Phaya Thai Pet Care
Small Enterprise Resource Planning (SERP) System

by

Ms. kultida Rattanapun

A Final Report of the Three-Credit Course
CS 6998 System Development Project

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer Information Systems
Assumption University

July 2006

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Project Title	Phaya Thai Pet Care Small Enterprise Resource Planning (SERP) System
Name	Ms. Kultida Rattanapun
Project Advisor	Dr. Aran Namphol
Academic Year	July 2006

The Graduate School of Assumption University has approved this final report of the three-credit course, CS 6998 System Development Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

Approval Committee:

(Dr. Aran Namphol)
Advisor

(Prof.Dr. Srisakdi Charmonman)
Chairman

(Dr. Rapeepat Techakittiroj)
Program Director

(Air Marshal Dr. Chulit Meesajjee)
Member

(Assoc.Prof. Somchai Thayarnyong)
CHE Representative

July 2006

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ABSTRACT

Nowadays, as we realize that the importance of the animal hospital is increasing since people love to have pets as a friend, to guard their houses, or for some other reasons. The pet's owner needs a vet to cure or take care of their pets whenever they get sick. The result of this invention is computer and computer technology.

The Small System Resource Planning System is the web-based application that facilitates the management of customer relationships and company valuable resources to be more effectively and efficiently. The SERP system consists of seven crucial functionalities; sales, purchases, inventory, accounting and General Ledger module, customer, and appointment management modules including system administration function. The system not only helps the company to reduce ineffective and tedious tasks, eliminate a certain amount of human errors, and speed up some operations which are leaded to a great reduction in operational cost, but also provide an opportunity for Phaya Thai Pet Care to offer new value-added services to customers which are leaded to both corporate income and satisfaction of customers. In conclusion, we confidently believe that with the Small Enterprise Resource Planning System, Phaya Thai Pet Care can provide better services to the clients and move several steps closer to accomplish the corporate mission.

ACKNOWLEDGEMENTS

Several people have made contributions to this project. The writer would like to acknowledge their efforts and thank them for their contributions.

She would like to thank Asst.Prof.Dr. Aran Namphol, her project advisor, for her valuable suggestions and advice given in to preparation of this project.

She extend his sincere thanks to Dr. Jeeranat Chaihanish , Owner and Management Director of Phaya Thai Pet Care Clinic , Dr. Artit Vasikarn, Senior Manager of this clinic for their timely assistance and information provided to her while carrying out the data collection required for her project.

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I. INTRODUCTON

1.1 Background of the Project

Established in 2001, Phaya Thai Pet Care is primitively a small-sized veterinary clinic located in downtown Bangkok, at Soi Phathumwan Resort, Phaya Thai Ratchathavee, to be exact. With Phaya Thai BTS station nearby, Phaya Thai Pet Care has a very suitable location. Consequently, by 2002, it was able to expand its business area from only medical service to the complete pet care services. It opens daily from 9:00 AM. to 9:00 PM

As the complete pet care business, Phaya Thai Pet Care provides a variety of services and products related to animals.

Medical Services

(1) Sick animal treatment: Phaya Thai Pet Care offers medical treatments to various kinds of animals such as dogs, cats, birds and poultries, squirrels, rabbits, and fishes. Nevertheless, approximately 60% and 25% of patients are dogs and cats respectively.

(2) Vaccine injection: available for dog and cat only.

(3) Sterilization: available for dog and cat only.

(4) Dental service: available for dog and cat only

(5) Computer radiography (X-ray): mainly for disease diagnosis

(6) Animal Surgery

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Other Services

(1) Bathing and cleaning

(2) Beauty salon service: glooming and pedicure

(3) Pet nursery.

(4) Breeding consultant: mostly, to ensure the pedigree preservation

Pet Merchandise

(1) Food and supplements

(2) Toys and accessories for animal activities

(3) Cage and Dog houses

(4) Manuals, books, and animal magazines

(5) Sometimes, animal themselves

The newly computerized system is introduced to facilitate the users to run the business fasters be more reliable and more accurate than the current existing system. The proposed system has to reduce manual work, paper work, and human work in order to minimize the human-generated mistakes as well as the cost of running business. The proposed system has to reduce the time to operate the sales management, to minimize worker cost, and to generate the system reports to serve the operation and analytical tasks.

1.2 Objectives of the project

This project aims to analyze and design a new effective computerized system for the company and its customers. The objectives of this project are as follows:

(1) To design an effective computerized information system and new network infrastructure in order to improve the efficiency of current system.

(2) To analyze and identify problems of the existing system in order to develop the new computerized system to reach customer satisfaction.

(3) To provide the summary report to Management level for Decision Making.

(4) To protect and decrease the risk of possible frauds from the traditional system.

(5) To improve the company information system by utilizing the Information Technology in order to facilitate the company internal operation.

(6) To be able to effectively manage the historical information in order to control the working process and improve the company's internal operations.

1.3 Scope of the Project

This project is to develop and modernize Phaya Thai Small Enterprise Resource Planning (SERP) System, which will enhance the current system process. To maintain and update information of the system. All information can be updated easily and also the old information can be easily kept. Provide the standardized document such as request orders, purchase orders, receipts, daily reports, monthly reports and annual reports which are used to support the sales forecasting by the management.

1.4 Deliverables

The deliverables of the project on the proposed PHAYA THAI PET CARE Inventory Information System are as follows:

(1) Data Modeling includes the following Diagram; Context Diagram, Entity Relationship Diagram and Key-Based and Fully Attributed Diagram

(2) Process Modeling (Context Diagram and Data Flow Diagram)

(3) System Specification (Both Hardware and Software Specification)

(4) Cost and Benefit Analysis

(5) Input Design (Input Screen of Proposed System)

(6) Data Dictionary

(7) Interface Design (Input and Report Design)

(8) Test plan and Conversion plan

1.5 Project Plan

As shown by Project Gantt Chart below, the system development project plan started on February 2006 and will run through April 2006. Major Activities for this project plan are System Analysis. System Design and System Implementation.

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II. THE EXISTING SYSTEM

2.1 Background of Organization

Established in 2001, Phraya Thai Pet Care is primitively a small-sized veterinary clinic located in downtown Bangkok, at Soi Phathumwan Resort, Phaya Thai Ratchathavee, to be exact. With Phaya Thai BTS station nearby, Phaya Thai Pet Care has a very suitable location. Consequently, by 2002, it was able to expand its business area from only medical service to the complete pet care services. It opens daily from 9:00 AM. to 9:00 PM

Mission Statement: To provide excellent and compassionate veterinary services at a reasonable price and also offer both high-quality merchandise and sincere and friendly services by taking both the pet's and the client's needs into account

2.2 Company Products and Services

As the complete pet care business, Phaya Thai Pet Care provides a variety of services and products related to animals.

Medical Services

(1) Sick animal treatment: Phaya Thai Pet Care offers medical treatments to various kinds of animals such as dogs, cats, birds and poultries, squirrels, rabbits, and fishes. Nevertheless, approximately 60% and 25% of patients are dogs and cats respectively.

(2) Vaccine injection: available for dog and cat only.

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2.3 Company Organization Chart

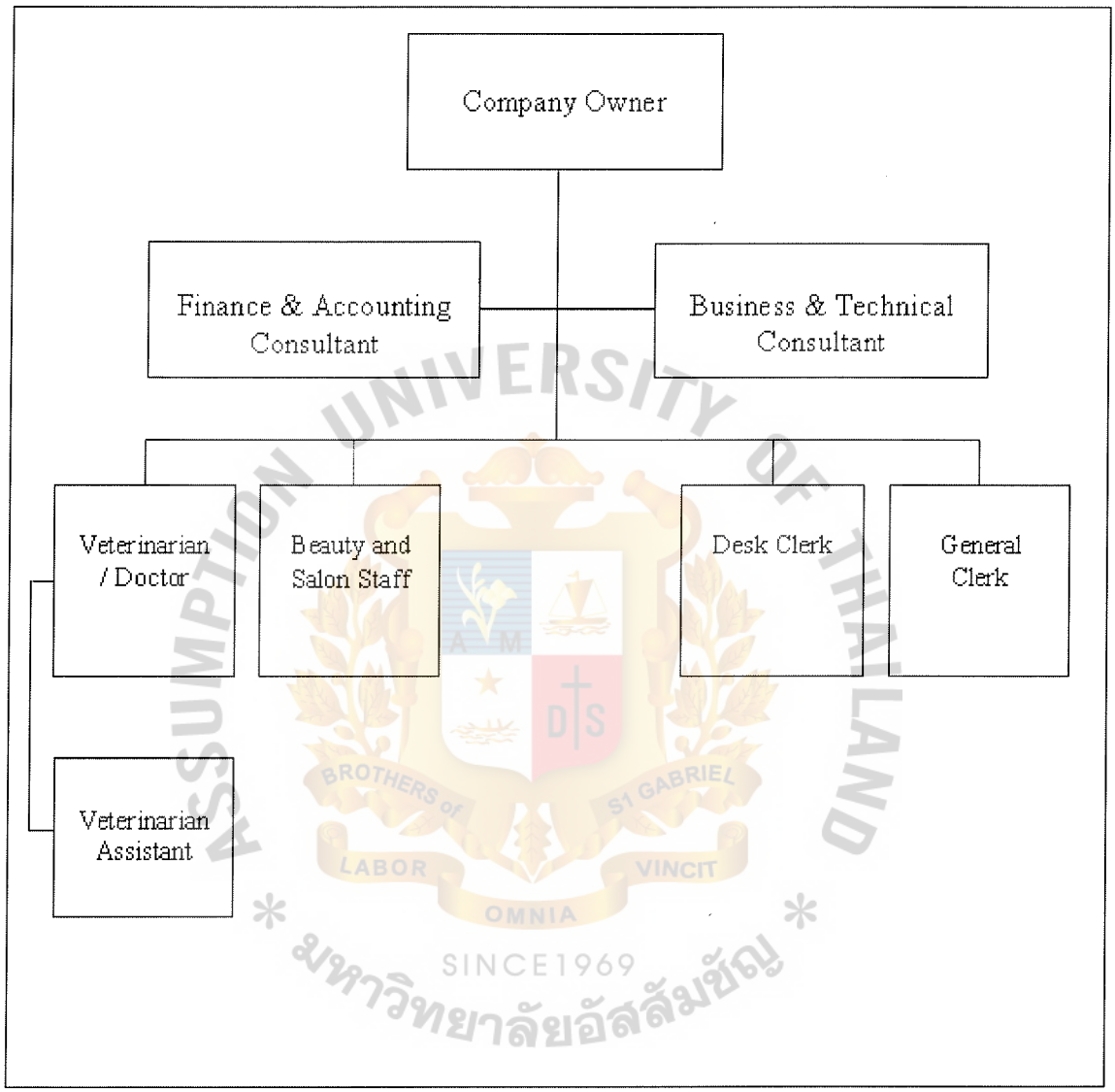

Figure 2.1. Existing System Organization Chart of Phaya Thai Pet Care Clinic

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2.4 Analysis of the Existing System

To gain a thorough and explicit understanding of the processes, activities, and e and environment of Phaya Thai Pet Care, our system analysts conducted the intensive study via several methods as describe below.

(1) Interview

Interviewing is the primary method used in our study. Our system analysts conducted a main interview with an owner and a veterinarian of the company, Dr. Jeeranat Chaihanish, and an additional interview to desk clerks.

Mostly, contents from the talk with Dr. Chaihanish are focused on three aspects. The first aspect was related to overall management issues, company structures, as well as the corporate direction. The second part was exclusively concerned with medical services. The last one was concerned with other services aside from medical treatments and available types of pet merchandise. Whereas, the clerk interview was mainly related to procedures of daily store-front activities such as selling merchandise, issuing invoices, receiving payments either from customer or to suppliers, and managing customer profiles.

Besides asking several questions regarding the current work flows of the enterprise, our system analysts also used those opportunities to receive new requirements from interviewees as well.

(2) Observation

In addition to interviews, three system analysts of us also observed routine tasks of each employee on both weekdays and weekends as well as the current system supporting them in following area;

- Medical Service
- Additional Services like bathing, beauty and salon, and kennel.
- Purchasing and selling merchandise
- Inventory and Stock Management
- Customer relationship management

(3) Document Examination

Many paper documents provided by Dr. Chaihanish herself and staffs were also thoroughly examined in order to gain additional information and find proper solutions to reduce inefficient paper-based documents. Here is the list of documents that we examined;

- Customer Profile
- Customer registration forms
- Customer appointment forms
- Invoice and Receipts
- Customer ID cards
- Inventory files
- Sale and purchase record files
- Check-in and check-out from for per nursery

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2.5 Detailed result of systems study

From the study of the current system of Phaya Thai Pet Care by various methods as mentioned in the previous section, our system analysts have discovered that almost all activities in the store can be mainly divided into two subsystems; customer management subsystem and merchandise management subsystem.

(1) Customer Management Subsystem:

More or less, the majority of services provided by Phaya Thai Pet Care are involved with customers. As a matter of fact, the system initially interacts with customers since they enter the store either for a medical treatment, beauty & salon service, nursery service, or merchandise.

Activities: Here is summary activities related to customer

- A new customer fills in a registration form asking for owner and his/her pet information.
- A desk clerk issues a new customer ID card and files a registration form into a customer cabinet in which those forms are alphabetically sorted by owner name.
- For existing customers, when they visit to use any service of the company, their profiles will be extracted from the cabinet manually by a desk clerk.
- For regular customers or VIP customers who have profiles in the system, when they purchase any merchandise, they will receive a discount rate depending on their level of importance (e.g. VIP).

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- Frequently, pets will have appointments for a vaccine ejection, a scheduled physical examination, a surgery, etc. Currently, the veterinarian is responsible for scheduling these appointments with customers. Furthermore, the veterinary assistant also has a responsibility to remind the particular customer usually a couple weeks before a periodical vaccine ejection via a postcard and a couple days before another medical appointment via telephone.

Documents: Obviously, the document in this subsystem is a customer profile, which contains following details:

- Name of pet owner (customer)
- Contact information such as address and phone number
- A pet name
- A pet species and breed
- Other sex information like sex, birthday, birth mark, color, and age
- Level of customer and his/her discount rate
- Historical Medical records

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(2) Merchandise Management Subsystem:

In this subsystem, there are three groups of activities involved; sale, purchase, and stock or inventory management.

Activities:

- The existing selling system consists of a programmable cashing machine attached with a bar code reader. A customer usually makes a payment to a desk clerk at a cashier's counter. At the end of each day, two desk clerks has a responsibility to manually count all money received, cross check with a sales summary report generated by the cashing machine, and record the result into the transaction file.
- For any merchandise that dose not register into the machine, a desk clerk has to charge according to a price tag. Therefore, if there is no price tag, that item will lose an opportunity to be sold.
- The manager (company owner) is responsible for ordering medical supply and merchandise to sell as well as making payments to suppliers
- After orders are delivered by suppliers, a desk clerk is responsible for categorizing and updating those items into the inventory file.

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- A desk clerk also has a responsibility to register a bar code of a new product and its price into the cashing machine and also place a price tag on each individual piece of products.
- At the end of every month, two desk clerk and a general clerk together with the manager perform the approximate inventory inspection by comparing between the number of items manually counted and those in the inventory file.

Documents:

- A Daily Sale record file (MS excel spreadsheet)
- An inventory file (MS excel spreadsheet)
- Invoices from and purchase orders for suppliers
- Receipts for Customer

2.6 Current Problems:

According to the current system we have studied, we have found that there is some deficiencies in the existing subsystem processes. Which can be classifies as the following

(1) Customer Management Subsystem:

Deficiencies:

- Hard to search for the particular customer record: because occasionally, a pet is not brought to the clinic by its owner, moreover, a person who brings the pet does not does not bring an ID card and also does not know the first name of the owner. As a consequence, a desk clerk has to use other information such as a pet name or an address to search for

the record. Unfortunately, as mentioned earlier, all customer records are alphabetically sorted by owner names, thus a desk clerk has to sift through all files in the cabinet. This process definitely consumes a huge amount of time.

- Have many redundant records: due to the previous problem, if a desk clerk fails to retrieve an existing record of a pet, then a new record will be added to the system.
- Hard to retrieve an accurate discount rate: due to the fact that a discount rate is in a customer profile. Therefore, for each sale, it consumes an amount of time for a clerk to cross check the accurate discount rate for each customer. Therefore, in practice, a clerk trends to give a discount rate to only familiar customers.
- Hard to track a medical record: because of the inefficiency of searching and maintenance procedure, any loss or redundancy of a customer record is usually result in an inefficient and ineffective medical diagnosis and treatment
- Requires many cabinets to place paper-base documents
- Paper-base documents are vulnerable to external environment

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(2) Merchandise Management Subsystem:

Deficiencies:

- Hard to track both sale and purchase transactions: actually, it is unable to track an individual transaction
- Hard to manage inventory effectively and efficiently: since the inventory file is paper-based, it is hard to navigate or extract the inventory information especially for the particular product. Besides, it has many possibilities for human errors to occur.
- Occasionally, loss of opportunities to sell some merchandise because a desk clerk fails to determine accurate prices of products
- Human error in register prices of merchandise into the selling machine: consequently, it leads to sales below an actual selling price

Hard to produce aggregated report: either sales, purchasing or overall inventory reports

- Require many cabinets or places to keep paper-based documents:
- Paper-based documents are vulnerable to external environment:

All deficiencies of both subsystems potentially result in follow problems:

- Customer dissatisfaction: due to inaccurate charges for merchandise and service, delay in service, etc. This

problem will eventually leads to losses of customers and potential customers in the near future.

- Unpleasant work environment: due to numerous tedious and time- consuming tasks, employees tend to be unhappy.
- Over stock of merchandise: because of the poor inventory system and lack of a analysis tool
- Sale and inventory fraud: by either employees or suppliers

To enhance these business processes as well as to prevent potential problems, Phaya Thai Pet Care should utilize the computer-based system to facilitate the management of customer, sales, and inventory activities. This system should not only improve the efficiency of current business processes, but should also be capable of conducting further analyses from historical transaction data. In the next section, we will discuss alternatives that will help Phaya Thai Pet Care to achieve these goals.

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2.7 Area for improvement

According to the problems that we studied from the current system, we suggest the new solution to the users. The new system should have features as described below.

(1) The new system should provide a function to view product information.

(2) The actual amount of product in the stock room must be synchronized with the amount value in the system.

(3) The new system must keep the incoming and outgoing transactions.

(4) The system should provide the report generator function.

(5) The system will be implemented to support concurrent accesses from the users.

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III. THE PROPOSED SYSTEM

3.1 System Specification

In order to improve the efficiency and effectiveness of business processes, to overcome present deficiencies, and to prevent potential problems stated in the previous section, our system analysts suggest three solutions as alternatives for Phaya Thai Pet Care. Each of them has different advantages and disadvantages, consumes the different amount of resources (cost), as well as provides different levels of benefits. Each approach is discussed in detail below.

(1) Reengineering the System

System Overview:

From the perspective of cost, the most appropriate approach at the lowest cost is to reengineer the current system by performing following steps:

(1.1) Initially, revise all customer profiles of existing customers in order to eliminate the redundant documents.

(1.2) Second, import all customer profiles from paper-based documents into MS Access format as the customer database. MS Access will facilitate search procedure to be faster and more convenient.

(1.3) Repeat the first and second steps with inventory files.

(1.4) For a new customer or merchandise, a clerk has to add, delete, or update these databases instead of paper documents

(1.5) Finally, define the standard procedure for all activities and formally document them as work procedures

Before implement these activities, the company owner must conduct following l actions first:

(1.1) Purchase MS Access software and license.

(1.2) Send a desk clerk or another employee to train MS Access user course

(1.3) Schedule specific time and date as well as assign specific employees for document 's revision

(2) Customize Computer-based Information

The next approach that we would like to offer for your consideration is to implement a web-based application to substitute major parts of the present paper-based system. The new system will be developed specifically for Phaya Thai Pet Care work environment based on the result of the system study and new requirements. Here is the overview of the system characteristics.

System Feature:

(2.1) Customer Management Module

(2.2) Sale Management Module

(2.3) Purchase Management Module

(2.4) Inventory Management Module

(2.5) Accounting and General Ledger Management Module

(2.6) Report generator module which can be viewed in different formats.

(2.7) Appointment Management Module

(2.8) Report Generator Module

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System Specification:

(2.1) Mainly developed with PHP and MySQL as a web-based application

(2.2) The system can be run and compatible with both MS Windows and Linux operating systems.

(3) Small Enterprise Resource Planning System

The last approach and the highest one in term of cost is to replace the current customer management subsystem mentioned in section 4.1 with Customer Relationship Management such as IBM Siebel and Microsoft CRM as well as to replace the inventory management subsystem in section 4.2 with commercial ERP system from Oracle or PeopleSoft. Both applications are designed to fully and completely support almost all functionalities related to customers and business activities.

Main Feature of SERP system

This application consists of the several subsystems as below:

(1.1) Customer Management Module

- Add/delete customers
- Update Customer Information

(1.2) Sale Management Module

- Add/Delete Sale Entries
- Generate Sale Receipts
- Queries Sales Entries

(1.3) Purchase Management Module

- Add/Delete Purchase Order Entries
- Add/ Delete Supplier Information
- Update Supplier Information
- Query Purchase Order Entries

(1.4) Inventory Management Module

- Add/Delete/Update items
- Add/Delete/Update item categories
- Add/Delete/Update Sale pricing
- Adjust Inventory
- Query Inventory Movement
- Query Inventory Status

(1.5) Appointment Management Module

- Add/Delete/Update Appointment
- Reminder of Appointment

(1.6) Report Generator Module

- Inventory Status Report
- Sale Report
- Purchase Report

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3.2 System Design

After the proposal of the system analyst's recommendation, the Small Enterprise Resource Planning System, was approved by Phaya Thai Pet Care, our system analysts together with our system developers and programmers starting to design the new system based on the detailed result of the system study as well as additional requirements from the company. In this chapter, we will demonstrate and describe outcomes of both logical design and physical design ranging from the data flow diagram of both the current system and the SERP system, the database design, the form and dialog design to the report design.

