cambodia. Based on extensive testing, the questionnaire appears to be a reasonably valid and reliable measure. A framework for how this measure can be used to detect and diagnose problems with user satisfaction is presented and illustrated via the opinion and feedback information. Finally, recommendations and suggestions are made regarding the future use of this and other measures of user information satisfaction. The insert people there are the expertise of the information system, the official of the agricultural cooperative by dividing the efficiency of the evaluation into three phases:

Phase 1: The Personnel Information of Respondent.

Phase 2: The Assessment of Respondent to the Effectiveness of the System.

Phase 3: The Recommendation and Suggestion of Respondent

Phase 1: The Personnel Information of Respondent.

Remark: Please fill in the box (□) using text signal (✓)

1. Sex: □. Male □. Female
2. Status: □. Manager □. General Specialist □. Official
   □. NGO's staff □. System Specialist
3. Education: □. Diploma □. High Diploma □. Bachelor
   □. Master □. Doctorate □. Others.....
4. Working experience: □. From 1-3 years □. From 3-5 years □. From 6-10 years □. More than 10 years □. Others.....

Phase 2: The Assessment of Respondent to the Effectiveness of the System.

Remark: Please fill into column using text signal (✓). The evaluation score were divided into:

- From 9.00 – 10.00: Very Good
- From 7.00 – 8.00 : Good
- From 5.00 – 6.99 : Average
- From 3.00 – 4.99 : Low, the system have to improve
- From 1.00 – 2.99: Very Low, the system is not available to use

The Assessment	Grade of effectiveness									
	Very Good		Good		Average		Low		Very Low	
	10	9	8	7	6	5	4	3	2	1
The capacity of the system The satisfaction to the system capacity										
The capacity to search data										
The speed of system										
The appropriate of system operation The appropriate of data output										
The appropriate of data record										
The appropriate of collecting data										
The proper of data report										
The Proper data for decision making										
The convenience of the system The convenience of system usage										
Suitable front page, easy to use										
The suitable colorful of page										
The font size										

The Assessment	Grade of effectiveness									
	Very Good		Good		Average		Low		Very Low	
	10	9	8	7	6	5	4	3	2	1
Speed of data searching										
The system security The proper system user privilege										
The suitable keeping the system security										
Data browser and report The output and report										
Data browser and report The output and report interpret to requirement										
Data browser and report The output and report interpret to requirement										
The output and report are correct as the requirement										
The proper understanding to the system report of output and report										

Phase 3: The Recommendation and Suggestion of Respondent

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Thank you so much

Mr. Chea Cheath Student Id: 5512600300

Agricultural Information Technology and Rural Development

Faculty of Agriculture, Ubon Ratchathani University

APPENDIX E

Questionnaire Form Evaluates the Satisfaction of System User for Agricultural Cooperative in Kampong Thom Province, Cambodia

Questionnaire Form Evaluates the Satisfaction of System User for Agricultural Cooperative in Kampong Thom Province, Cambodia

Chea Cheath, Student Id: 5512600300

Agricultural Information Technology and Rural Development

Faculty of Agriculture, Ubon Ratchathani University

Questionnaire ID:..... Interviewer's name: .....

Date of interview:.....Time start:.....Time end: .....

This paper reports on a measuring and analyzing computer user satisfaction for the information technology for agricultural cooperative in Kampong Thom province, Cambodia. Based on extensive testing, the questionnaire appears to be a reasonably valid and reliable measure. A framework for how this measure can be used to detect and diagnose problems with user satisfaction is presented and illustrated via the opinion and feedback information. Finally, recommendations and suggestions are made regarding the future use of this and other measures of user information satisfaction. The insert people there are the expertise of the information system, the official of the agricultural cooperative by dividing the efficiency of the evaluation into three phases:

Phase 1: The Personnel Information of Respondent.

Phase 2: The Assessment of Respondent to the Effectiveness of the System.

Phase 3: The Recommendation and Suggestion of Respondent

Phase 1: Personnel Information of Respondent.

Remark: Please fill in the box (☐) using text signal (✓)

5. Sex: ☐. Male ☐. Female
6. Status: ☐. Manager ☐. General Specialist ☐. Official
   ☐. NGO's staff ☐. System Specialist
7. Education: ☐. Diploma ☐. High Diploma ☐. Bachelor
   ☐. Master ☐. Doctorate ☐Others.....
8. Working experience: ☐. From 1-3 years ☐. From 3-5 years ☐. From 6-10 years
   ☐.More than 10 years ☐. Others.....

Phase 2: The Assessment of Respondent to the Effectiveness of the System.