In this phase, the system requirements are determined and transformed into some kinds of diagrams that are easy to convert to working program. We divide this phase into many sub-phases as follows.

(1) Designing data flow diagrams

(2) Process Specification

(3) Designing E-R diagrams

(4) Designing relational databases

(5) Data Dictionary

(6) Interface design

(7) Structure Chart

3.2.1 Data Flow Diagram

As mentioned before, the current system of Phaya Thai Pet Care can be divided into 2 subsystems; the customer management subsystem and the inventory management subsystem. The following figure illustrates the level-0 data flow diagram (DFD) of the current system.

Designing DFD in this phase is a bit different from the previous one in that it focuses in specifications of a new system. Here, we attach a level-0 diagram for the readers to get an overview of our system.

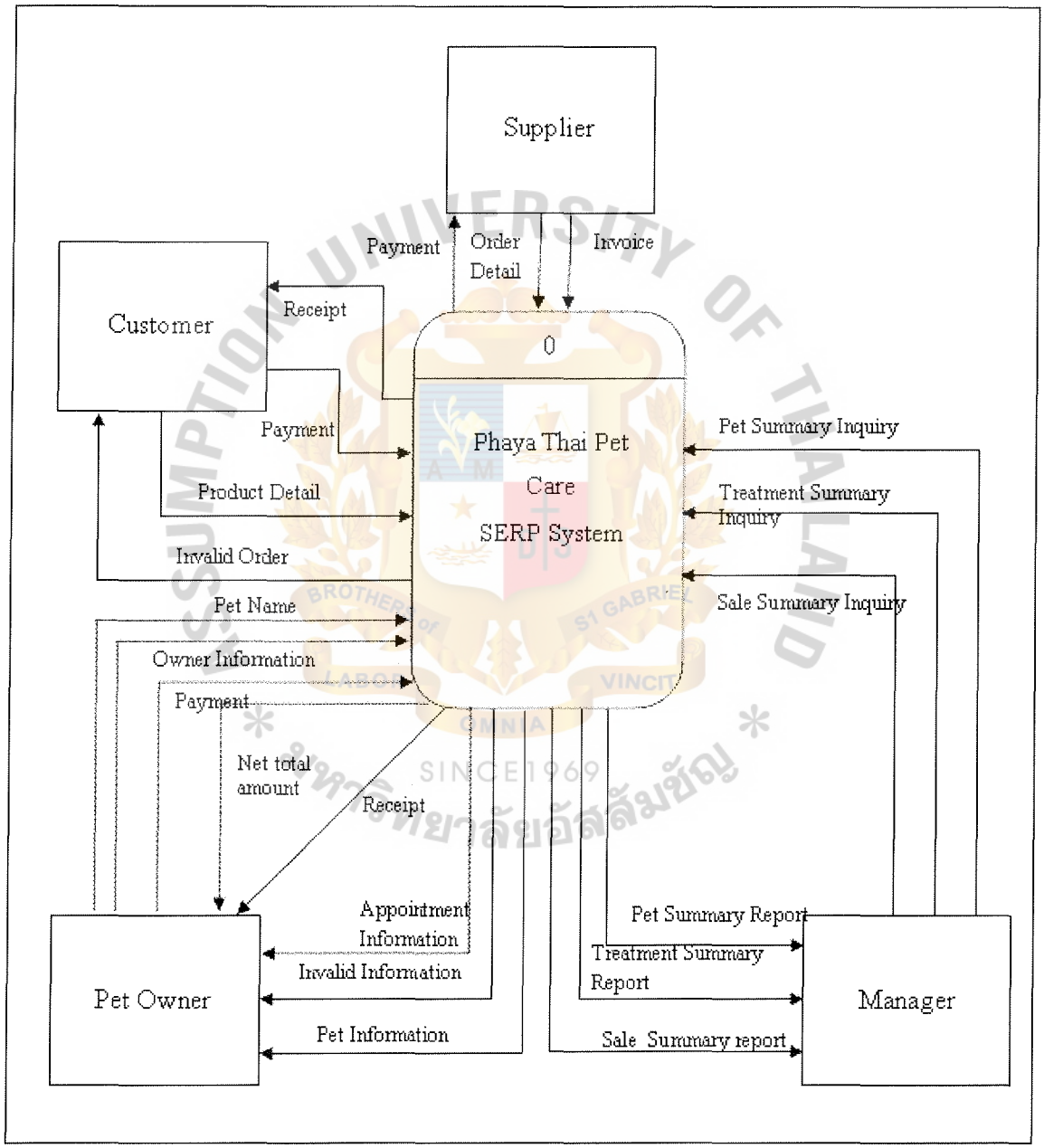

Figure 3.1. Context Diagram for Phaya Thai Pet Care SERP System

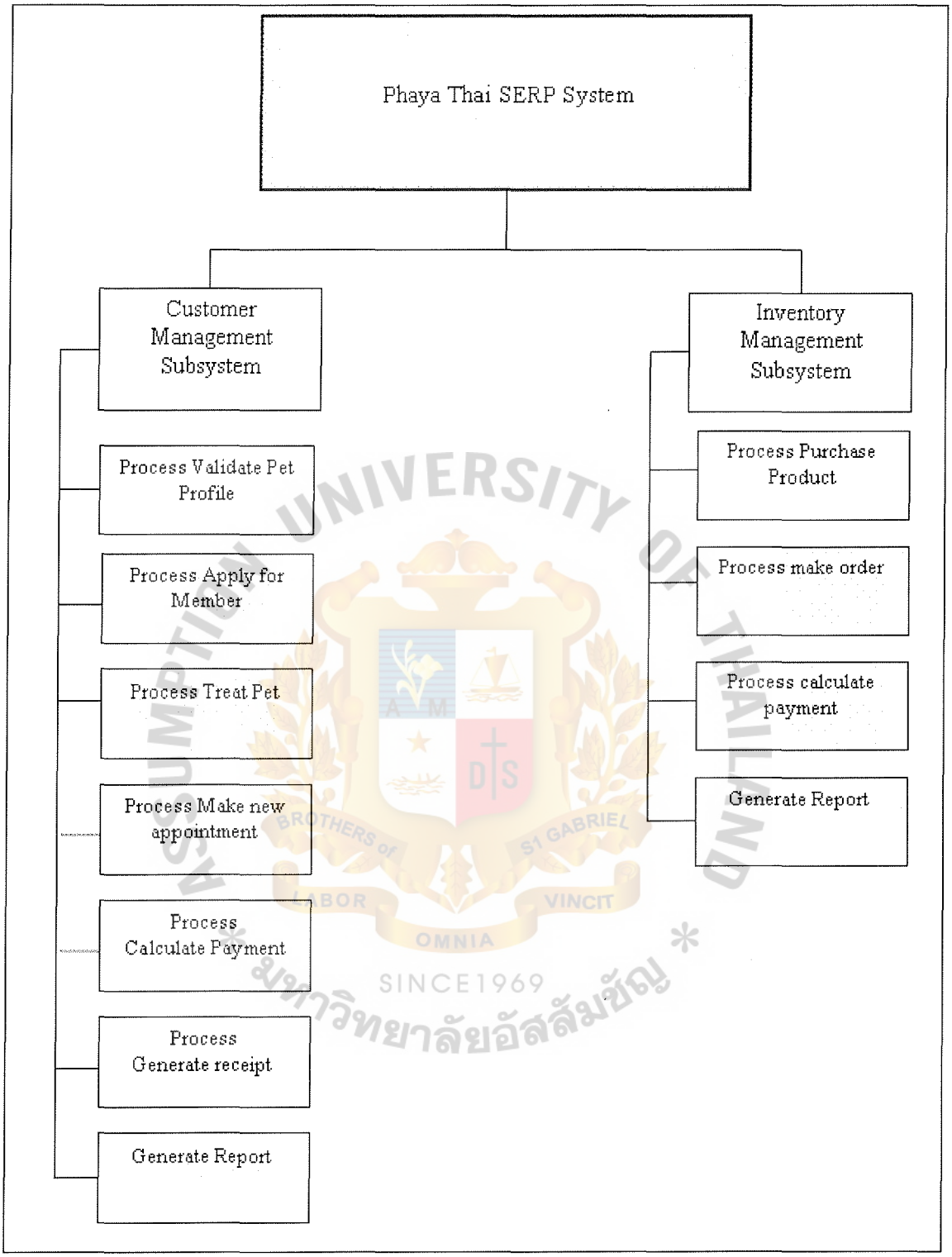

Figure 3.2. Functional Decomposition Diagram of Phaya Thai Pet Care SERP system

Explanation of Data Flow Diagram (Level 0)

The new system of Phaya Thai Pet Care Small Enterprise Resource Planning System (SERP) can be illustrated by the level-0 data flow diagram (DFD). We can see that the Phaya Thai Pet Care Small Enterprise Resource Planning System (SERP) composes of 10 major work processes.

For source/sink of the current system, there are four external entities interacting with the current system.

Customer / Pet Owner

Customer and Pet Owner may be the same person but has the different role in the system. Customer be the one who come into the system in order to purchase the products and services from the system, but pet owner are the one who own they pet and come to the system in order to treat them.

Pet Owner mainly interact directly to the system via the process Validate Pet Profile (process 1.0), Process Apply for member (process 2.0), Process Make new appointment (process 4.0) and finally for the process generate receipt (process 6.0). Customers mainly interact with the current system through the process of buying product and merchandise (process 7.0).

Doctor

Similar to the customer, the doctor or veterinarian interacts with the current system at the process of making appointment.

Supplier

Opposite to customers, suppliers usually interact with the current system at the process of make order (Process 9.0). Suppliers will provide invoice and supplier info to the system while receive purchases order and payment from the system.

Manager

Manager usually interacts with the current system at the process of Generate Report (Process 10.0). Manager will request for the various report from the system for decision making purpose

3.2.2 Process Specification

Process Specification helps to define what the system must do to transform inputs to outputs. It provides the details of system processes in table format, which is easier to look at all related input, output, and relevant process than in a diagram as shown in APPENDIX E.

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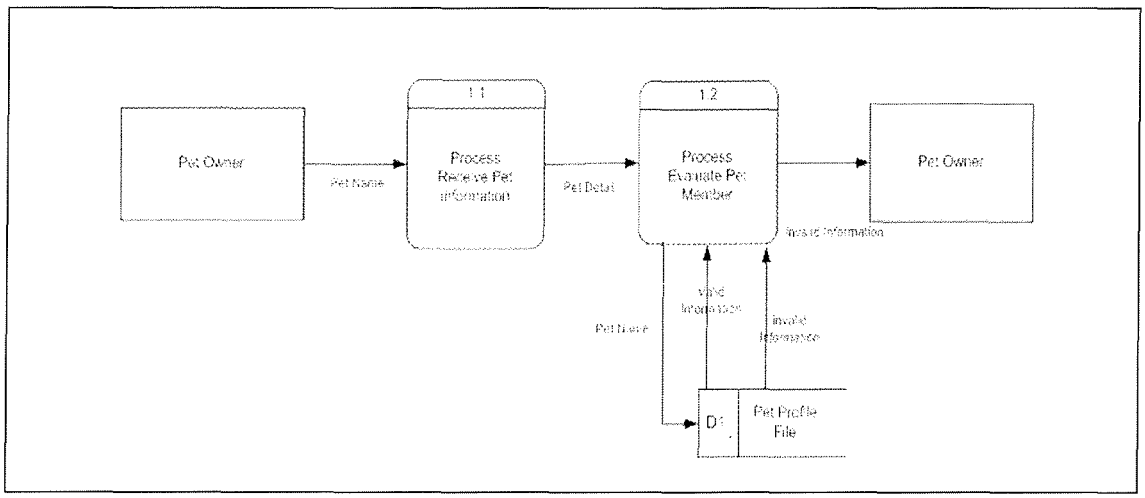

Figure 3.3. Data Flow Diagram Level1 of Process Validate Pet Profile of the Proposed System.

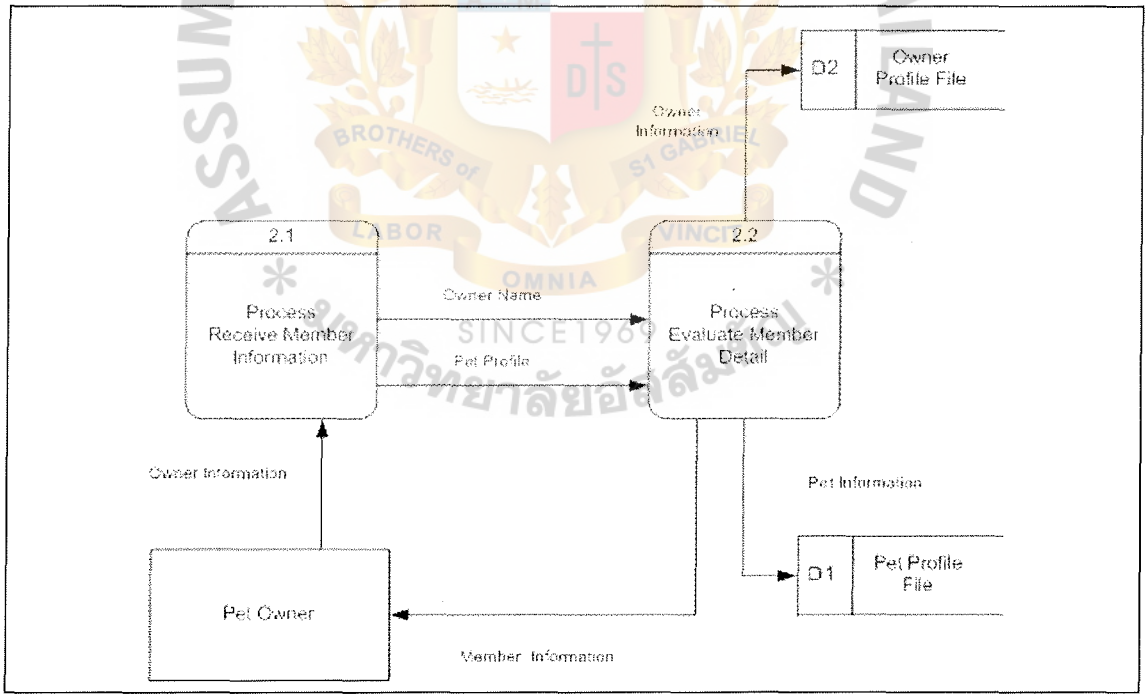

Figure 3.4. Data Flow Diagram Level2 of Process Apply for Member of the Proposed System.

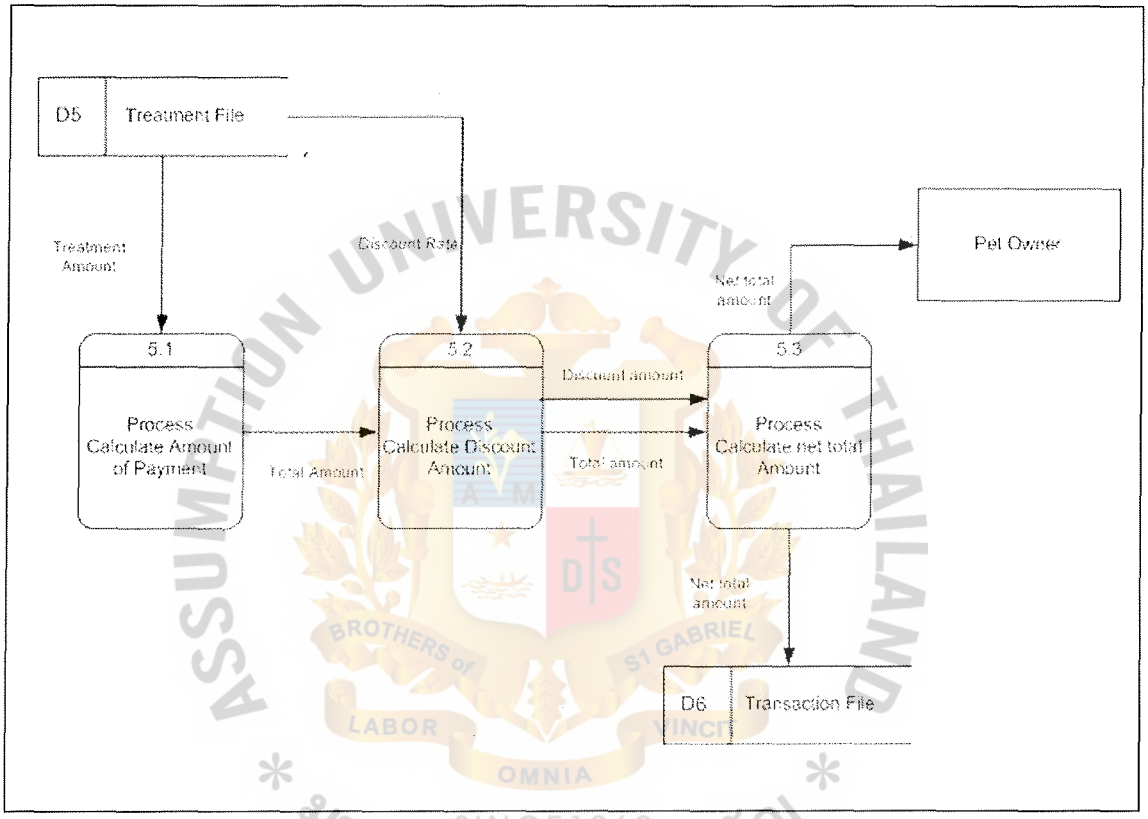

Figure 3.5. Data Flow Diagram Level5 of Process Calculate Payment of the Proposed System.

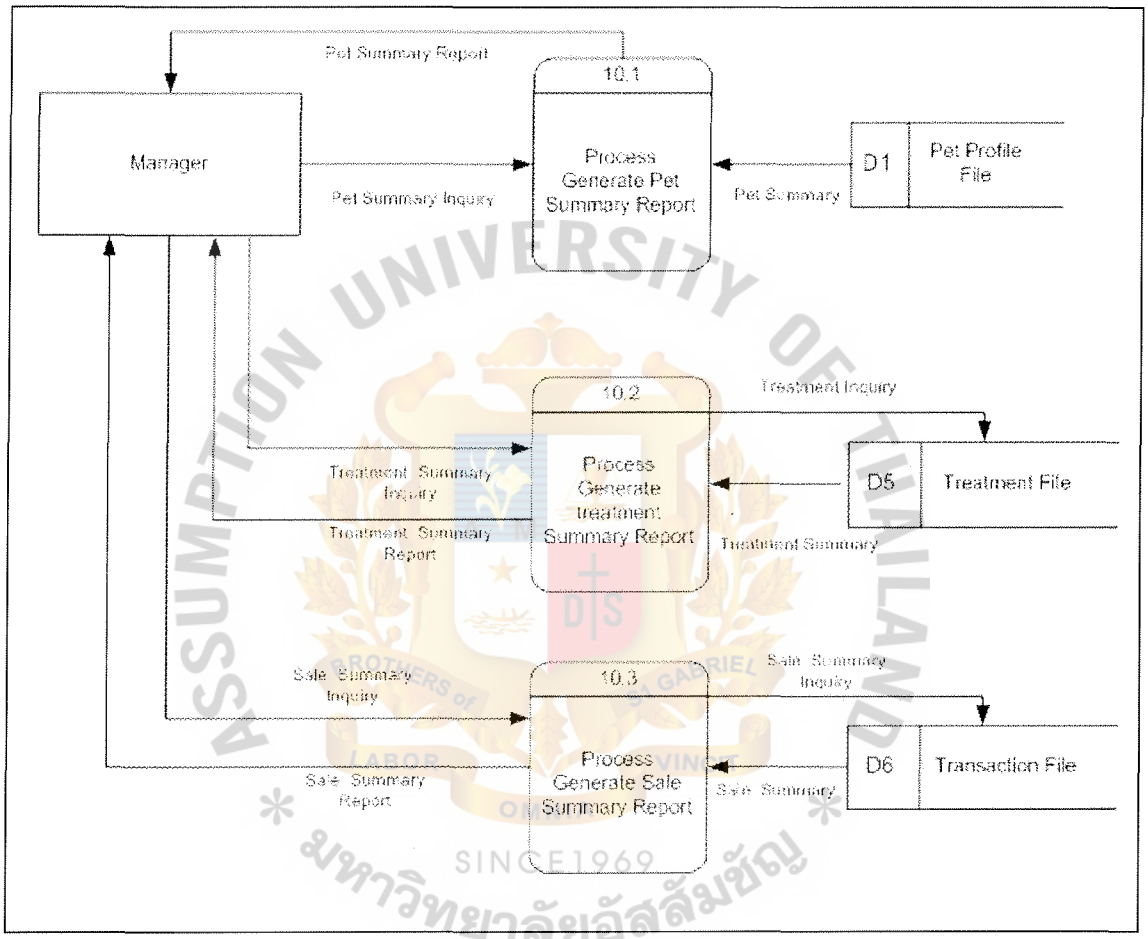

Figure 3.6. Data Flow Diagram Level10 of Process Generate Report of the Proposed System.

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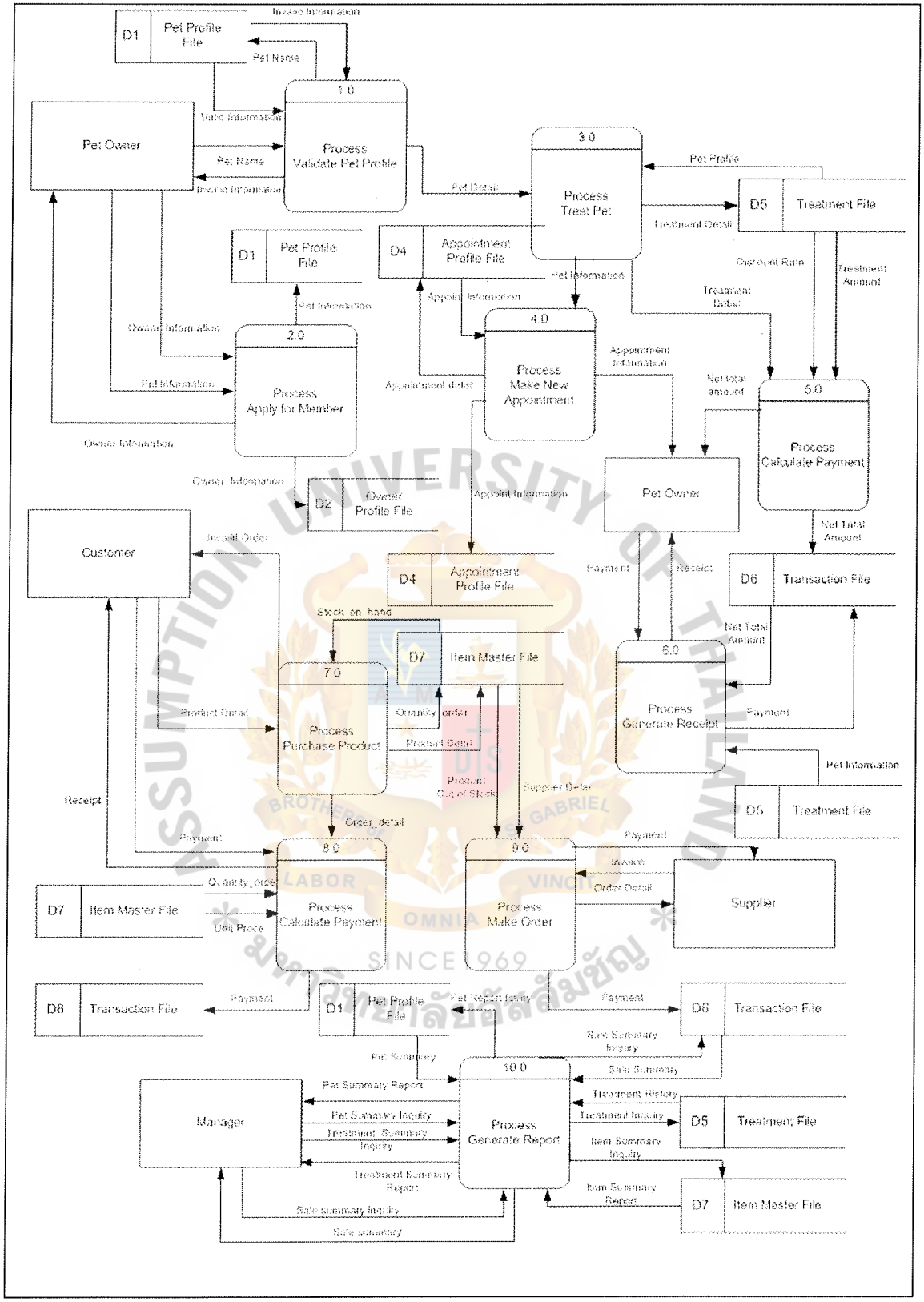

Figure 3.7. Data Flow Diagram Level 0 of Phaya Thai Pet Care SERP System.

3.2.3 Entity Relationship Diagrams

The following detail describes each table separately. The details include table name, its primary keys and foreign keys, and corresponding component in E-R diagram (note that actual tables might correspond to the relationship).

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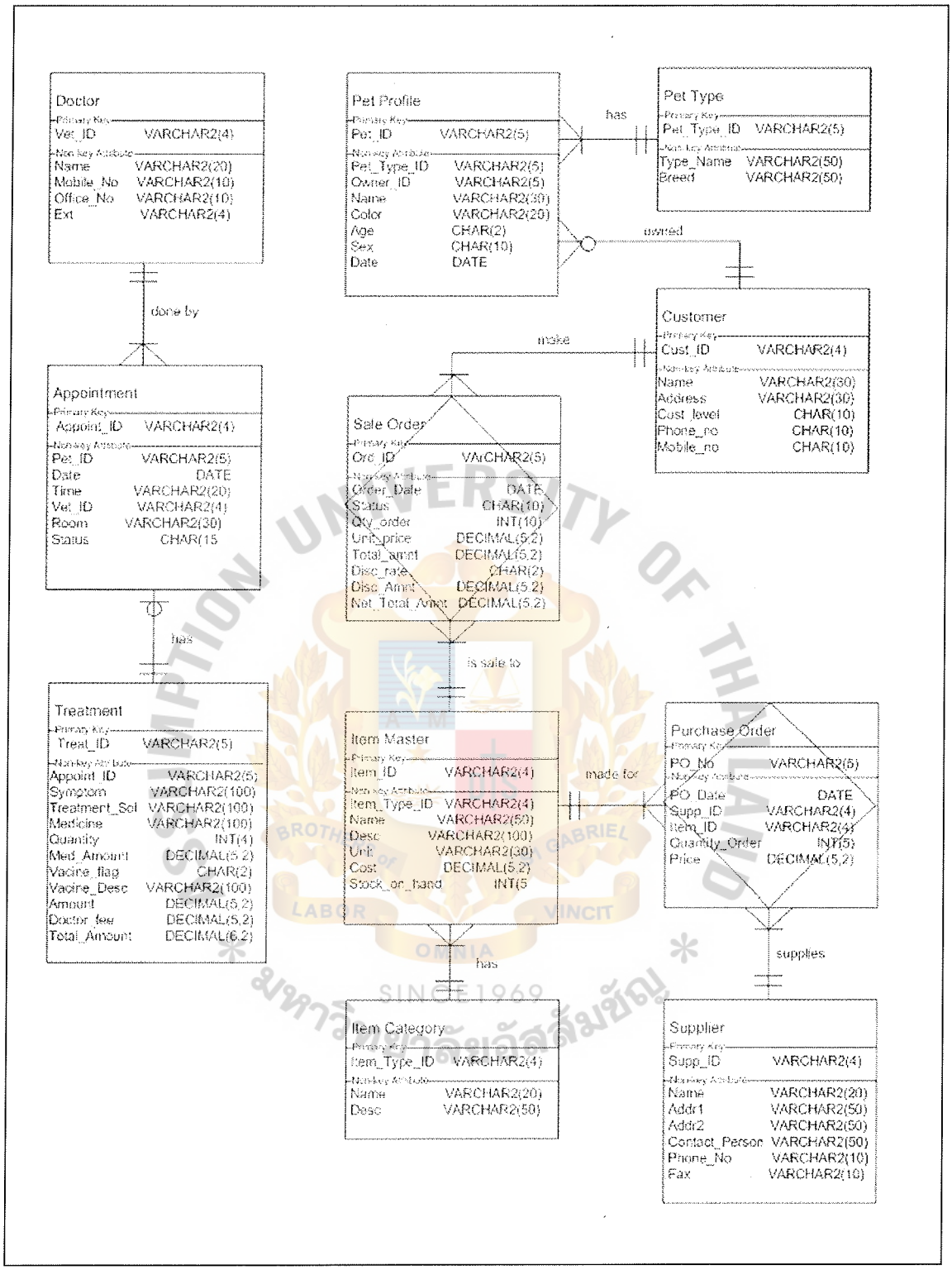

Figure 3.8. Entity Relationship Diagram for Phaya Thai Pet Care SERP System

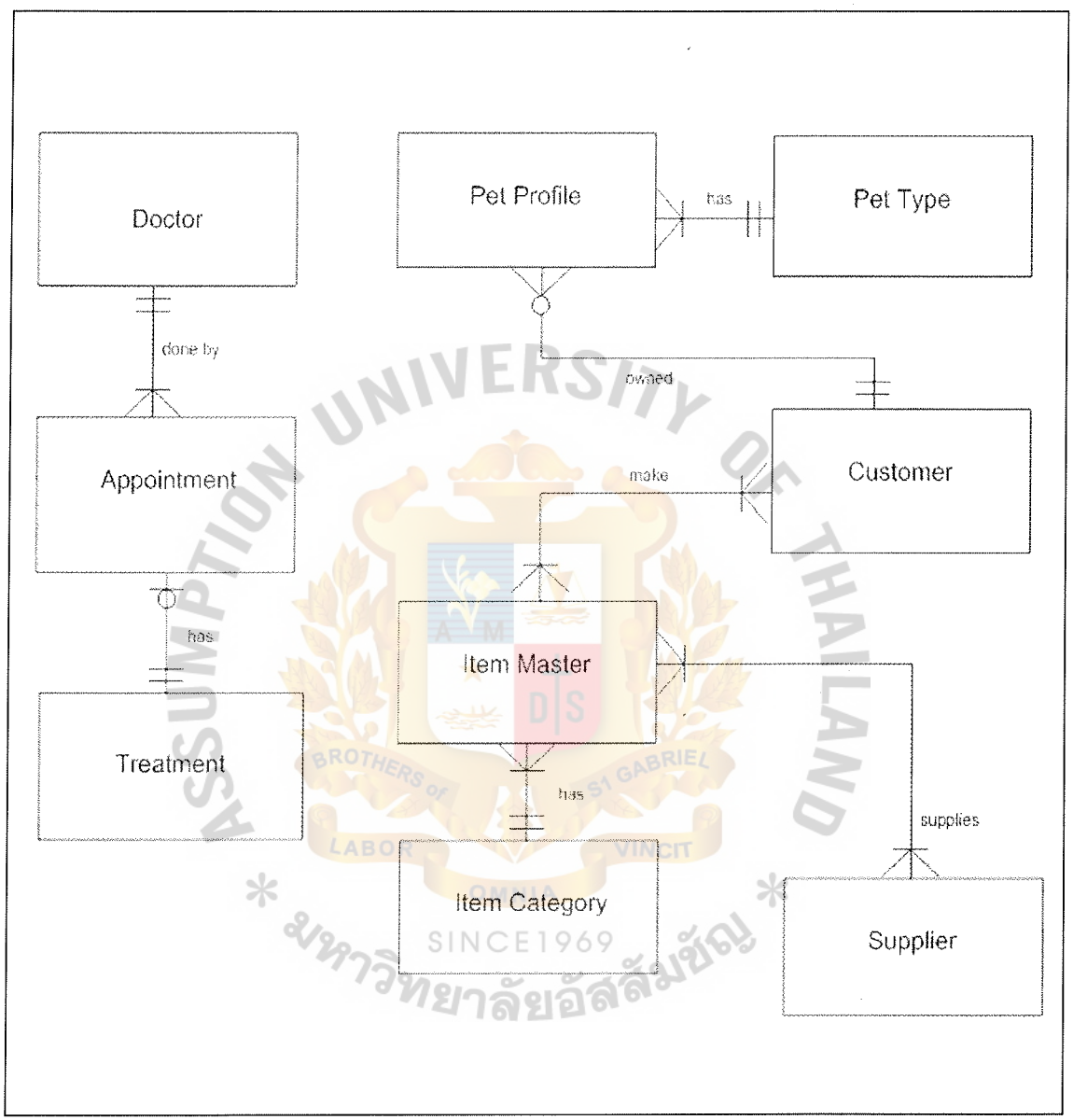

Figure 3.9. Context Data Model for Phaya Thai Pet Care SERP System

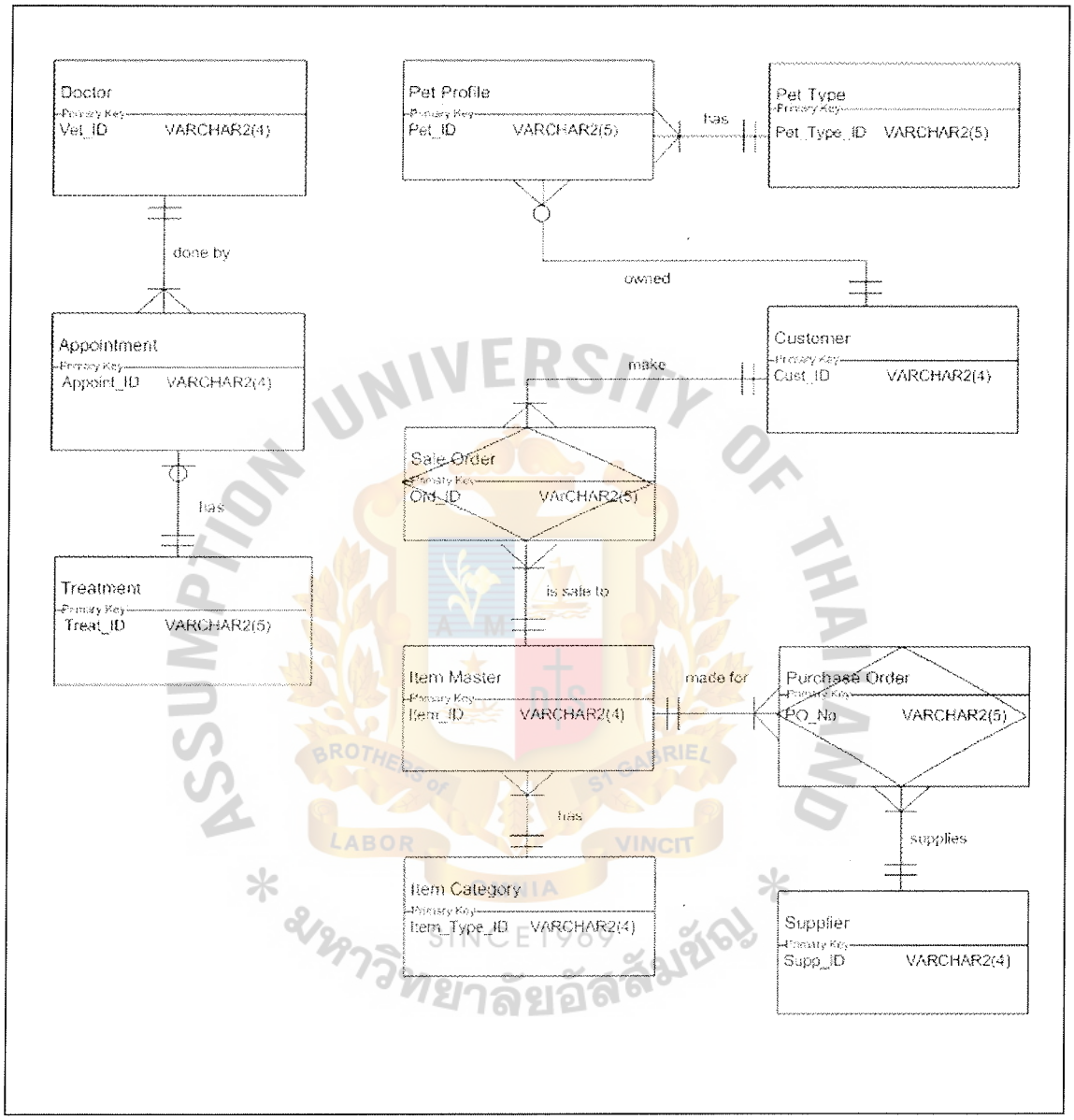

Figure 3.10. Key-based Data Model For Phaya Thai Pet Care SERP System

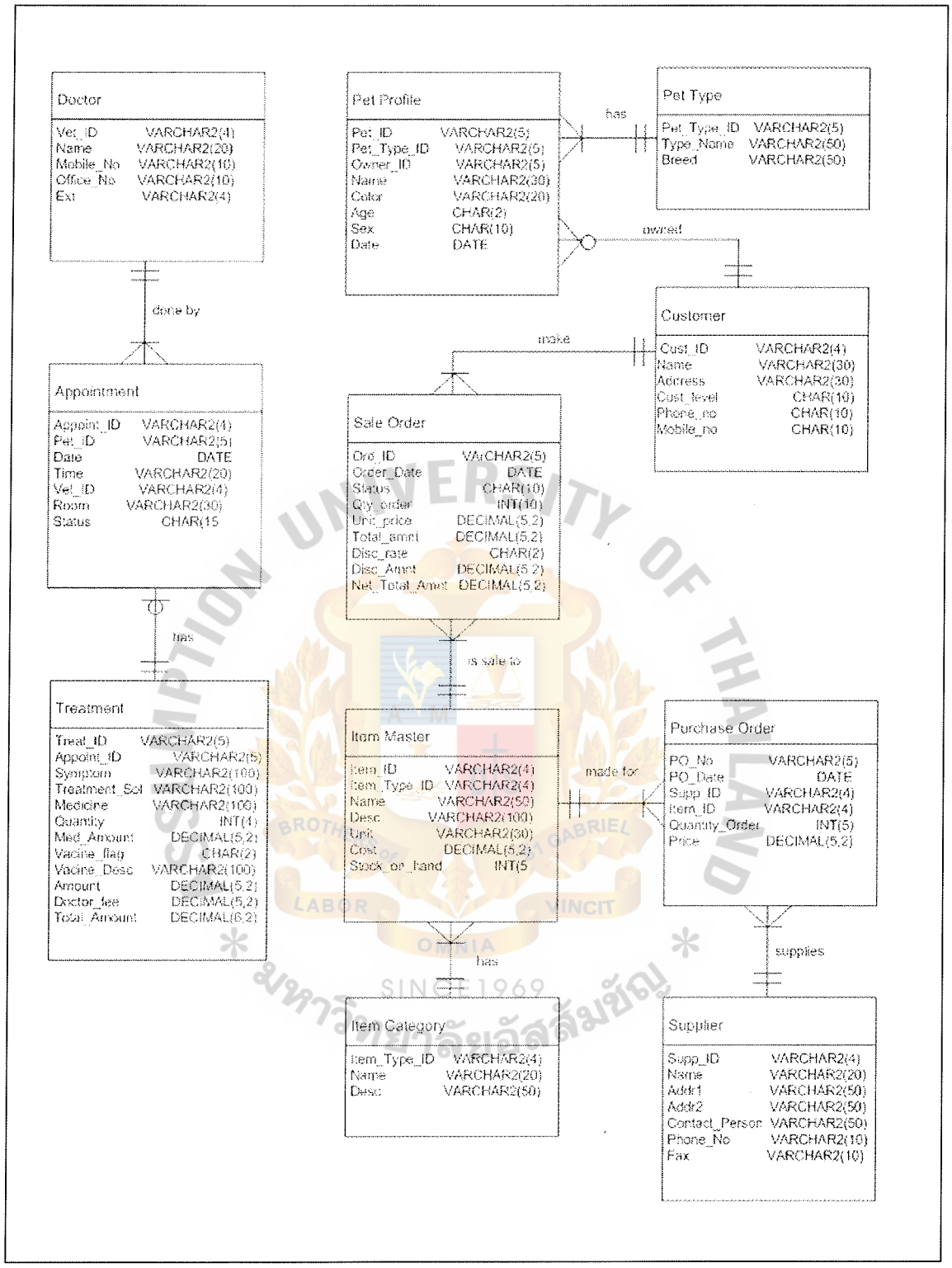

Figure 3.11. Fully Attribute Data Model for Phaya Thai Pet Care SERP System

3.2.5 Data Dictionary

To support system design, data dictionary provides a list of term and definition for all data items and data stores with the developed system. The data dictionary is shown in APPENDIX C.

3.2.6 Interface Design

The user interface designs are the design of the interface screens for the proposed system. The user interface designs are represented in APPENDIX A.

3.3 Hardware and Software requirement

Since the SERP system is the web-based application. The system requires both server and client workstation. Even though, in practice, both client and server can operate within the same computers, we will be addressed them separately.

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SERP Server: Hardware Specification

For the server of the Small Enterprise Resource Planning System. Here is a minimum requirement.

Table 3.1. The Hardware Specification

Hardware	Specification
CPU	Pentium IV processor with 1.5 MHz or equivalent processors
Cache	80 GB or higher
Memory	Memory 512 MB
Hard Disk	Disk space 30 GB (for OS and estimated two years transaction data)
CD-ROM Drive	32x or higher
Floppy Drive	1.44 MB
Network Adapter	Ethernet 10/100 Base-T
Display Adapter	SVGA Cards
Display Monitor	17" Monitor
UPS	1000 VA or higher
Printer	Laser and Dot Matrix

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Software Specification

For the Software of the Small Enterprise Resource Planning System. Here is a minimum requirement.

Table 3.2. The Software Specification for the Database Sever.

Software	Specification
Operating System	Linux Red Hat 9.0 or Microsoft window XP/2000
Database Management System	MySQL 4.0 is preferable
Web Server	For Linux Red Hat 9.0 packages the Apache web server will be included. Apart from this, you can select several web server application such as Apache and Microsoft IIS
PHP4	The web server must be compatible with PHP technology
Web Application	Microsoft Internet Explorer (IE) 6.0 or higher Netscape Navigator 6.0 or higher
Application Software	JSP Package Antivirus Program

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SERP Workstation: Hardware Specification

For the Software of the Small Enterprise Resource Planning System. Here is a minimum requirement.

Table 3.3. The Hardware Specification for the SERP Workstation.

Hardware	Specification
CPU	Pentium IV processor with with 800 MHz or equivalent processors
Memory	Memory 128 MB
Hard Disk	Disk space 10 GB for OS
CD-ROM Drive	32x or higher
Floppy Drive	1.44 MB
Network Adapter	Ethernet 10/100 Base-T
Display Adapter	SVGA Cards
Display Monitor	17" Monitor
Printer	Laser and Dot Matrix

3.4 Security and Control

Security

Security is an attribute of information systems that includes specific policy-based mechanisms and assurances for protecting the confidentiality and integrity of information, the availability and functionality of critical services, and the privacy of individuals.

Mostly, information system must have security system to protect essential information in every transaction. Therefore, security is 'the quality or state of being

secure – to be free from danger.' In other words, building protection against hacker or thieves – from those who would do harm, intentionally or otherwise.

The following section sets general policy regarding the security, availability, privacy, and integrity of its information systems, networks, and data. It stipulates specific policies for monitoring computing resources, managing electronic data and records, and controlling access to computing resources. In addition, it outlines minimum standards and practices for systems and network security.

System Security:

To protect the availability and integrity of Phaya Thai Pet Care SERP system, all computing systems and servers hosted on the networks should comply with the following systems security measures and practices:

1. Operating systems and applications must be maintained with the timely application of all related vendor-issued patches necessary to prevent the systems from being compromised and/or causing disruptions of network services and/or other systems.
2. Externally accessible systems must install antivirus software and maintain procedures for regular signature updates.
3. Shared systems are required to have a technical access control mechanism that allows authorization and allocation of system and data resources to individual users.
4. Procedures must be maintained for regular backup of all data and system files necessary for discovery and recovery purposes. All backup media should be stored properly in a location authorized by the data owner with

protections that allow access to the data by authorized personnel only. The ability to recover data from backups should be tested regularly.