Remark: Please fill into column using text signal (✓). The evaluation score were divided into:

- From 9.00 – 10.00: Very Good

- From 7.00 – 8.00 : Good
- From 5.00 – 6.99 : Average
- From 3.00 – 4.99 : Low, the system have to improve
- From 1.00 – 2.99: Very Low, the system is not available to use

The Assessment	Grade of effectiveness									
	Very Good		Good		Average		Low		Very Low	
	10	9	8	7	6	5	4	3	2	1
The capacity of the system The satisfaction to the system capacity										
The capacity to search data										
The speed of system										
The appropriate of system operation The appropriate of data record										
The appropriate of collecting data										
The proper of data report										
The comfortable and convenience of the system The convenience of system usage										
Suitable front page, easy to use										
The suitable colorful of page										
The font size										
Speed of data searching										
Data browser and report The output and report interpret to requirement										

The Assessment	Grade of effectiveness									
	Very Good		Good		Average		Low		Very Low	
	10	9	8	7	6	5	4	3	2	1
The output and report are correct as the requirement										
The proper understanding to the system report of output and report										

Phase 3: The Recommendation and Suggestion of Respondent

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Thank you so much

Mr. Chea Cheath Student Id: 5512600300

Agricultural Information Technology and Rural Development

Faculty of Agriculture, Ubon Ratchathani University

APPENDIX F

The Name Respondent of System Evaluation

The Name Respondent of System Evaluation

Name: Mr. Chea Cheath Student ID: 5512600300

Batch: ☐. Independent Studies ☑ Thesis

Thesis Topic: An Information System for Agricultural Cooperative Management in Kampong Thom Province, Cambodia (A Prototype System).

Advisor: Assoc. Prof. Narintorn Boonbrahm

Name list of system analysis specialist for An Information System for Agricultural Cooperative Management in Kampong Thom Province, Cambodia (A Prototype System).

1. Name list of computer's specialist

Surname and Name	**Position**	**Workplace**	**Degree**
1. CHAN SEYHA	IT TECHNICIAN	MEAN CHEY UNIVERSITY	BACHELOR
2. CHAN VANNA	AGRI-COOP OFFICER	Kg. THOM PROVINCIAL DEPARTMENT OF AGRICULTURE	BACHELOR
3. CHOUN KIMLEANG	SYSTEM CONTROLLER	COMPUTER AND NETWORK DIVISION, UBB.	BACHELOR
4. HONG SENGHAK	GIS OFFICER	Kg.THOM PROVINCIAL DEPARTMENT OF AGRICULTURE	BACHELOR
5. KANJANA MANOMAI	SYSTEM CONTROLLER	COMPUTER AND NETWORK DIVISION	BACHELOR
6. LIM SOPHENG	ADMINISTRATION OFFICER	Kg. THOM PROVINCIAL DEPARTMENT OF AGRICULTURE	BACHELOR

Surname and Name	Position	Workplace	Degree
8. NOV POV	VILLAGE CHIEF	CHHOUK KASACH	SECONDARY SCHOOL
9. PREAB MONY	COMMUNE CLERK	TBONG KROPUE COMMUNE	HIGH DIPLOMA
10. SE SOPHAL	VILLAGE CHIEF	PREN COMMUNE	PRIMARY SCHOOL
11. YIMKIM SAN	MERCHANT	CHHOUK KASACH	HIGH SCHOOL
12. NAN TEAT	FARMER	PANNHACHY	PRIMARY
13. LAY LAM	FARMER	KOR KOH	PRIMARY
14. NOSE CHAN	FARMER	KVAK	PRIMARY
15. LY CHAN	VILLAGE CHIEF	OR KANTOR	PRIMARY
16. NOV NAM	FARMER	TRAPENG RUSSEY	PRIMARY
17. RUN SAVATH	TEACHER	PANNHA CHY	HIGH DIPLOMA
18. LAP UDOM	FARMER	KAMPONG SVAY	PRIMARY
19. YAY YOUNG	FARMER	TARIEM	ILLITERATE
20. CHHAY CHOUET	FARMER	PRASAT SAMBO	ILLITERATE

CURRICULUM VITAE

SURNAME AND NAME	CHEA CHEATH
EDUCATION	Sept, 2004- Aug, 2010 Graduated Bachelor of Arts in Lao Language and Literature at National University of Laos. Graduated Bachelor of Arts in English at National University of Laos.
WORK EXPERIENCES	May 1st, 2014- Present Siem Reap Provincial Department of Agriculture, Siem Reap Province, Kingdom of Cambodia
POSITION	Project Officer
PRESENT ADDRESS	Chong Kao Su Village, Slokram Commune, Siem Reap Province, Kingdom of Cambodia