5. Encryption capabilities (the ability to turn readable text into unreadable cipher text) must be used for systems that send or receive personally identifiable information that is transmitted over open networks like the Internet or Intranet over networks.

Network Security:

To protect the security, availability, and integrity of network resources, all computing systems and servers hosted on Phaya Thai Pet Care networks should comply with the following security measures and practices:

1. Support proactive vulnerability probing and reporting by technicians to help manage system security needs
2. Use secure protocols (e.g., SSL/SSH/Kerberos) for accessing all services that require authentication.

Physical Security:

Physical security measures are an important part of any effort to protect information system assets and services. As with logical security, the physical security measures required for protecting Phaya Thai Pet Care resources must be commensurate with the nature and degree of criticality of the computer systems, network resources, and data involved. The following physical security measures and objectives should be implemented where applicable to protect Phaya Thai Pet Care computing and network assets and sensitive information:

1. Physical access control measures sufficient to prevent Phaya Thai Pet Care assets from unnecessary and unauthorized access, use, misuse, vandalism, or theft.

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2. Computer rooms and telecommunications closets located away from heavy traffic patterns and not advertised.
3. Certified smoke and fire-alarm and fire-suppression systems for data centers, server rooms, telecommunication closets, and vaults to mitigate potential damage to Phaya Thai Pet Care assets in the event of a fire.
4. Environmental control measures (e.g., power supply, heating, ventilation, air conditioning, plumbing, and physical location) sufficient to protect Phaya That Pet Care assets from preventable service disruptions or harm.
5. Secured off-site data/media storage and procedures that meet all archival, backup, and recovery needs for Phaya Thai Pet Care computing and network operations.

Control

Control designed to defend systems are either preventive or detective.

Access Control:

Access control measures required for establishing users' access to any Phaya Thai Pet Care resources should be commensurate with the functional nature and degree of criticality of the computer systems, network resources, and data involved. All system owners, operators, and system users are responsible for ensuring that their systems are properly protected with appropriate access control measures based on the criticality of their systems and the data involved. In addition, all computing systems hosted on Phaya Thai Pet Care networks must support and comply with the following fundamental access control measures, functions, and operating principles:

1. Systems are required to have an access control mechanism that allows for an appropriate level of authorization and allocation of system and data resources to individual users. Access mechanisms can be physical, transaction-based, role-

based, time-based, user-based, or use any other reasonable control method appropriate for the systems' functions.

2. Shared systems are required to have the capability to log basic information about user access activity and to create historical logs and access violation reports.
3. Users' system access must be based on their and their activities
4. Computer applications must be developed and integrated in a way that maintains individual user accountability and audit capability.
5. Documented procedures should be in place for issuing, altering, and revoking access privileges on systems.

3.5 Database Design

The Database design shows the table name and shows which attributed name is the primary key or the constraint. Each table has the element name attribute name and the column names. Element that fall into each table or that regularly combines with several other elements in many structures. It should be placed together into structure record. Database Designs are shown in APPENDIX D

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3.6 Network Requirement

The proposed system is set up network within the company. It speeds the business operation and reduces the cost of paperwork of the company. Some information are sent through intranet and internet. The network configuration is shown in Figure 3.8

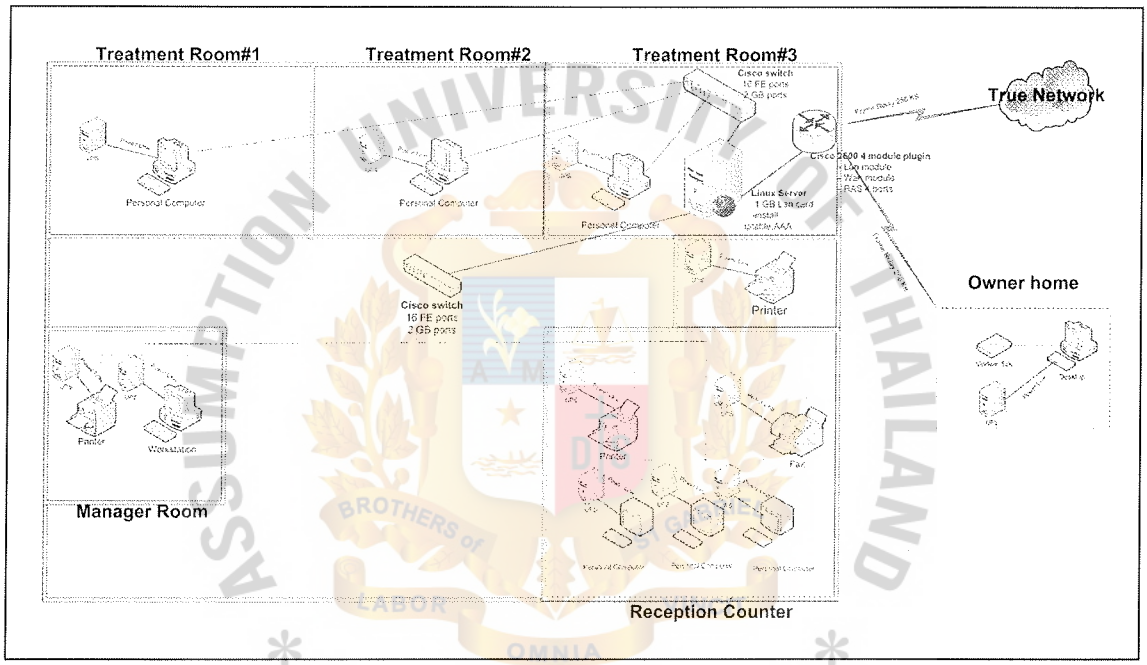

Figure 3.12. Network Configuration for Phaya Thai Pet Care SERP System

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3.7 Cost and Benefit Analysis

The cost and benefit is considered to compare between the existing system (manual system) and proposed system (computerized system). Cost and benefit analysis will be applied to determine whether the project will be continued or terminated.

(1) The cost of Manual System:

The most of existing system is operated manually and incurs both fixed cost and annual operating cost. For fixed cost, there is only office equipment and operating cost it includes salary cost, office supplies and miscellaneous cost. The office equipment that our team used in their operation is calculators for calculating all cost that occur in the process and typewriters for doing the report. The details of the existing system cost are summarized on Table 3.5.

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Table 3.4. Manual System Cost Analysis, Baht.

Cost Items		Years				
		1	2	3	4	5
Fixed Cost (Head Office)						
Computer	3 units @ 20,000	60,000	-	-	-	-
Printer	2 units @ 8,000	16,000	-	-	-	-
Calculator	6 units @ 2,000	12,000	-	-	-	-
Maintenance cost		-	5,000	7,000	10,000	12,000
Total Fixed Cost		98,000	5,000	7,000	10,000	
Operating Cost						12,000
Salary Cost:						
General Manager	1 person @ 70,000	70,000	77,000	87,120	93,170	
Doctor	3 persons@ 50,000	150,000	165,000	181,500	199,650	102,487
Staffs	6 persons @ 12,000	72,000	79,200	87,120	95,832	219,615
Total monthly salary Cost		292,000	321,200	355,740	388,652	
Total annual salary Cost		3,504,000	3,854,400	4,268,880	4,663,824	105,414
Office Supplies & Miscellaneous Cost:						427,516
Stationary	Per Annual	50,000	53,000	55,000	57,000	5,130,192
Paper	Per Annual	150,000	155,000	160,000	165,000	
Utility	Per Annual	20,000	22,500	25,000	27,500	60,000
Miscellaneous	Per Annual	30,000	30,000	30,000	30,000	170,000
Total Annual Office Supplies &		250,000	260,500	270,000	279,500	30,000
Total Annual Operating Cost		3,754,000	4,114,900	4,538,880	4,943,324	30,000
						290,000
						5,420,192
Total Manual System Cost		3,852,000	4,119,900	4,545,880	4,953,324	5,432,192

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Table 3.5. Five Years Accumulate Manual System Cost, Baht.

Year	Total Manual Cost (Baht)	Accumulated Cost (Baht)
1	3,852,000	3,852,000
2	4,119,900	7,971,900
3	4,545,880	12,517,780
4	4,953,324	17,471,104
5	5,432,192	22,424,428
Total	22,424,428	-

(2) Cost of Computerized system:

After implementation the computerized system in the organization, below is the forecast cost of the computerized system that we have to invest in the organization. The cost of the computerized system will be high in the first year of implementation because of the computer system investment but we can reduce the staff who work in each division as the computer system will help the staff can do the work more efficient. The details of the proposed system cost are summarized on Table 3.6.

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Table 3.6. Computerized System Cost Analysis, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost (HO + Branches)					
Hardware Cost :					
Computer Server Cost	400 ,000	-	-	-	-
Workstation Cost 4 units@20, 000	80,000	-	-	-	-
Laser Printer 2 units@ 5, 000	10,000	-	-	-	-
Total Hardware Cost	490,000	-	-	-	-
Maintenance Cost :					
Total Maintenance Cost		-	10,000	10,000	10,000
Software Cost :					
Window Server 2003	220,000	-	-	-	-
Window XP Pro	150,000	-	-	-	-
Software Package	500,000	-	-	-	-
Network Cost	80,000	-	-	-	-
Total Software Cost	950,000	-	-	-	-
Implementation Cost :					
Basic Training Cost	100,000				
Set up Cost	50,000				
Total Implementation Cost	150,000				
Total Fixed Cost (Baht)	1,590,000	-	10,000	10,000	10,000
Operating Cost					
Salary Cost:					
General Manager 1 person @ 50,000	70,000	77,000	87,120	93,170	102,487
Doctor 3 persons @ 50,000	150,000	155,000	160,000	165,000	170,000
Staff 4 persons @ 10,000	40,000	44,000	48,000	52,000	56,000
Total monthly salary Cost	260,000	276,000	295,120	310,170	328,487
Total annual salary Cost	3,120,000	3,312,600	3,541,440	3,722,040	3,941,844
Office Supplies & Miscellaneous Cost					
Stationary Per Annual	20,000	20,000	20,000	20,000	20,000
Paper Per Annual	10,000	10,000	10,000	10,000	10,000
Utility Per Annual	10,000	10,000	10,000	10,000	10,000
Miscellaneous Per Annual	5,000	5,000	5,000	5,000	5,000
Total Annual Office Supplies & Miscellaneous Cost	55,000	55,000	55,000	55,000	55,000
Total Annual Operating Cost	3,175,000	3,367,600	3,596,440	3,777,040	3,996,844
Total Computerized System Cost	4,765,000	3,367,600	3,606,440	3,787,040	4,096,844

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Table 3.7. Five Years Accumulated Computerized Costs, Baht.

Year	Total Computerized Cost	Accumulated Cost
1	4,765,000	4,765,000
2	3,367,600	8,132,600
3	3,606,440	11,739,040
4	3,787,040	15,526,080
5	4,096,844	19,622,924
Total	19,622,924	-

(3) The comparison between computerized system cost and manual system cost.

In comparing the cost of manual system and computerized system, below are the comparison cost and the graphic display with the break even point.

Table 3.8. The Comparison of the System Costs, Baht.

Year	Accumulated Manual Cost	Accumulated Computerize Cost
1	3,852,000	4,765,000
2	7,971,900	8,132,600
3	12,517,780	11,739,040
4	17,471,104	15,526,080
5	22,424,428	19,622,924

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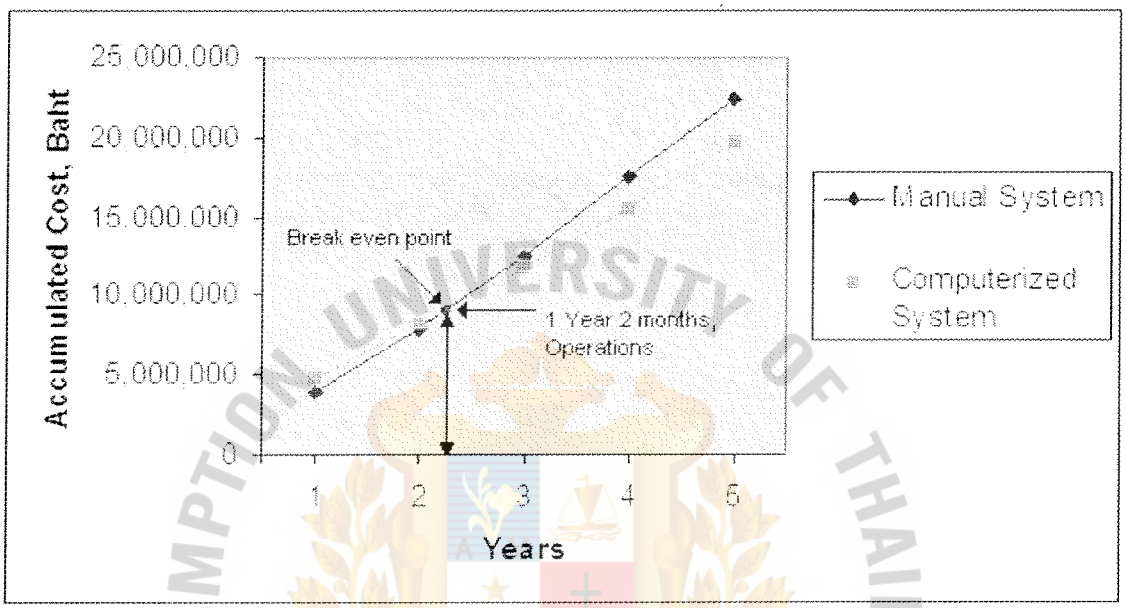

Figure 3.13. Cost Comparison between the Manual and Computerized System.

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IV. PROJECT IMPLEMENTATION

After intensively conducting analysis and design, the explicit design specification of the project had been delivered. To successfully implement that design specification on time and within budget, the appropriate implementation approach is a must. As a consequence, our system analysts examined all feasible approaches generally used for Information system project implementation. In this chapter, the development approach that we use will be described.

4.1 Overview of Project Implementation

The system implementation is the planned and orderly conversion from an existing system to the proposed system. The final design should be evaluated first to make sure that the proposed system can meet the objectives and goals, and then other remaining processes will be performed. It can be classified into 7 categories.

(1) Hardware and software acquisitions

(2) Test plan and results.

(3) System testing

(4) User acceptance test

(5) Installation

(6) Conversion

(7) Training

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4.2 Hardware and Software Acquisitions

The proposed system must use newly purchased hardware and software following the specification requirement. The hardware and software should have a guarantee for at least 1 years and 1 year for customer service from the vendor.

4.3 System Testing

The purpose is to validate all programs, input-output, procedures and the database. All programs are tested altogether with the hardware and software. The testing with test data and live data is necessary. Live data are actual data that have already been processed through the existing service system. Testing and modifications will continued until the project team and user are satisfied with the result of the test.

4.4 User Acceptance Test

The User Acceptance Test is a process that makes sure the programs are correctly run by checking the result. The users are allowed to submit their test cases to verify the effectiveness of the system. All the bugs should be eliminated. The staff should be able to manage all system components smoothly. This test is to get the users' approval and they can examine and test the operations of the system until they are satisfied.

4.5 Installation

The installation of the new system will install both hardware and software for both the server and client. The vendor will perform hardware installation in this project and configuration setup. Software installation involves loading the entire computer program that are written for the new system onto the computer and making them ready for the operations.

4.6 Conversion

Once successful system test and user acceptance test have been completed, we can begin preparations to place the proposed system in to operation. This normally involves the conversion from the existing system to the new one. The parallel conversion is selected to place the proposed system into operation. Under this approach, both the existing system and the proposed system are operated for some period. This ensures that all major problems in the proposed system have been solved before the existing system is discarded. The existing system will serve as a backup if the new one fails to operate as expected. This strategy minimizes the risk of major flaws in the proposed system causing reparation harm to the system. The time for parallel conversion is usually a month, which is one complete invoicing and collecting cycle.

4.7 Training

Training is the final task of the system development team, which is provided to the user. The objective of training is to give more understanding of the proposed system to all relevant users and all users need training before they can begin using the new system.

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V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

To accomplish the current corporate goal and mission including to promote Phaya Thai Pet Care SERP system to be well recognized as the successful middle-sized veterinary care center especially in the downtown of Bangkok, the effective and efficient enhancement of the existing customer relationship management and business resource management is essential. As a consequence, we proudly to deliver the Small Enterprise Resource Management (SERP) system.

In the beginning of the project, we propose the complete system that integrates the capability of customer relationship management system with the essential functions of resource planning system. Seven main functionalities; sales, customer, purchases, inventory, accounting and General Ledger, and appointment management module including the system administration module, has been planned to accomplish. At present, we achieve our promise by delivering the Small Enterprise Resource Planning System containing all desired functions on time and within budget.

Not only can the SERP system either solve most of deficiencies of the old system or greatly improve the rest, but it also provides following additional benefits to the company.

- Reduce the cost of an external accounting consultant due to the introduction of the account and GL feature.
- Reduce tedious and time-consuming tasks owning to the elimination of paper- based documents
- Encourage better work environment.
- Increase customer satisfaction.

Apart from these intangible benefits, we estimate that the company can reduce the cost of operation as well as generate new income for approximately 230,500 Bath a year after the SERP deployment.

Since we decided to implement the system by both customizing from the open-source application and newly developing several functions, the most demanding aspect in this project is to customize the selected software package which demand intensive code tracking, code modification, and database modification including integrate between the customized modules and new developed modules in order to ensure that the complete system will be able to serve the company as effective as possible.

Besides, documentation turned out to be more difficult aspect than we expected owning to the fact that we have to deliver both technical specification and user manual to users. However, we did not develop the system from scratch and the open-source application that we used did not provide sufficient documents as well. Thereby, we have to sift through code in order to provide the technical specification. In addition, since there are seven modules and over fifty menus available in the SERP, the process of making well user manual also became more grueling and time-consuming than we estimated.

Similar to other information systems, the effectiveness and efficiency of the system is depended on the computer skill of end users. Especially for users who work with accounting and GL module, the basic knowledge in accounting and finance is a must. For this result, the intensive training course for SERP users is required. In addition, the system cannot interface with external systems such as a barcode reader and a cashing machine yet.

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For future extensions, since the SERP system is web-based application, it has a high capability to integrate to other IS system in order to provide additional electronics transactions such as issuing online purchases order to suppliers and receiving online invoice from suppliers. Moreover, it can easily integrate with the E-commerce of the company in the future. Apart from this, the interface with external systems is another crucial extension.

In conclusion, with the Small Enterprise Resource Planning system, we confidently believe that Phaya Thai Pet Care can provide excellent and friendly services to the corporate clients as stated in the corporate mission.

Benefit from proposed system

According to the business requirement of the Phaya Thai Pet Care, the Phaya Thai Pet Care SERP System has gained the benefit of response to the business requirements and the company policy as follows.

(1) Fasten the software development time especially when compared with the time that will be consumed due

(2) Reduce a risk of a project failure that usually occurs especially when developing a sophisticated information system from scratch.

(3) The OpenAccouting software package is well programmed; therefore, customizations and debugs are feasible and not required extreme efforts.

(4) Since the OpenAccounting is open-source application, the additional investment is not required.

(5) Several support channels are provided by the OpenAccounting developer such as E-mail support, FAQ, and discussion forum.

(6) With the appropriate open-source application like the OpenAccounting, system developers can spend their valuable times to focus on developing more value-added functionalities as well as enhancing system performance, reliability, and scalability rather than spend those times to develop commonly used modules such as sales, purchases, and inventory management.

Phaya Thai Pet Care SERP System enables the manager to track the transactions to check the validity of the operation.

Table 5.1. Degree of Achievement of Proposed Computerized System

Process	Existing System	Proposed System
Receive Pet Information	50 Minutes	3 Minutes
Calculate Payment	30 Minutes	2 Minutes
Receive Payment	20 Minutes	1 Minutes
Query Item Information	50 Minute	1 Minutes
Generate Report	40 Minutes	1 Minutes

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5.2 Recommendations

At present, information technology plays a very important role in the operation of a business. Some people may gain the competitive advantage if they apply the information system in their business properly. This project is an example of applying information system in some business processes.

The new computerized system has been designed to meet the requirements of the management and staff of the company. The management team plays an important role in developing the new system. Users from each department have to be involved and participate in all activities. The post implementation. The evaluation should be conducted one to three months after the implementation.

For future extensions, since the SERP system is web-based application, it has a high capability to integrate to other IS system in order to provide additional electronics transactions such as issuing online purchases order to suppliers and receiving online invoice from suppliers. Moreover, it can easily integrate with the E-commerce of the company in the future. Apart from this, the interface with external systems is another crucial extension.

In conclusion, with the Small Enterprise Resource Planning system, we confidently believe that Phaya Thai Pet Care can provide excellent and friendly services to the corporate clients as stated in the corporate mission.

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APPENDIX A

INTERFACE DESIGN

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User Interface Design

Display Screen:

In this section, we will demonstrate the design of the SERP user interface in general as well as how to navigate throughout the application.

User Interface Overview

Owing to the fact that the Small Enterprise Resource Planning System consists of several sub-system in which a variety of features had been provided, the main page of the system had been designed to help users to navigate either between modules or among functions in each module as easy as possible as shown in the figure

Figure A.1. Log in page Screen Design

If the username and password is correct, then the main menu of the SERP system will be appeared as below.

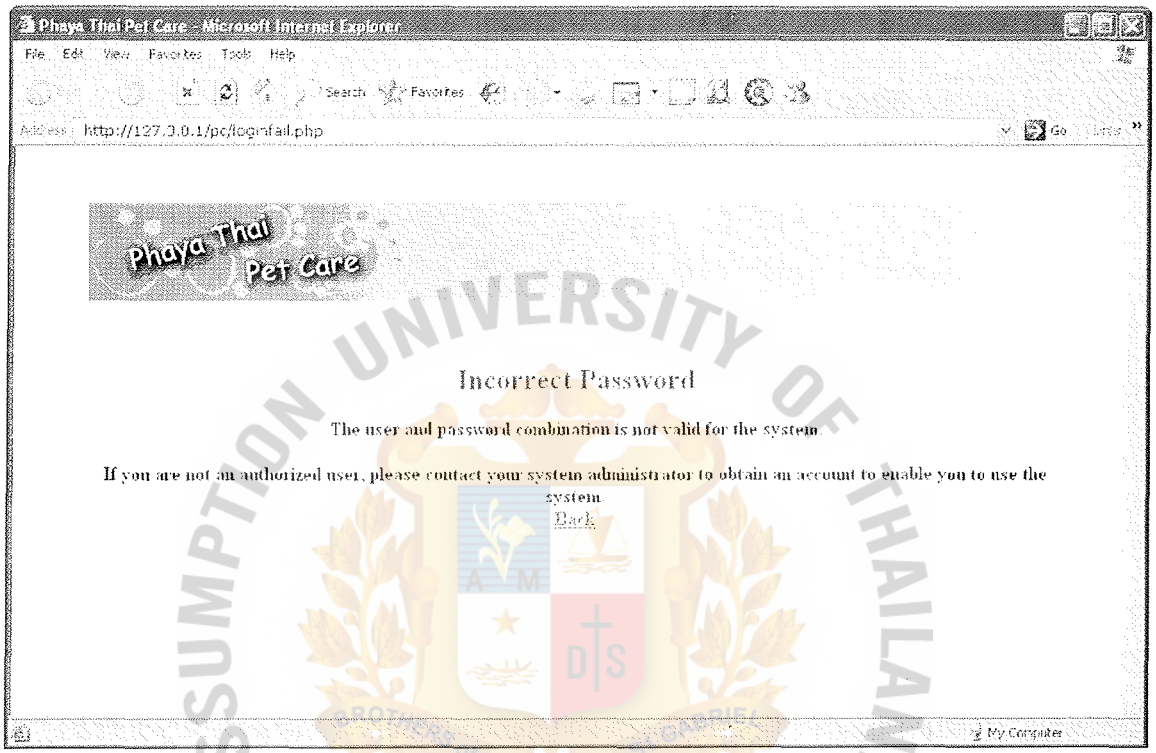

Figure A.2. Invalid Username and Password Screen

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Using with SERP Menu: Main Page

As can be seen from below figure (so called sales main page), the Sales and Customers Management module consists of three sub-modules each of which also provides several functions.

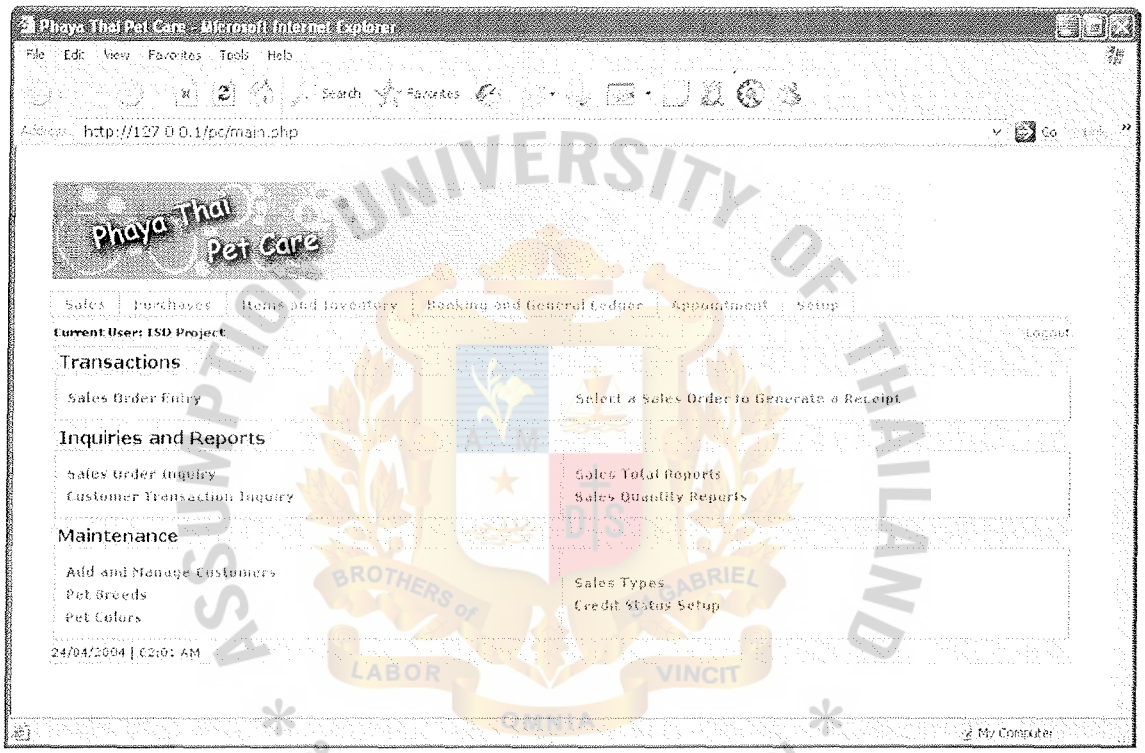

Figure A.3. Main Menu of Phaya Thai Pet Care SERP system

All of menus in this module can be divided into work functions. Below is the classification of work functions and menus involved in those functions.

- Managing sales orders: Sales order entry and select a sales order to generate a receipt

- Viewing sales reports: Sales order inquiry, sales total reports, and sales quantity reports
- Managing customers and pet profiles: Add and manage customers, pet breeds, and pet colors
- Viewing customers reports: Customer Transaction Inquiry
- Managing sales types: Sales types
- Managing credit status: Credit Status Setup

Using with SERP Menu: Creating Sales Order

In the selling process, there are three main activities which are generating sales orders, receiving payments, and generating receipts.

To create a sales order, click menu "Sales order entry" at the sales main page. The system will lead you to Sales Order Entry page as shown then follow below instructions to create a new sales order.

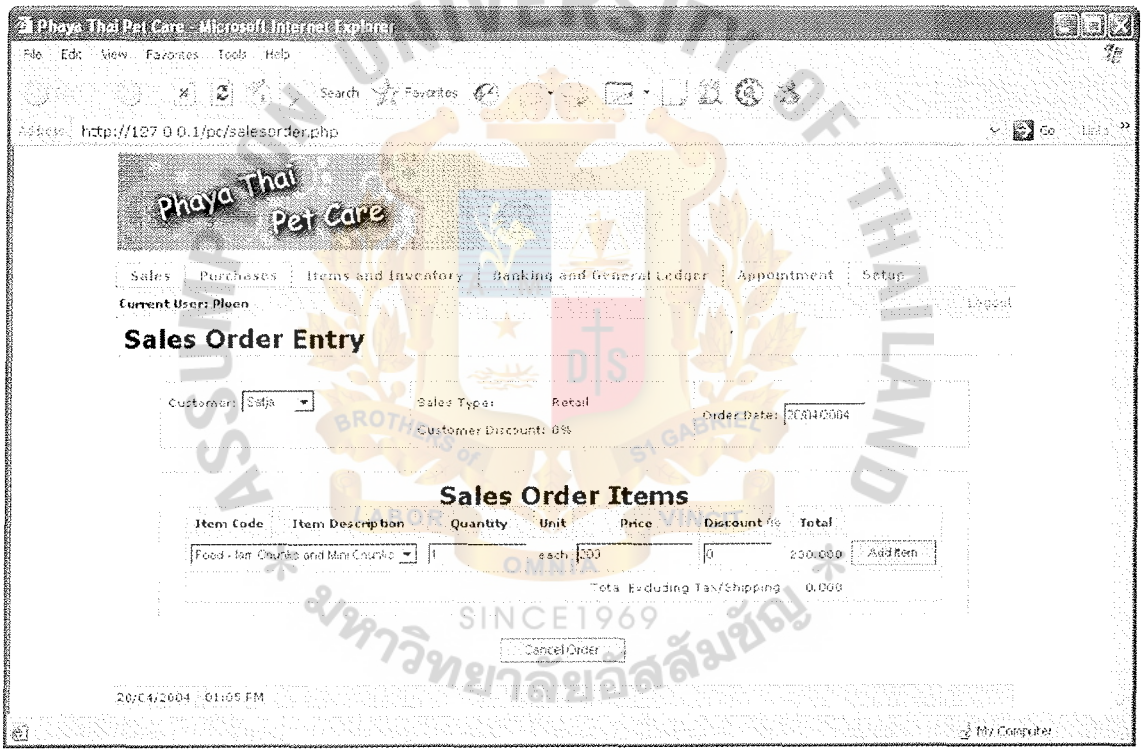

Figure A.4. Creating Sale Order Screen

Menu Instruction

- At the customer box (top left), select either a customer name for a regular customer or "General" for a general customer from the drop-down list.
- At the order date box (top right), you can change the order date. However, it is recommended since the current date will be automatically generated.
- Select items to be sold from the drop-down list and make necessary changes for a quantity, price, and discount. Please be noted that a specific price of a item will be automatically generate if the price of that item is already setup (refer to "Sales Pricing" at Items and Inventory Management module)
- After complete item selection and modification (quantity, price, and discount), click the "Add Item" button to add this item to the sales order.

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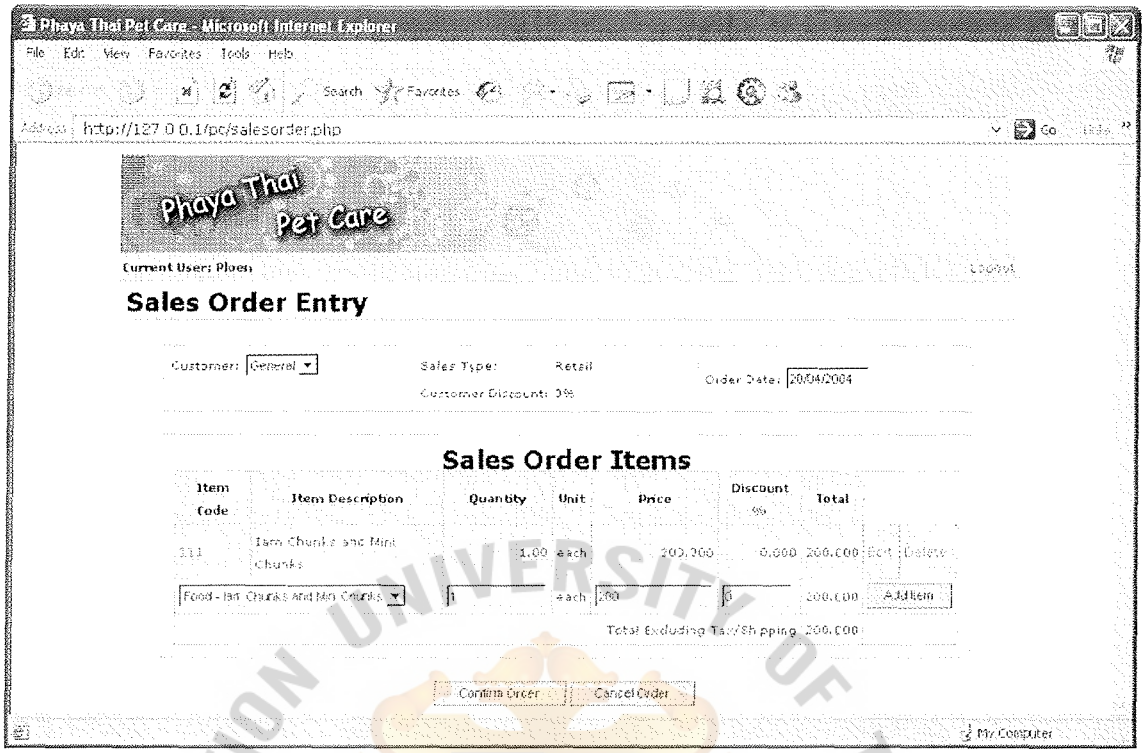

Figure A.5. Sales Order Items Screen

- The total price of that item will be re-calculated corresponding to the quantity, price, and discount rate.
- After adding all items that customer wants to buy, click the "Confirm Order" Button to complete the sales order creation. The "Order Delivery Detail" page will be prompted to inform you that either the sales order can be placed or not.

Once the customer makes a payment, you have to close a sales order as well as generate a receipt. To do this task, click "Select a Sales Order to Generate a Receipt" menu at the sales main page. The "Search Outstanding Sales Orders" page will be prompted and then follow below instructions to complete a task.

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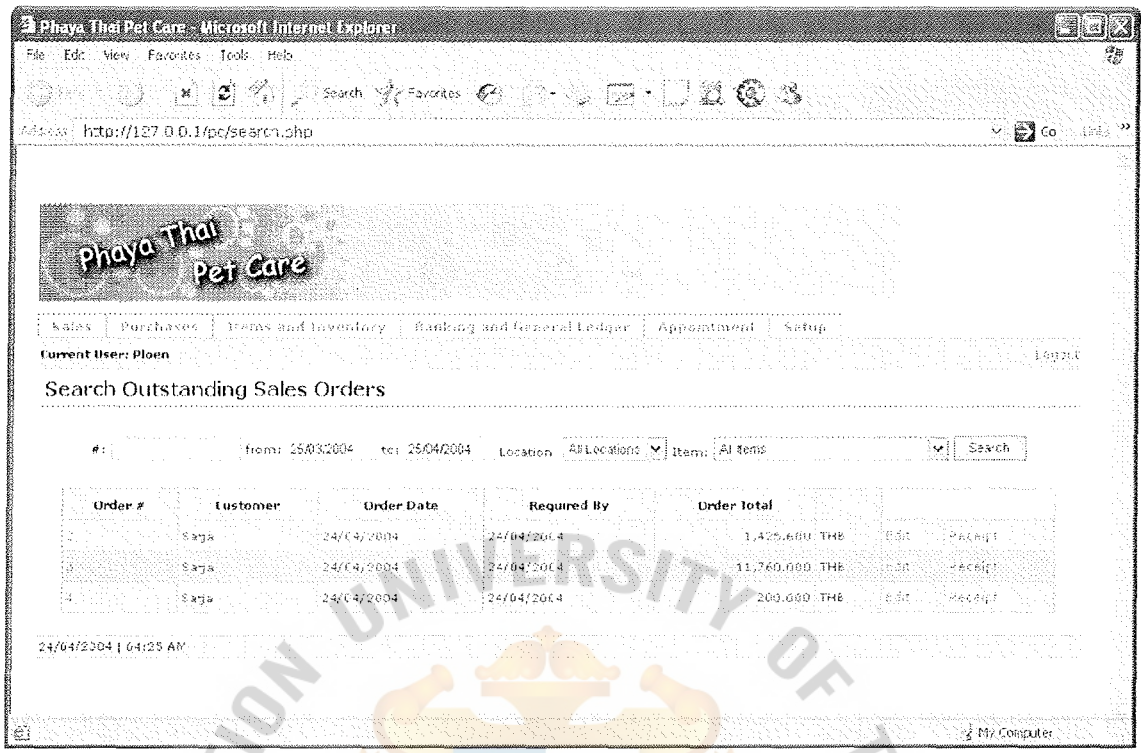

Figure A.6. Searching Outstanding Sales Order Screen

At this page, you can select the outstanding sales orders which are sales orders that still do not receive payments yet. There are four parameters that can be used as filters as below.

- Filter by order ID by entering the order ID at the "#" box.
- Filter by dates by entering the date interval.
- Filter by locations by selecting a location from the drop-down list in case that the company has more than one site.
- Filter by items by selecting either a specific item or all items from the drop-down list.

Once manipulate any filter, click "search" button to generate the new result.

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Current outstanding sales orders will be display in the table, there are three operations can be done with each record; viewing the sales order, editing the sales order, and generating the receipt for the sales order.

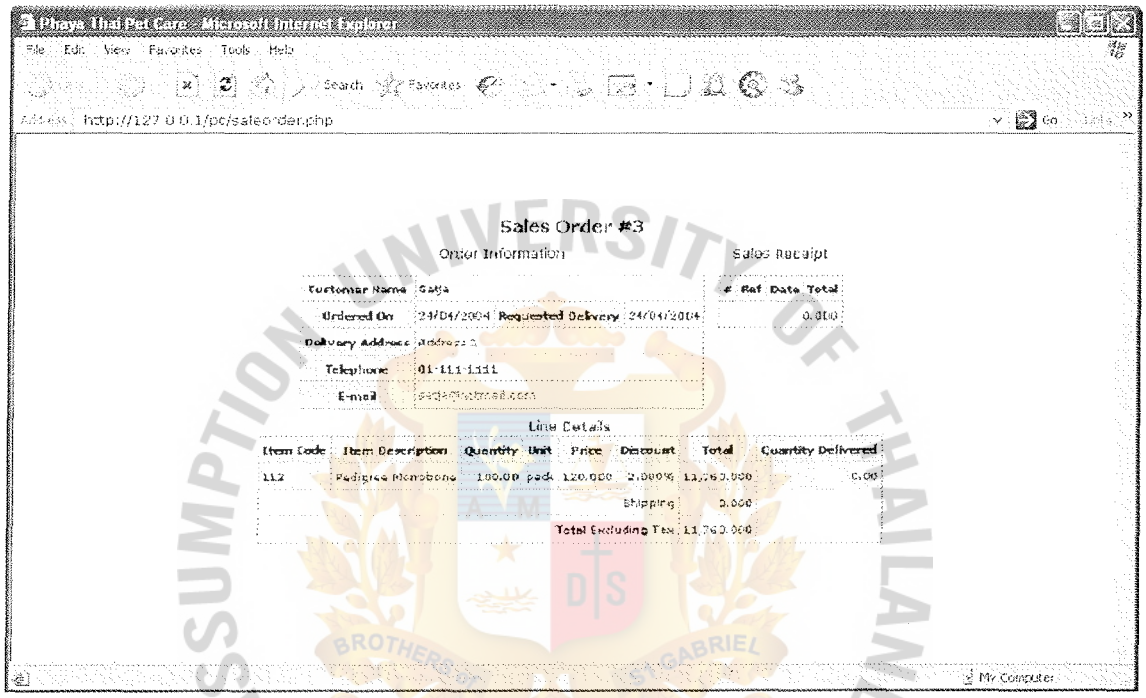

Figure A.7. Sale Order Detail Screen

To edit that sales order, click at "edit" in the seventh column. Following page will be shown and to edit the sales order.

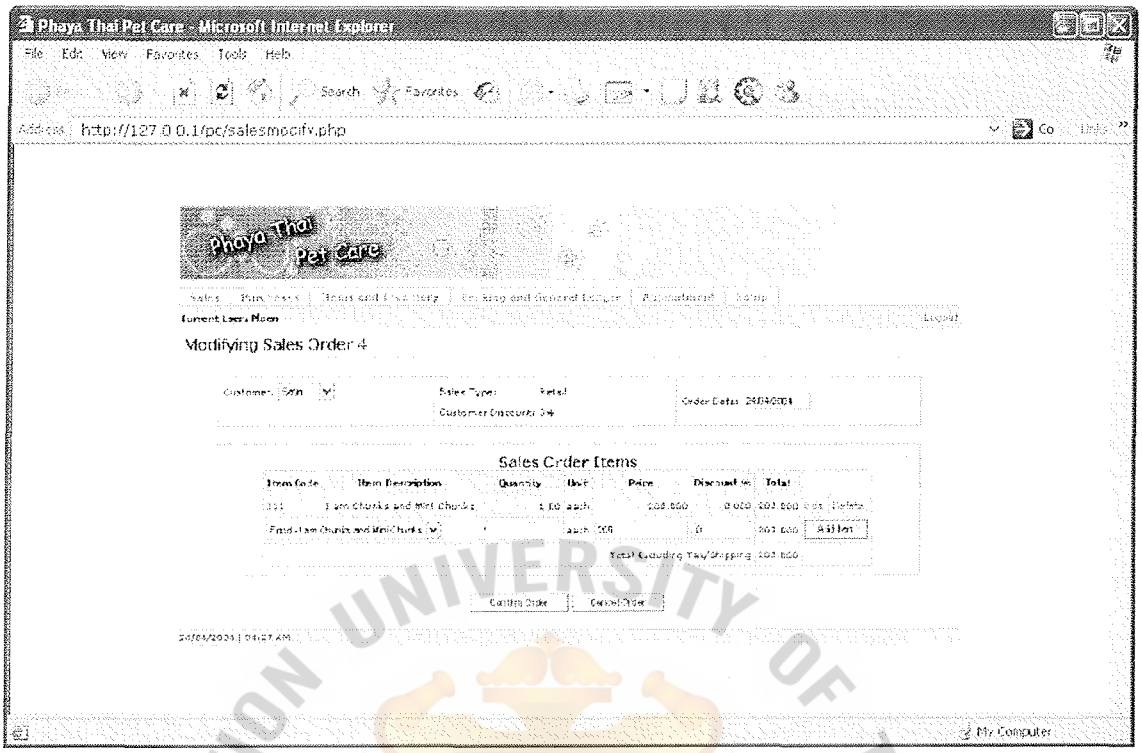

Figure A.8. Modify Sale Order Screen

To generate a receipt and close the sales order, click at "Receipt". The below page will be shown

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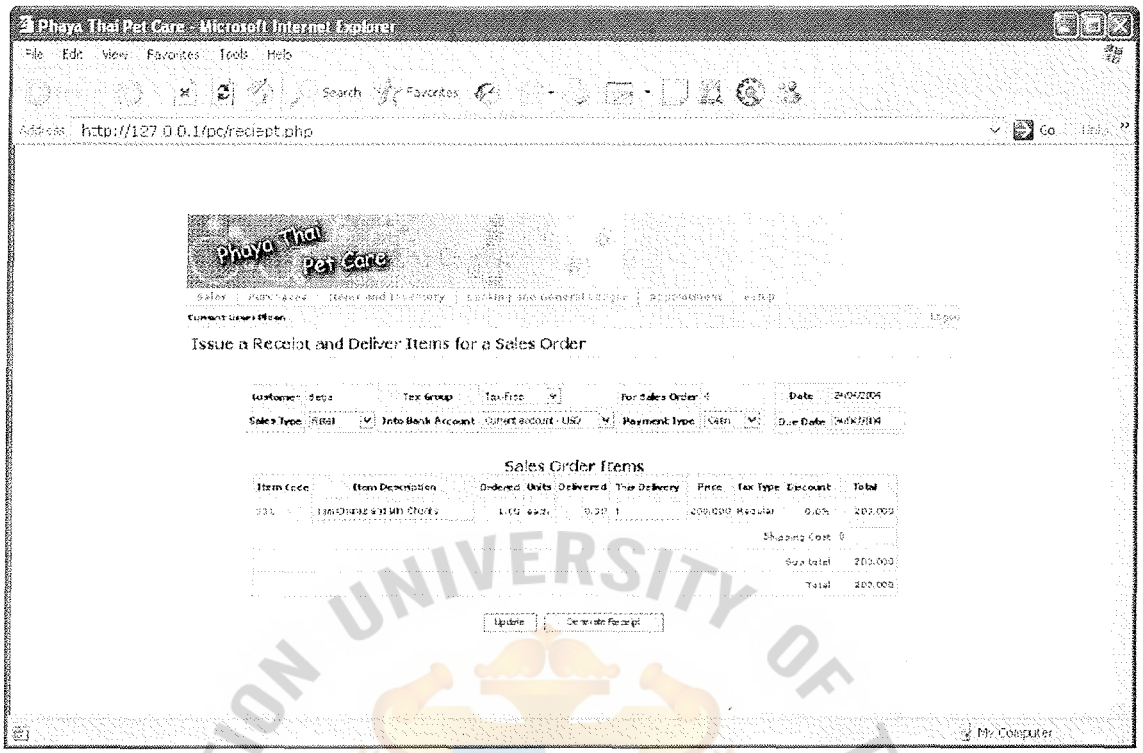

Figure A.9. Generate Receipt for Sale Order Screen

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APPENDIX B

REPORT DESIGN

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Report Screen:

Sales Report

There are three reports regarding sales orders available. Two of them are aggregated reports particularly designed for the store manager whereas another one is a basic transaction inquiry.

To view "Sales Order Transaction Report", you must follow the below instructions.

1) At the sales main page, click at "Sales Order Inquiry" menu then the following page will be prompted.

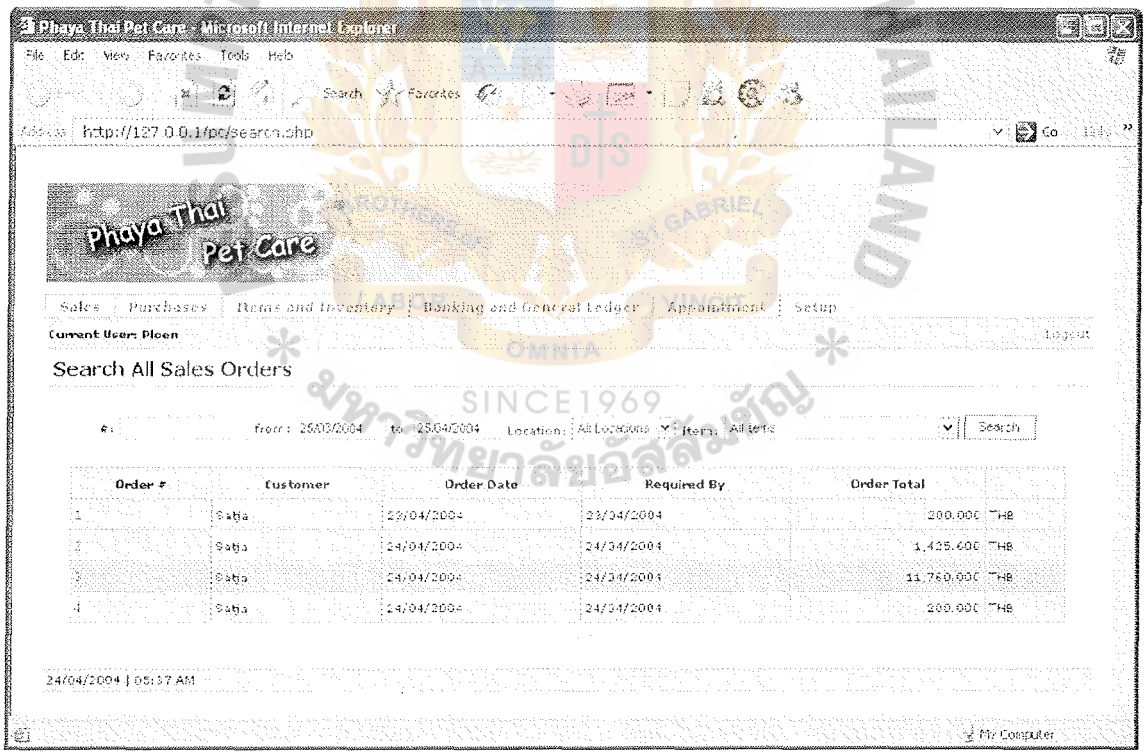

Figure B.1. Sale Order Report

As can be seen, there are four parameters that can be used as filters

- Filter by order ID by entering the order ID at the "#" box.
- Filter by Date by entering the date interval.
- Filter by locations by selecting a location from the drop-down list in case that the company has more than one site.
- Filter by items by selecting either a specific item or all items from the drop-down list.

2) For a detail of each sales order, click at the record# at the first column of each record then the following page containing a complete detail of a sales order will be shown.

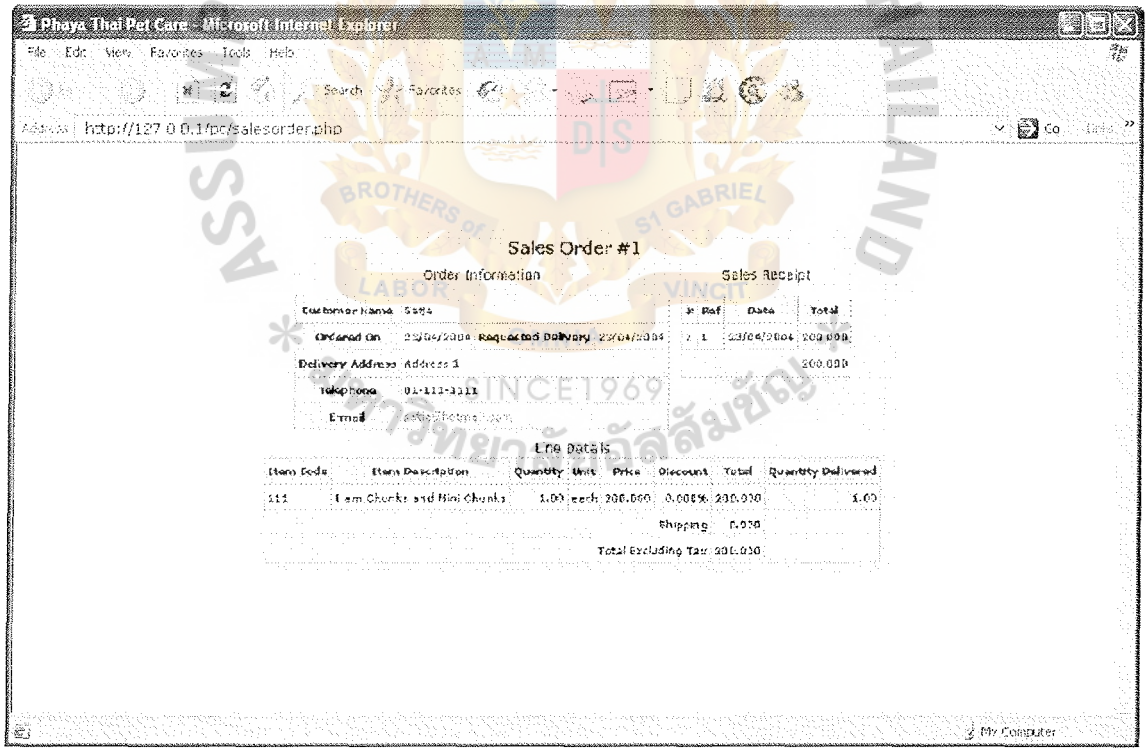

Figure B.2. Sale Order Detail Report

3) If the queried sales order is already closed, you can. display the printed version of the receipt by clicking at the "#" column of Sales Receipt table.

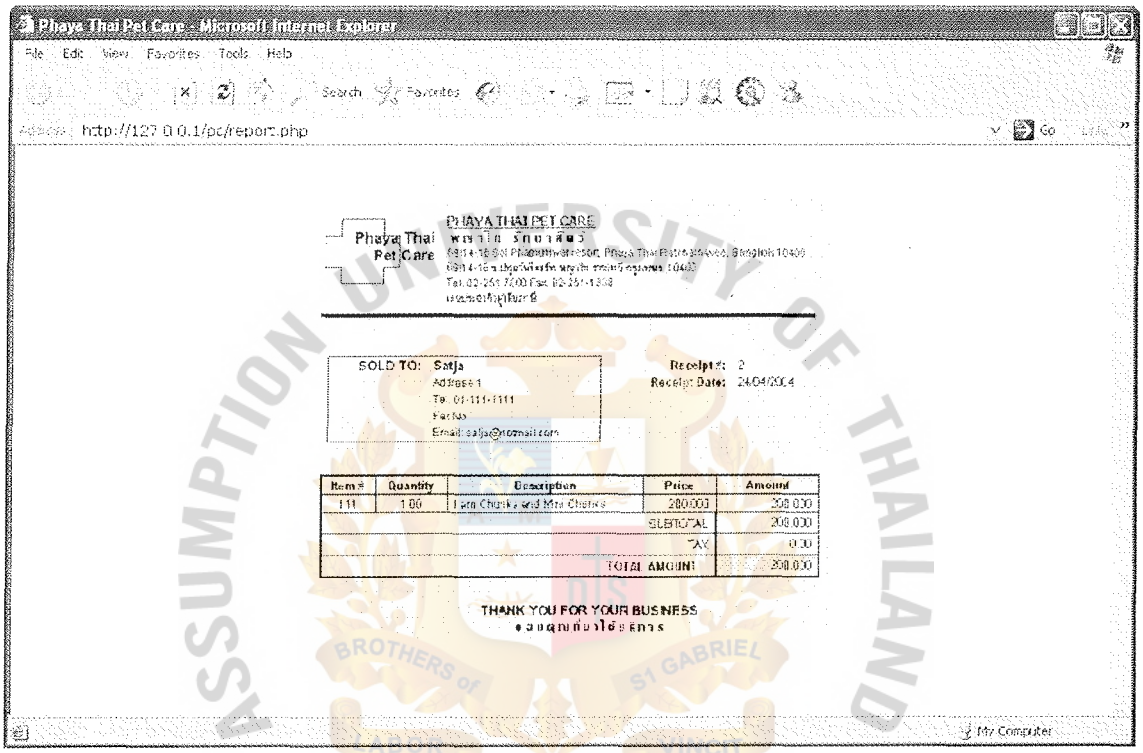

Figure B.3. Receipt Report

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APPENDIX C

DATA DICTIONARY

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Table C.1. Data Dictionary for Doctor Table

Field Name	Description
Vet_ID	Doctor Code
Name	Doctor Name
Mobile No	Mobile phone number
Office No	Office Telephone number
Ext	Extension number (office)

Table C.2. Data Dictionary for Appointment Table

Field Name	Description
Appoint_ID	Appointment Code
Pet_ID	Animal / Pet Code
Date	Date of Appointment
Time	Time of Appointment
Vet_ID	Doctor Code
Room	Treatment Room number
Status	Status of Appointment

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Table C.3. Data Dictionary for Treatment Table

Field Name	Description
Treat_ID	Treatment Code
Appoint_ID	Appointment Code
Symptom	Symptom of Pet
Treatment_Sol	The Solution for treatment
Medicine	Medicine name (for Treatment)
Quantity	Quantity of Medicine
Med_Amount	The Medicine Amount of Payment
Vaccine_Flag	Status of Vaccine treatment
Vaccine_Desc	Vaccine Description
Amount	The Vaccine Amount of Payment
Doctor_fee	Doctor fee
Total_Amount	Net total Amount for treatment

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Table C.4. Data Dictionary for Pet Profile Table

Field Name	Description
Pet_ID	Animal / Pet Code
Pet_Type_ID	Pet Type
Owner_ID	Owner of Pet Code
Name	Pet Name
Color	Color of Pet
Age	Age of Pet
Sex	Sex
Date	Date for Applied

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Table C.5. Data Dictionary for Sale Order Table

Attribute Name	Description
Ord_ID	Order Code
Date	Order Date
Status	Statusd of Order
Qty_Order	Quantity of Order
Unit_Price	Unit Price
Total_Amnt	Total Amount of Order
Disc_Rate	Discount Rate
Disc_Amnt	Discount Amount
Net_Total_Amnt	Net Total Amount

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Table C.6. Data Dictionary for Item Master Table

Field Name	Description
Item_ID	Item Code
Item_Type_ID	Item Type
Name	Item Short name
Desc	Item Description
Unit	Unit Measure
Cost	Cost of Item
Stock_on_hand	Quantity on hand

Table C.7. Data Dictionary for Item Category Table

Attribute Name	Description
Item_Type_ID	Item Type Code
Name	Item Type Short name
Desc	Item Type Description

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Table C.8. Data Dictionary for Pet Type Table

Field Name	Description
Pet_Type_ID	Pet Type Code
Type_Name	Pet Type Name
Breed	Beed

Table C.9. Data Dictionary for Customer Table

Field Name	Description
Cust_ID	Customer Code
Name	Customer Name
Address	Customer Address
Cust_level	Level of Customer
Phone_No	Customer Phone Number
Mobile_No	Customer Mobile Number

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Table C.10. Data Dictionary for Purchase Order Table

Field Name	Description
PO_No	Purchase Order Number
PO_Date	Purchase Order date
Supp_ID	Supplier Code
Item_ID	Item Code
Qty_Order	Quantity of Order
Price	Total Purchase Order Amount

Table C.11. Data Dictionary for Supplier Table

Field Name	Description
Supp_ID	Supplier Code
Name	Supplier Name
Addr1	Supplier Address #1
Addr2	Supplier Address #2
Contact_Person	Contact Person
Phone_No	Supplier Phone Number
Fax	Supplier Fax Number

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APPENDIX D

DATABASE DESIGN

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Table D.1. Doctor Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Vet_ID	VARCHAR2[4]	Y	Y				Primary Key
2	Name	VARCHAR2[20]						Attribute
3	Mobile_No	VARCHAR2[10]			Y			Attribute
4	Office_No	VARCHAR2[10]						Attribute
5	Ext	VARCHAR2[4]			Y			Attribute

Table D.2. Appointment Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Appoint_ID	VARCHAR2[4]	Y	Y				Primary Key
2	Pet_ID	VARCHAR2[5]	Y			Y		Attribute
3	Date	DATE						Attribute
4	Time	VARCHAR2[20]						Attribute
5	Vet_ID	VARCHAR2[4]						Attribute
6	Room	VARCHAR2(30)						Attribute
7	Status	CHAR[5]						Attribute

Table D.3. Treatment Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Treat_ID	INTEGER	Y	Y				Primary Key
2	Appoint_ID	INTEGER					Qnty>0	Attribute
3	Symptom	INTEGER					Qnty>0	Attribute
4	Treatment_Sol	INTEGER					Qnty>0	Attribute
5	Medicine	INTEGER					Qnty>0	Attribute
6	Quantity	INTEGER					Qnty>0	Attribute
7	Med_Amnt	INTEGER					Qnty>0	Attribute
8	Vaccine_Flag	INTEGER					Qnty>0	Attribute
9	Veccine_Desc	INTEGER					Qnty>0	Attribute
10	Amount	INTEGER	Y			Product		Foreign Key
11	Doctor_fee	INTEGER					Qnty>0	Attribute
12	Tota_Amnt	DECIMAL[10.2]					Amnt >0.00	Attribute

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Table D.4. Pet Profile

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Pet_ID	VARCHAR2[5]	Y	Y				Primary Key
2	Pet_Type_ID	VARCHAR2[5]	Y	Y		Pet Type		Foreign Key
3	Owner_ID	VARCHAR2[5]	Y	Y		Customer		Foreign Key
3	Name	VARCHAR2[30]						Attribute
3	Color	VARCHAR2[20]						Attribute
3	Age	CHAR[2]						Attribute
4	Sex	CHAR[10]						Attribute
5	Date	DECIMAL[10.2]						Attribute

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Table D.5. Sale Order Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Ord_ID	VARCHAR2[5]	Y	Y				Primary Key
2	Order_Date	DATE						Attribute
3	Status	CHAR[10]						Attribute
4	Qty_Order	INT[10]						Attribute
5	Unit_Price	DECIMAL[5.2]					Amount >0.00	Attribute
6	Total_Amnt	DECIMAL[5.2]					Amount >0.00	Attribute
7	Disc_Rate	CHAR[2]						Attribute
8	Disc_Amnt	DECIMAL[5.2]					Amount > 0.00	Attribute
9	Net_Total_Amnt	DECIMAL[10.2]						Attribute

Table D.6. Item Master Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Item_ID	VARCHAR2[4]	Y	Y				Primary Key
2	Item_type_ID	VARCHAR2[4]	Y	Y		Item Category		Foreign Key
3	Name	VARCHAR2[50]						Attribute
4	Desc	VARCHAR2[100]						Attribute
5	Unit	VARCHAR2[30]						Attribute
6	Cost	DECIMAL[5.2]				Amount > 0.00		Attribute
7	Stock_on_hand	INT[5]				Qty > 0		Attribute

Table D.7. Item Category Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Item_Type_ID	VARCHAR2[4]	Y	Y				Primary Key
2	Name	VARCHAR2[20]						Attribute
3	Desc	VARCHAR2[50]						Attribute

Table D.8. Pet Type Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Pet_Type_ID	VARCHAR2[5]	Y	Y				Primary Key
2	Type_Name	VARCHAR2[50]						Attribute
3	Breed	VARCHAR2[50]						Attribute

Table D.9. Customer Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	Cust_ID	VARCHAR2[4]	Y	Y				Primary Key
2	Name	VARCHAR2[30]						Attribute
3	Address	VARCHAR2[30]						Attribute
4	Cust_level	CHAR[10]						Attribute
5	Phone_no	CHAR[10]						Attribute
6	Mobile_No	CHAR[10]						Attribute

Table D.10. Purchase Order Table

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to table	Check	Key Type
1	PO_No	VARCHAR2[5]	Y	Y				Primary Key
2	PO_Date	DATE						Attribute
3	Supp_ID	VARCHAR2[4]	Y	Y		Supplier		Foreign Key
3	Item_ID	VARCHAR2[4]	Y	Y		Item Master		Foreign Key
3	Quantity_Order	INT[5]					Qty > 0	Attribute
4	Price	DECIMAL[5,2]					Amount > 0.00	Attribute

APPENDIX E

PROCESS SPECIFICATION

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Table E.1. Process Specification of Process 1.0

Item	Description
Process Name:	Process Validate Pet Profile
Data In:	Order, Invoice
Data Out:	Product Quantity
Process:	(1) Receive Pet information from pet owner including pet name and owner name (2) System Receive pet history information from pet profile file to check whether this pet already in the profile or not (3) In case of the information is not kept in file, system return invalid pet information to the pet owner
Attachment:	(1) Customer member card

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Table E.2. Process Specification of Process 1.1

Item	Description
Process Name:	Process receive pet information
Data In:	Pet Name
Data Out:	Pet Summary detail
Process:	(1) Receive Pet information from pet owner including pet name and owner name (2) This process will summary into pet detail to process evaluate pet member
Attachment:	-

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Table E.3. Process Specification of Process 1.2

Item	Description
Process Name:	Process evaluate pet member
Data In:	Pet detail
Data Out:	Invalid Pet information
Process:	(1) Receive pet detail from process 1.1 (2) System Receive pet history information from pet profile file to check whether this pet already in the profile or not (3) In case of the information is not kept in file, system return invalid pet information to the pet owner
Attachment:	-

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Table E.4. Process Specification of Process 2.0

Item	Description
Process Name:	Process apply to member
Data In:	Pet owner information, Pet information
Data Out:	New member information
Process:	(1) Receive information including owner of pet and pet information from pet owner (2) System will validate those information from both owner profile file and pet profile file to check whether those information has already been kept into file or not (3) If information never been kept into file, system will update owner information into owner profile file and also update pet information into pet profile file (4) System return member detail to pet owner
Attachment:	(1) Member ID card

Table E.5. Process Specification of Process 2.1

Item	Description
Process Name:	Process receive member information
Data In:	Owner information
Data Out:	Owner information, Pet information
Process:	(1) Receive owner information from pet owner (2) This process will sent the information of owner information and pet information into process evaluate member detail
Attachment:	-

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Table E.6. Process Specification of Process 2.2

Item	Description
Process Name:	Process evaluate member detail
Data In:	Owner information, Pet information
Data Out:	Member information
Process:	(1) Receive owner and pet information from process receive member information (2) System will retrieve owner information from owner profile file table and pet information from pet profile file table to check whether these information already been kept into file or not (3) If information never been kept into file, system will update owner information into owner profile file and also update pet information into pet profile file
Attachment:	(1) Member ID card

Table E.7. Process Specification of Process 3.0

Item	Description
Process Name:	Process treat pet
Data In:	Pet Detail
Data Out:	Pet information, Treatment Detail
Process:	(1) Receive pet detail from the process 1.0 including the symptom of pet for treatment (2) Receive pet profile history from treatment table (3) Update treatment information into treatment table (4) Send treatment detail to process calculate payment
Attachment:	-

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Table E.8. Process Specification of Process 4.0

Item	Description
Process Name:	Process make new appointment
Data In:	Pet Information
Data Out:	Appointment Information
Process:	(1) Get the pet information from the process treat pet for making appointment (2) Retrieve appointment information from appointment file to check the last appointment for pet (3) Update new appointment information to appointment table (4) Send appointment detail to Pet owner
Attachment:	(1) Appointment Card

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Table E.9. Process Specification of Process 5.0

Item	Description
Process Name:	Process calculate payment
Data In:	Treatment Detail, Treatment Amount, Discount Rate
Data Out:	Net total amount
Process:	(1) Get the treatment detail from process treat pet including medicine has been used, the amount of medicine. (2) Retrieve the information of payment amount from treatment file for each medicine used and discount rate from each (3) Calculate the net total amount of payment into transaction file, and sent to pet owner
Attachment:	-

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Table E.10. Process Specification of Process 5.1

Item	Description
Process Name:	Process Calculate amount of payment
Data In:	Treatment amount
Data Out:	Total amount of payment
Process:	(1) Receive treatment amount from treatment table and summary them into to total amount of payment
Attachment:	-

Table E.11. Process Specification of Process 5.2

Item	Description
Process Name:	Process calculate discount amount
Data In:	Discount rate
Data Out:	Discount Amount
Process:	(1) Receive total amount of payment from the process calculate amount of payment (2) Receive discount rate from treatment file and use them to calculate discount amount
Attachment:	-

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Table E.12. Process Specification of Process 5.3

Item	Description
Process Name:	Process calculate net total amount
Data In:	Total Amount of payment, Discount amount
Data Out:	Net total amount
Process:	(1) Receive total amount of payment from process 5.1 (2) Receive discount amount from process 5.2 (3) Use the information from process 5.1 and 5.2 for calculate net total amount (4) Update net total amount into transaction file and sent to Pet owner
Attachment:	-

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Table E.13. Process Specification of Process 6.0

Item	Description
Process Name:	Process generate receipt
Data In:	Net total amount, payment, pet information
Data Out:	Receipt, payment
Process:	(1) Receive net total amount from transaction table, pet information from treatment table (2) Use those information to generate receipt and sent to pet owner (3) Update payment received from customer into transaction table
Attachment:	(1) Receipt

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Table E.14. Process Specification of Process 7.0

Item	Description
Process Name:	Process Purchase Product
Data In:	Product Detail
Data Out:	Invalid ordered
Process:	(1) Receive product information from customer (2) Receive the available amount of stock from item master table (3) If the amount that has been order less than amount in stock, return invalid order to customer (4) If valid, update the stock on hand in item master table
Attachment:	-

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Table E.15. Process Specification of Process 8.0

Item	Description
Process Name:	Process Calculate Payment
Data In:	Order Detail, Quantity Order, Unit Price
Data Out:	Payment
Process:	(1) Receive order detail from process Purchase Products (2) Receive information of unit price and quantity order from item master table (3) Use those information to generate total payment amount and send receipt to customer (4) Update payment detail into transaction file
Attachment:	-

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Table E.16. Process Specification of Process 9.0

Item	Description
Process Name:	Process make an order
Data In:	Product out of stock, Supplier detail, Order Detail, Invoice
Data Out:	Payment
Process:	(1) Receive product out of stock detail and supplier detail from item master table (2) Use those information to make an order to supplier (3) Receive an invoice from supplier and make payment to them (4) Update Payment into transaction file
Attachment:	-

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Data Out:	Sale summary report
Process:	(1) Manager request for pet summary report (2) System get information about pet information from pet profile table to generate report. (3) Pet Summary report has been responded to manager (4) Manager request for treatment summary report (5) System get information about treatment history from treatment table to generate report. (6) Treatment summary report has been responded to manager (7) Manager request for sale summary report (8) System get information about sale summary from transaction table to generate report. (9) Sale summary report has been responded to manager
Attachment:	(1) Pet Summary report (2) Treatment summary report (3) Sale summary report

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Table E.17. Process Specification of Process 10.0

Item	Description
Process Name:	Generate Report
Data In:	Pet Summary inquiry, Treatment Summary inquiry Sale summary inquiry

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Table E.18. Process Specification of Process 10.1

Item	Description
Process Name:	Generate Treatment Summary report
Data In:	Treatment Summary inquiry
Data Out:	Treatment Summary report
Process:	(1) Manager request for pet summary report (2) System get information about pet information from pet profile table to generate report. (3) Pet Summary report has been responded to manager
Attachment:	(1) Pet Summary report

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Table E.19. Process Specification of Process 10.2

Item	Description
Process Name:	Generate Pet Summary report
Data In:	Treatment Summary inquiry
Data Out:	Treatment Summary report
Process:	(1) Manager request for treatment summary report (2) System get information about pet information from pet profile table to generate report. (3) Treatment Summary report has been responded to manager
Attachment:	(1) Treatment Summary report

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Table E.20. Process Specification of Process 10.3

Item	Description
Process Name:	Generate Pet Summary report
Data In:	Sale Summary inquiry
Data Out:	Sale Summary report
Process:	(1) Manager request for sale summary report (2) System get information about sale information from transaction table to generate report. (3) Sale Summary report has been responded to manager
Attachment:	(1) Sale Summary report

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APPENDIX F

STRUCTURE CHART DIAGRAM

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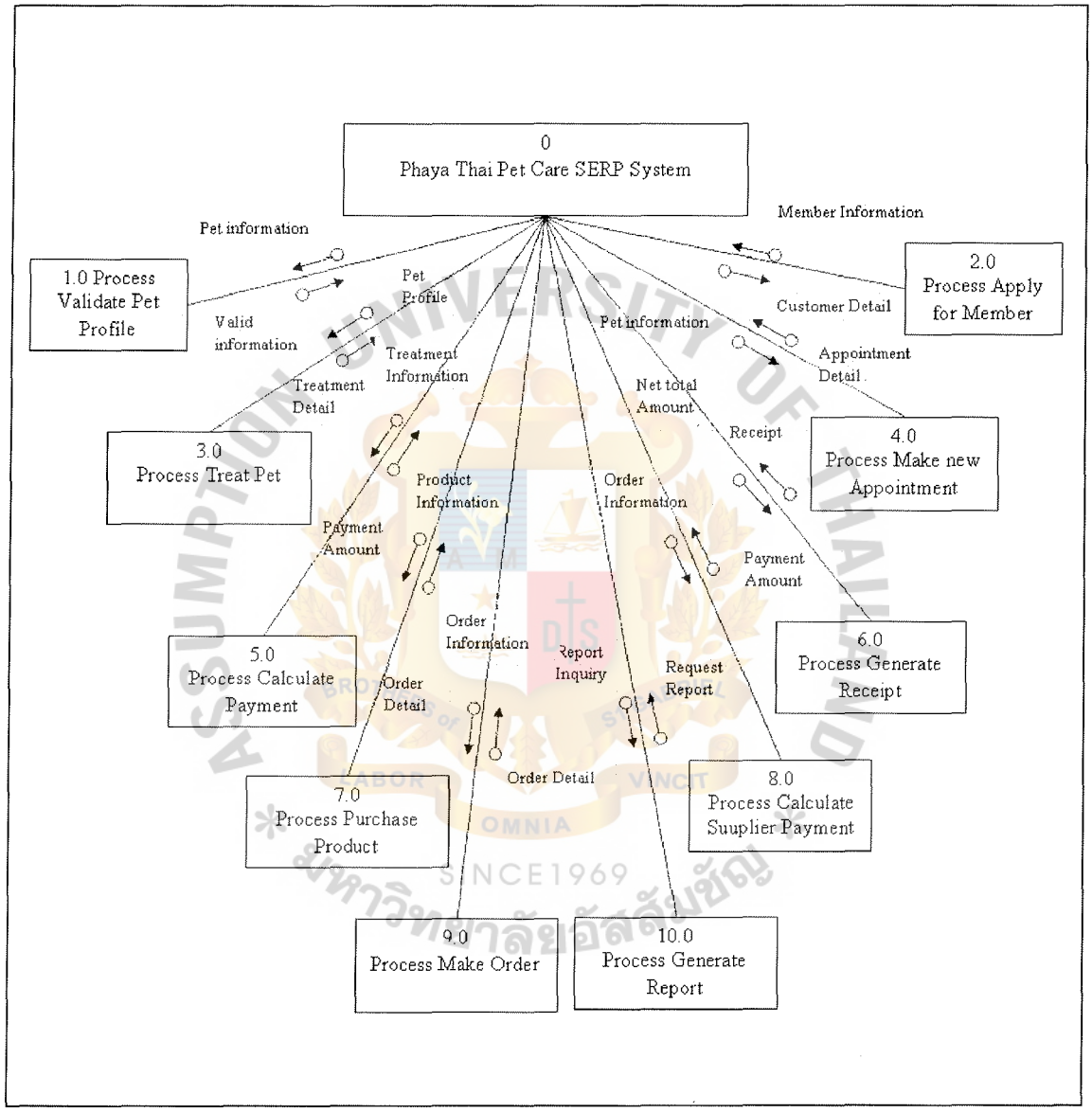

Figure F.1. Structure Chart of Phaya Thai Pet Care SERP System

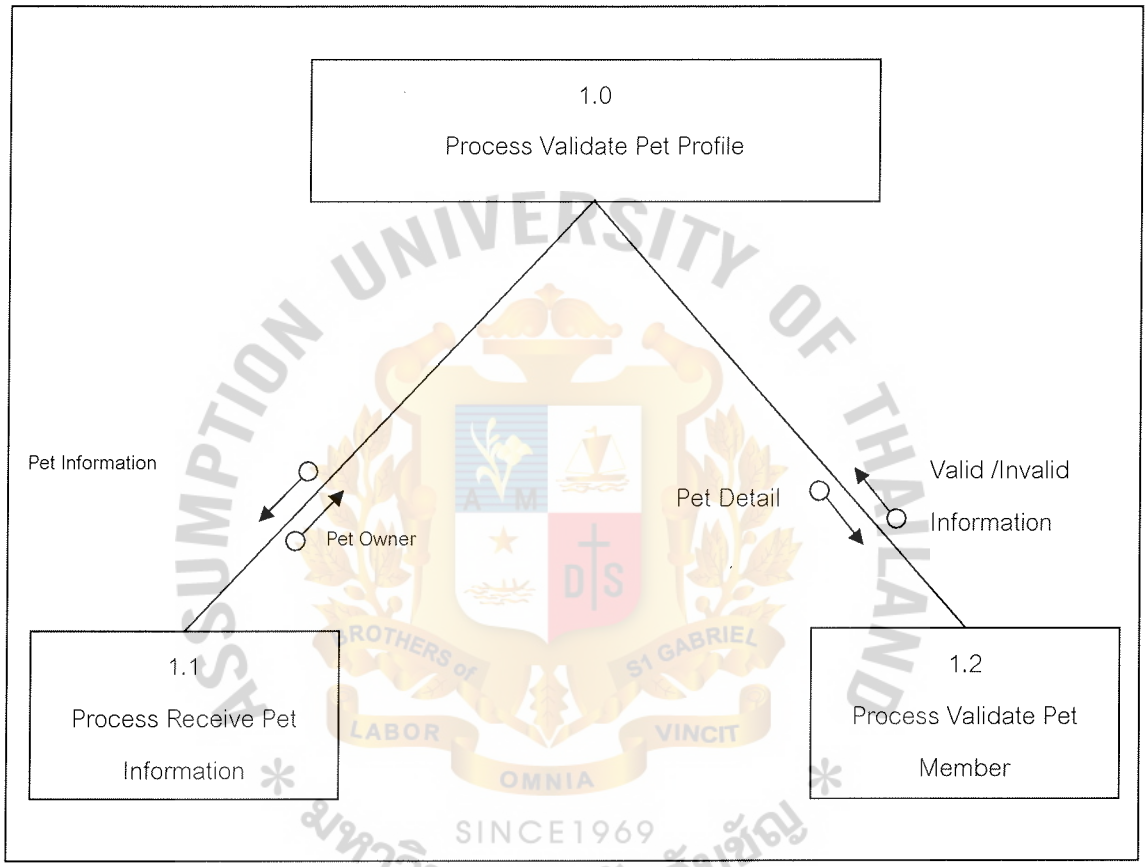

Figure F.2. Structure Chart of Process Validate Pet Profile

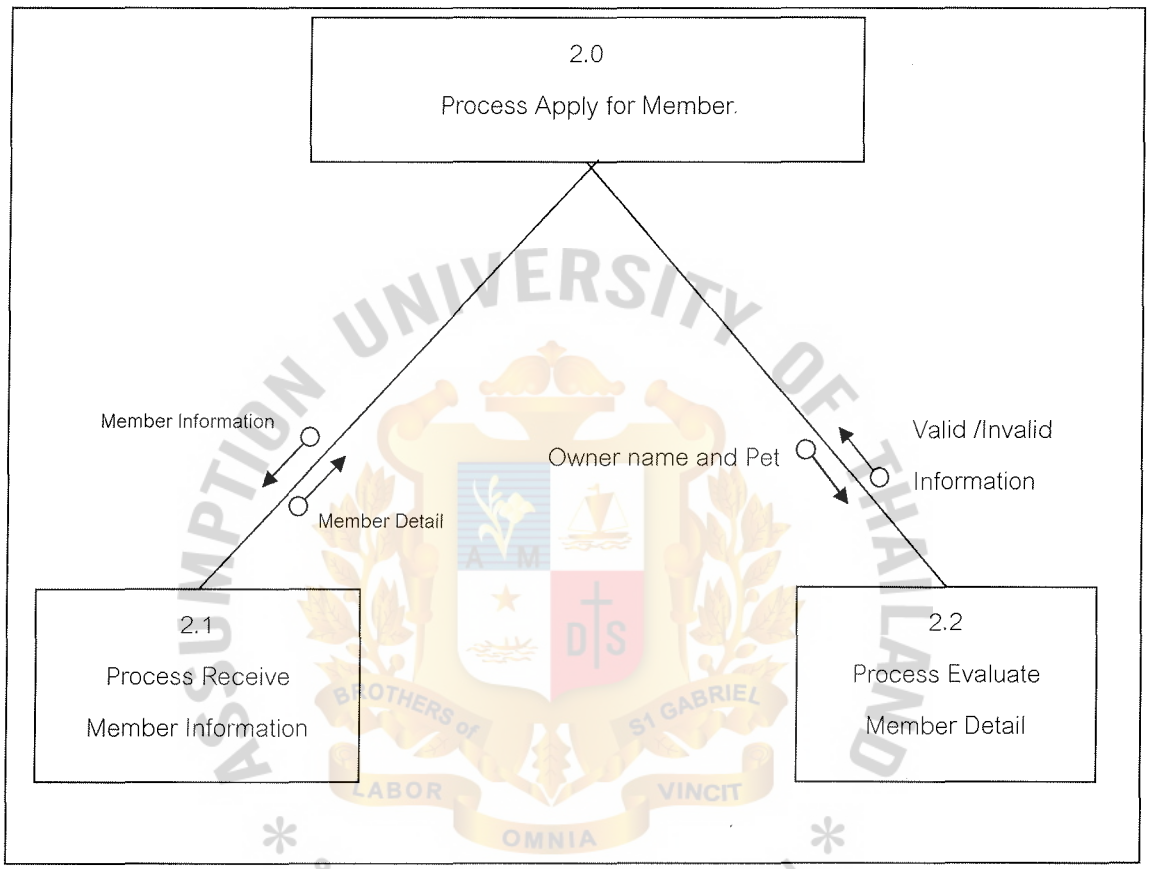

Figure F.3. Structure Chart of Process Apply for Member

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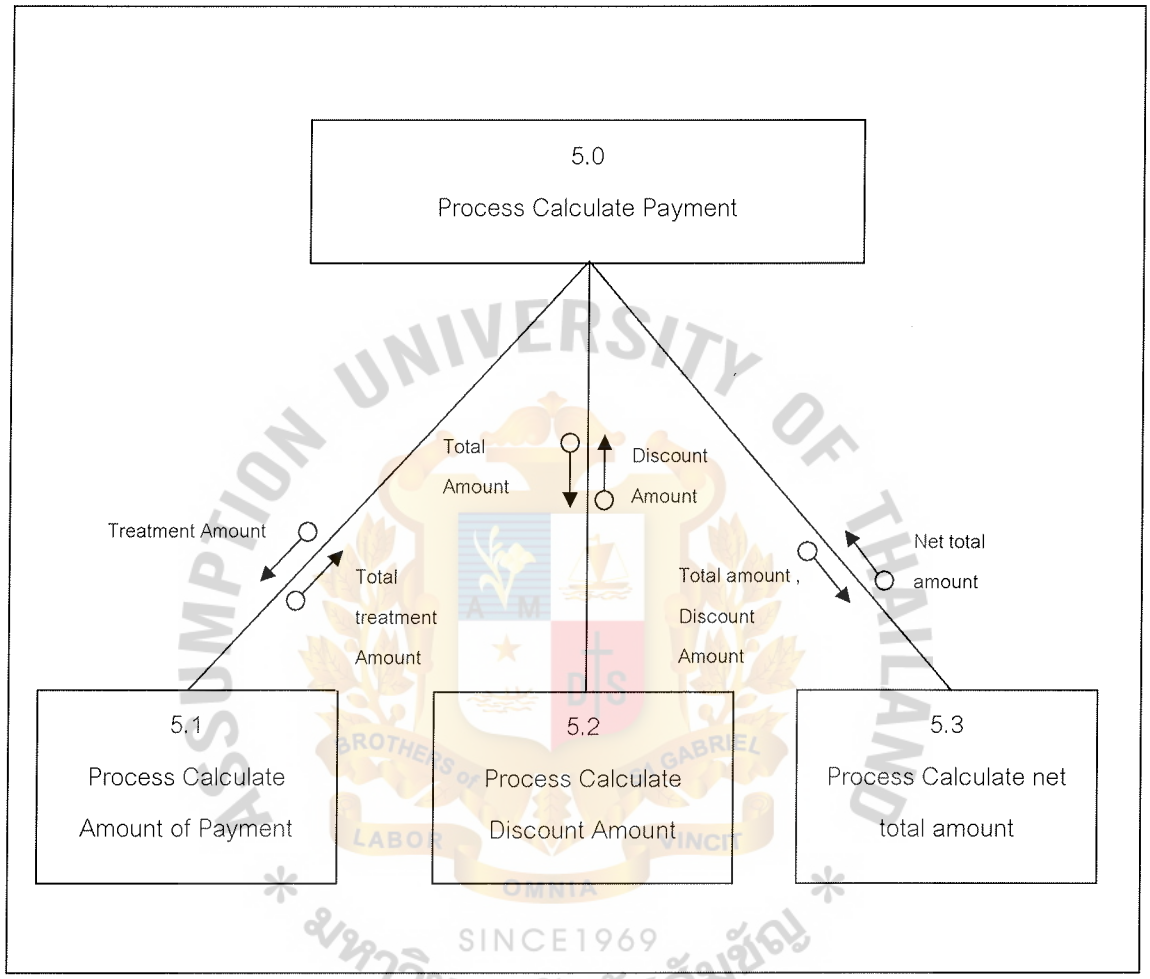

Figure F.4. Structure Chart of Process Calculate Payment

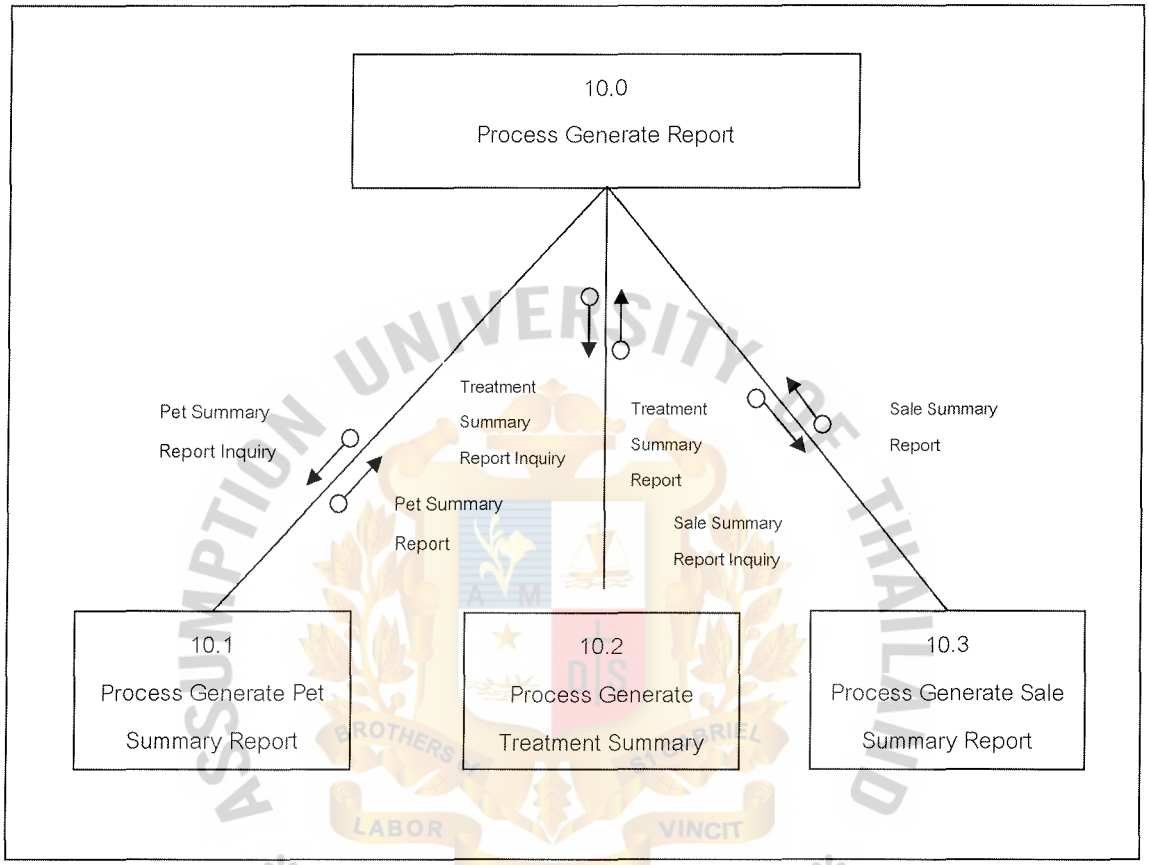

Figure F.5. Structure Chart of Process Generate Report

APPENDIX G

FEASIBILITY ANALYSIS

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(1) Alternative Candidates

Table G.1. Candidate System Matrix

Characteristics	Candidate 1	Candidate 2	Candidate 3
Portion of system computerized Brief description of the system that would be computerized in this candidate.	Retrieve Online Pet Information and Treatment Solution which can be support the business owner / Doctor to track inventory information in timely basis	Online Inventory information system tracking, and Pet treatment History on timely basis	Same as candidate 2
Benefits Brief description of the business benefits that would be realized for this candidate.	This solution can be implemented within 5 months and support most of user requirement.	This solution must be implemented as soon as possible.	Quick implementation & meet the business requirement as much as possible
Severs and workstations A description of the servers and workstations needed to support this candidate.	Server : Intel Pentium IV Processor 2.53 GHz, 256 MB DDR RAMS, L2 cache 80 GB, Floppy Drive with MySQL Server Client: Intel Pentium III Processor 1.7GHz 256 MB DDR RAM, 60 GB, 1.44 with Microsoft XP professional	Server : Intel Pentium IV Processor 2.53 GHz, 256 MB DDR RAMS, L2 cache 80 GB, Floppy Drive with MySQL Server Workstation: Intel Pentium IV Processor 2.0 GHz 256 MB DDR RAM, 40 GB, 1.44 with Microsoft 2000 professional	Same as candidate 1.
Software Tools Needed Software tools needed to design and build the candidate (e.g., database management system, emulators, operating systems, languages, etc.).Not generally applicable if applications software packages are to be purchased.	MS visual C++ and MS access for customization of package to provide report writing and integration.	MS visual basic, PHP MyAdmin and MySQL server 5.0 access for customization of package to provide report writing and integration.	MS Visual Basic 5.0 System Architect 2001 Internet Explorer
Application Software A description of the software to be purchased, built, accessed, or some	Package solution	Custom solution	Combination of package and custom solution
Method of Data Processing Generally some combination of: on-line, batch, deferred batch, remote batch, and real-time.	Client/Server	Same as candidate 1	Same as candidate 1

Table G.2. Candidate System Matrix (Continue)

Characteristics	Candidate 1	Candidate 2	Candidate 3
Output Devices and Implications A description of output devices that would be used, special output requirements, (e.g., network, preprinted forms, etc.), and output considerations (e.g., timing constraints)	Point of Sale and EDC system	Same as candidate 1	Same as candidate1
Input devices and Implications A description of input methods to be used, input devices (e.g., keyboard, mouse, etc), special input requirements (e.g., new or revised forms from which data would be input), and input considerations (e.g., timing of actual inputs).	Keyboard and mouse,	Same as candidate 1	Keyboard and optical mouse, and touch screen keyboard
Storage Devices and Implications Brief description of what data would be stored, what data would be accessed from existing stores, what storage media would be used, how much storage would be needed, and how data would be organized.	MS SQL Server 2003 DBMS with 500 GB arrayed capacity.	ORACLE RDBMS, with Oracle Application 11i e-business suite package	Same as candidate 1.

There are different among the three alternative candidates not only characteristic but also processing efficiency, flexibility, end-user friendliness, and the complexity of programming language that company should be consider for each candidate. The capacity of each alternative can be determine as detail below.

Table G.3. Degree of Capacity

Alternative	Processing Efficiency	Flexibility	End-User Friendliness	Programming Complexity
Candidate1	Medium	Low	Low	Medium
Candidate2	High	High	Medium	High
Candidate3	Low	Medium	High	Medium

Explanation of the degree of capacity

(1) Processing Efficiency

Candidate 2 uses PHP and MySQL for processing. So if compare with another candidate, candidate 2 has higher processing efficiency than the other candidate.

(2) Flexibility

According to Candidate2 customize the application to support the business requirement the application will be meet the most of user requirement and facilitated their work. Then system will have more flexible than the other candidate.

(3) End-user Friendliness

The interface and Input device of Candidate 3 is easy to user for the user. This provide the several of input device to user, user will take not much more effort for using the system or program.

(4) Programming Complexity

The programming of Candidate1 use standard solution with may more complex than candidate 2 and Candidate 3.

(2) Feasibility Analysis

After the candidate solutions are identified. The following feasibility analysis and criteria should be taken into consideration when the development team wants to select the best solution to implement the system.

(1) Operational Feasibility

(2) Technical Feasibility

(3) Economic Feasibility

(4) Schedule Feasibility

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Feasibility Analysis Matrix

Table G.4. Feasibility Analysis Matrix for Phaya Thai Pet Care Clinic

Feasibility Criteria	Wt	Candidate 1	Candidate 2	Candidate 3
Operation Feasibility Functionality: A description of to what degree the candidate would benefit the organization and how well the system would work. Political: A description of how well received this solution would be form user management, user, and organization perspective.	30%	Support the required functionality only partially Many users and management accept this solution, as it partially support the requirement Score : 85	Fully Support the required functionality Many users and management strongly accept this solution, as it partially support the requirement Score : 90	Support the required functionality only the period of time Less users and management accept this solution , as it support solution Score : 60
Technical Feasibility Technology: An assessment of the maturity availability (or ability to acquire), and desirability of the computer technology needed to support this candidate. Expertise: An assessment of the technical expertise needed to develop, operate, and maintain the candidate system.	30%	The solution is mixed between application tools and tailor made. It required 7 months to develop and implemented. Require to hire or training Visual Basic expertise to perform modification if necessary. Score : 70	The solution is pure application tools. It needs to know how to configure application tools with legacy system. It requires 3 months to implement. Require to hire or training MySQL and Visual Basic expertise to perform complicate process and flow. Score : 90	Although current technical staff has only Power builder experience, the senior analysts who saw the MS Visual Basic demonstration and presentation have agreed the transaction will be simple and finding experienced VB programmers will be easier than finding PowerBuilder programmers and at a much cheaper costs. MS Visual Basic is a mature technology based on version number. Score: 80
Economic Feasibility Development Cost:	30%	Approximately 1,586,500 Baht Score : 70	Approximately 978,500 Baht Score : 85	Approximately 805,600 Score : 70
Schedule Feasibility An assessment of how long the solution will take to design and implement.	10%	About 5 months Score : 80	About 3 – 4 months Score : 90	About 6 months Score : 85
Ranking	100 %	75.5	88.5	71.5

Table G.5. Estimated Cost of Candidate 1, Baht.

Cost Items		Years				
		1	2	3	4	5
Fixed Cost						
Hardware Cost :						
Computer Server Cost		750 ,000	-	-	-	-
Workstation Cost	4 units@32, 000	128,000	-	-	-	-
Laser Printer	3 units@20,000	60,000	-	-	-	-
Total Hardware Cost		938,000	-	-	-	-
Maintenance Cost :			-	80,000	85,000	90,000
Total Maintenance Cost			-	80,000	85,000	90,000
Software Cost :						
Window Server 2003		250,000	-	-	-	-
Microsoft Office XP		224,000	-	-	-	-
Software Package		900,000	-	-	-	-
Network Cost		250,000	250,000	250,000	250,000	250,000
Total Software Cost		1,624,000	250,000	250,000	250,000	250,000
Implementation Cost :						
Basic Training Cost		100,000	-	-	-	-
Set up Cost		48,000	-	-	-	-
Total Implementation Cost		148,000	-	-	-	-
Total Fixed Cost (Baht)		2,710,500	250,000	330,000	335,000	340,000

Table G.6. Accumulated Cost of Candidate 1, Baht.

Year	Total Computerized Cost	Accumulated Cost
1	2,710,500	2,710,500
2	250,000	2,960,000
3	330,000	3,290,000
4	335,000	3,625,000
5	340,000	3,965,000
Total	3,965,000	-

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Table G.7. Estimated Cost of Candidate 2, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Hardware Cost :					
Computer Server Cost	650 ,000	-	-	-	-
Workstation Cost 4 units@33, 000	132,000	-	-	-	-
Laser Printer 3 units@19,000	57,000	-	-	-	-
Total Hardware Cost	839,000	-	-	-	-
Maintenance Cost :		-	50,000	50,000	50,000
Total Maintenance Cost		-	50,000	50,000	50,000
Software Cost :					
Window Server 2003	250,000	-	-	-	-
Microsoft Office XP	250,000	-	-	-	-
Software Package	1,000,000	-	-	-	-
Network Cost	150,000	-	-	-	-
Total Software Cost	1,650,000	-	-	-	-
Implementation Cost :					
Basic Training Cost	80,000	-	-	-	-
Set up Cost	50,000	-	-	-	-
Total Implementation Cost	130,000	-	-	-	-
Total Fixed Cost (Baht)	2,619,000	-	50,000	50,000	50,000

Table G.8. Accumulated Cost of Candidate 2, Baht.

Year	Total Computerized Cost	Accumulated Cost
1	2,619,000	2,619,000
2	-	2,619,000
3	50,000	2,669,000
4	50,000	2,719,000
5	50,000	2,769,000
Total	2,719,000	-

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Table G.9. Estimated Cost of Candidate 3, Baht.

Cost Items		Years				
		1	2	3	4	5
Fixed Cost						
Hardware Cost :						
Computer Server Cost		650 ,000	-	-	-	-
Workstation Cost	4 units@30, 000	120,000	-	-	-	-
Laser Printer	3 units@22,000	66,000	-	-	-	-
Total Hardware Cost		836,000	-	-	-	-
Maintenance Cost :			35,000	40,000	45,000	45,000
Total Maintenance Cost			35,000	40,000	45,000	45,000
Software Cost :						
Window Server 2003		220,000	-	-	-	-
Microsoft Office XP		280,000	-	-	-	-
Software Package		1,500,000	-	-	-	-
Network Cost		250,000	-	-	-	-
Total Software Cost		1,650,000	-	-	-	-
Implementation Cost :						
Basic Training Cost		100,000	-	-	-	-
Set up Cost		85,000	-	-	-	-
Total Implementation Cost		185,000	-	-	-	-
Total Fixed Cost (Baht)		2,671,000	35,000	40,000	45,000	45,000

Table G.10. Accumulated Cost of Candidate 3, Baht.

Year	Total Computerized Cost	Accumulated Cost
1	2,671,000	2,671,000
2	35,000	2,706,000
3	40,000	2,746,000
4	45,000	2,791,000
5	45,000	2,836,000
Total	2,836,000	-

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Table G.11. Comparison of the Accumulated Cost among Candidates

Year	Candidate1	Candidate2	Candidate3
1	2,710,500	2,619,000	2,671,000
2	2,960,000	2,619,000	2,706,000
3	3,290,000	2,669,000	2,746,000
4	3,625,000	2,719,000	2,791,000
5	3,965,000	2,769,000	2,836,000

In conclusion, after the management and business team have been analyzed for the Estimation for the Hardware / Software costing among these three candidates. Then they have decided to choose Candidate 2 in order to participate in the new system.

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APPENDIX H

STUDY DOCUMENTATION

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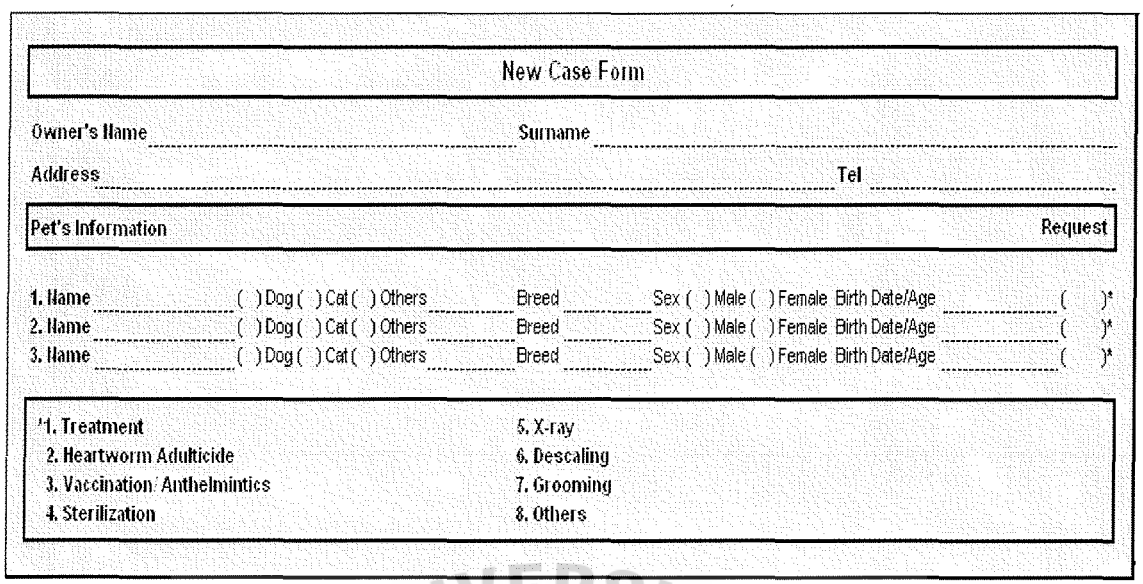


New Case Form

Owner's Name ..... Surname .....

Address ..... Tel .....

Pet's Information Request

1. Name ..... ( ) Dog ( ) Cat ( ) Others ..... Breed ..... Sex ( ) Male ( ) Female Birth Date/Age ..... ( )*
2. Name ..... ( ) Dog ( ) Cat ( ) Others ..... Breed ..... Sex ( ) Male ( ) Female Birth Date/Age ..... ( )*
3. Name ..... ( ) Dog ( ) Cat ( ) Others ..... Breed ..... Sex ( ) Male ( ) Female Birth Date/Age ..... ( )*

*1. Treatment
2. Heartworm Adulticide
3. Vaccination/ Anthelmintics
4. Sterilization
5. X-ray
6. Descaling
7. Grooming
8. Others

Figure H.1. Example of new Customer Application Form

PHAYA THAI PET CARE

69/14-16 Soi Phathumwanresort, Phaya Thai,
Ratchathavee, Bangkok 10400
Tel. 02-2517000 Fax. 02-2511338

Customer ID .....
Owner Name .....
Address .....
.....
Tel .....

Figure H.2. Example of Customer ID card

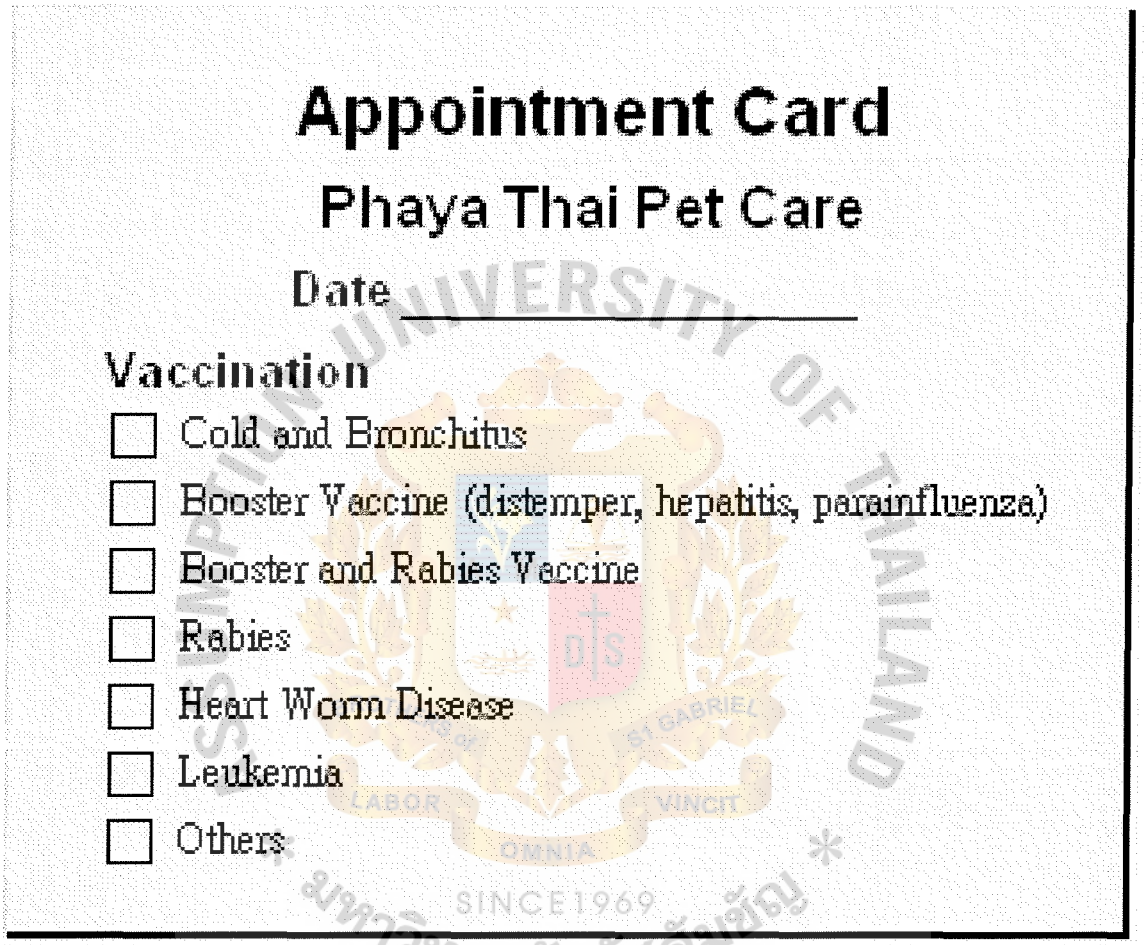
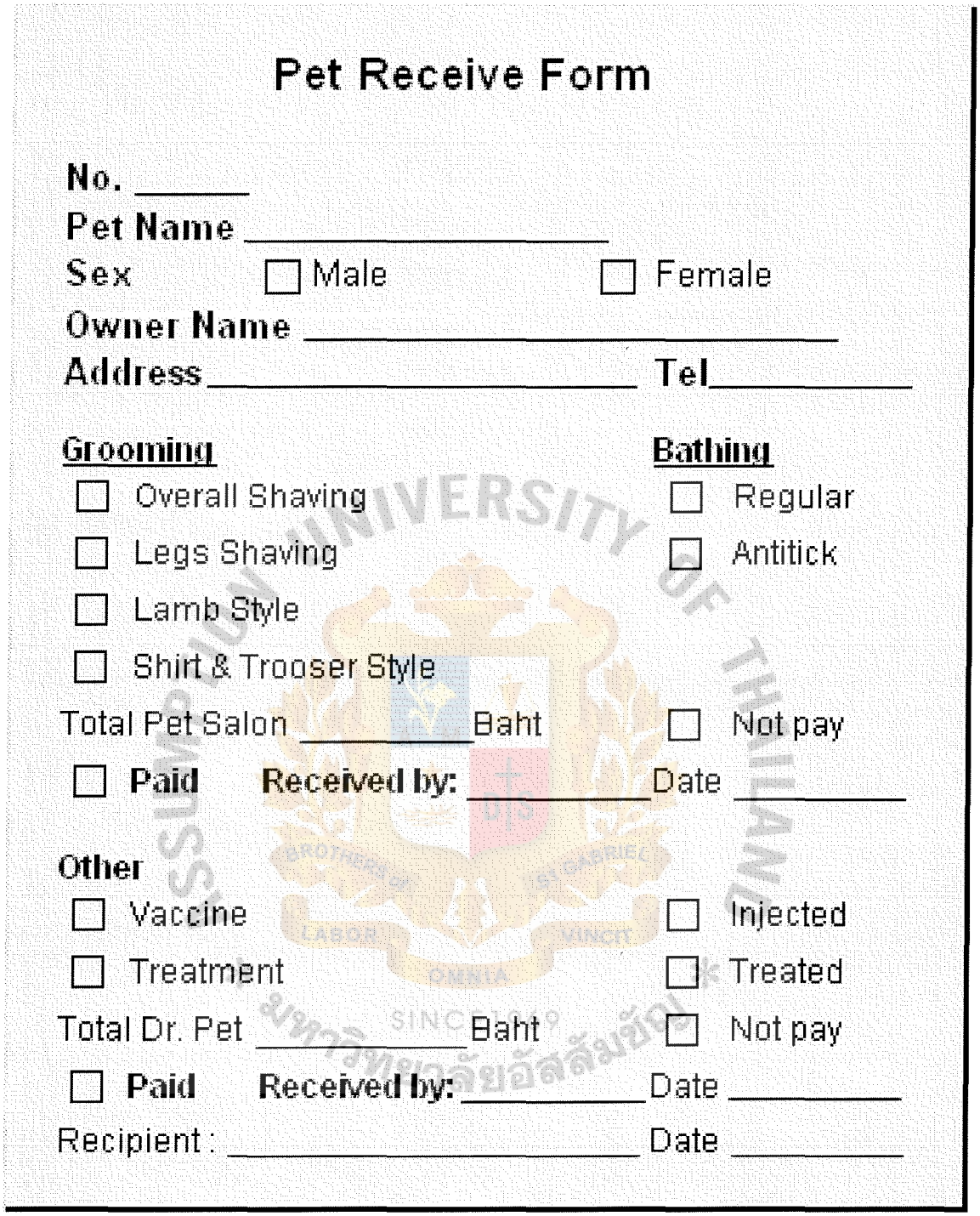


Figure H.3. Example of Appointment Card



Pet Receive Form

No. _____

Pet Name _____

Sex ☐ Male ☐ Female

Owner Name _____

Address _____ **Tel** _____

Grooming

- ☐ Overall Shaving
- ☐ Legs Shaving
- ☐ Lamb Style
- ☐ Shirt & Trooser Style

Total Pet Salon _____ Baht

☐ **Paid** **Received by:** _____ Date _____

Bathing

- ☐ Regular
- ☐ Antitick

☐ Not pay

Other

- ☐ Vaccine
- ☐ Treatment

Total Dr. Pet _____ Baht

☐ **Paid** **Received by:** _____ Date _____

- ☐ Injected
- ☐ Treated

☐ Not pay

Recipient : _____ Date _____

Figure H.4. Example of Pet Receive form

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