



Practical Development of Information System in Business Context:
Inventory, Purchasing and Sales System for Kittisak Pets Mart

PROJECT WRITE-UP

Prepared by

Ms. Panida Gantanant

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Developers: Ms.Panida Gantanant
Advisor: A.Dhirachat Chayaporn
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The Department of Business Information Systems, ABAC School of Management has approved the aforementioned project, which includes complete Project Write-up and System submitted in fulfillment of the 3-credit course BIS 4995 Information System Development towards the requirements for the Bachelor's Degree of Business Administration in Business Information Systems

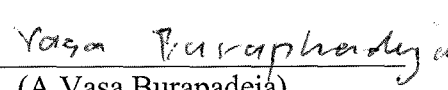
Advisory Committee:



(A.Dhirachat Chayaporn)
Advisor



(A.Dr.Rapeepart Techakitroj)
Chairman



(A.Vasa Burapadeja)
Member



(A.Rossukhon Taechasivalai)
Member

September,2004

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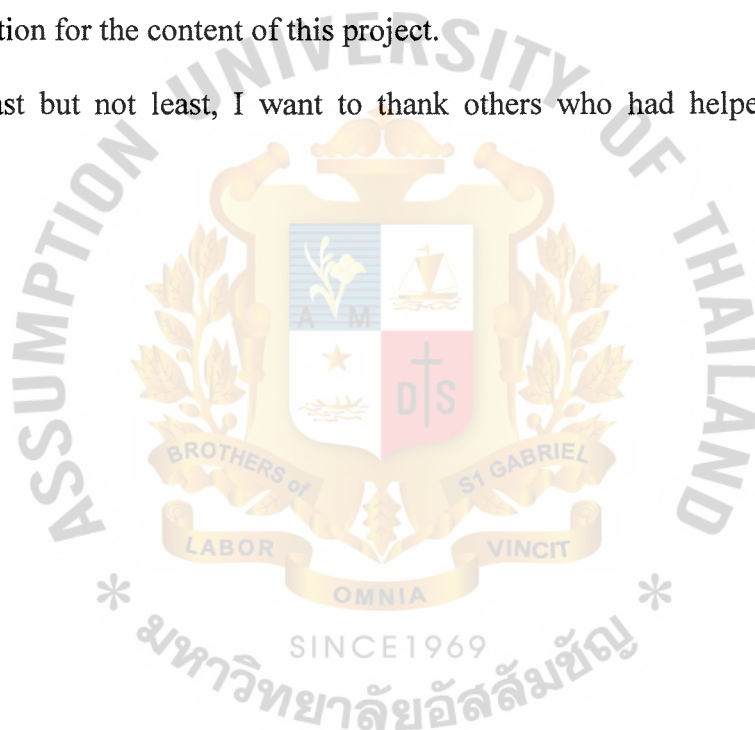


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1. INTRODUCTION

1.1 Organization's Profile

Kittisak Pets Mart has established in 1997 and over the past 7 years, the shop has acquired a strong reputation of trust among its many customers. What separates Kittisak Pets Mart is simply customer service. It is this aspect as well as product quality and selection and a real love of animals that gives Kittisak Pets Mart its winning edge. Kittisak Pets Mart is committed to do everything possible to provide its customers, both human and pets, with superior service and products that meet your needs and provide lasting value.

As a retailer, the shop offers tons of different pet supplies. The shop's pet supplies for Dogs and Cats, includes collars, beds, bowls, shampoos & conditioners, combs & brushes, pooper scoopers, other cleanup supplies for stains & odors, health products, such as vitamins, dental needs, the itches and fleas, toys, treats and of course bones of every kind. The shop has expanded its pet supplies to include grooming items and training aids, including books. The shop also carries a full line of pet supplies for Ferrets and small animal products for other small animals. The shop has a continuous expanding pet product line.

The shop also provides grooming service for dogs and cats – no tranquilizers are used. Only gentle handling and lots of patience. The shop offers the customer specialized shampoos to give customer's pet seasonal comfort and protection from external parasites or allergies.

1.2 Organization's Location

The shop is situated at 208/6 Moo 6, Pattanakarn Road, Amphur Pravet, Bangkok, Thailand 10250.

1.3 Organization's Structure

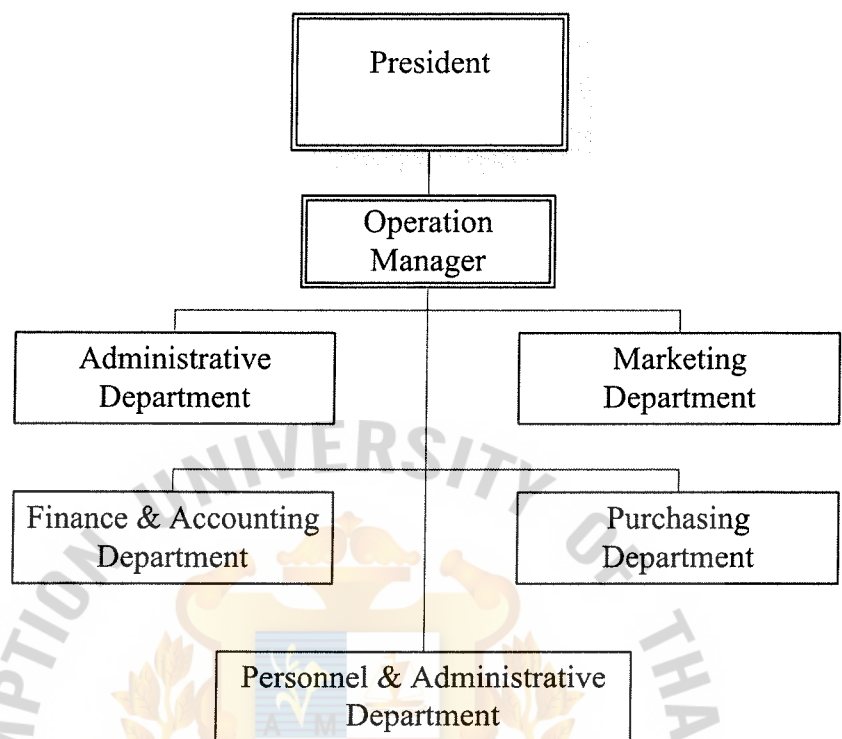


Figure 1-1 Organization Chart of Kittisak Pets Mart

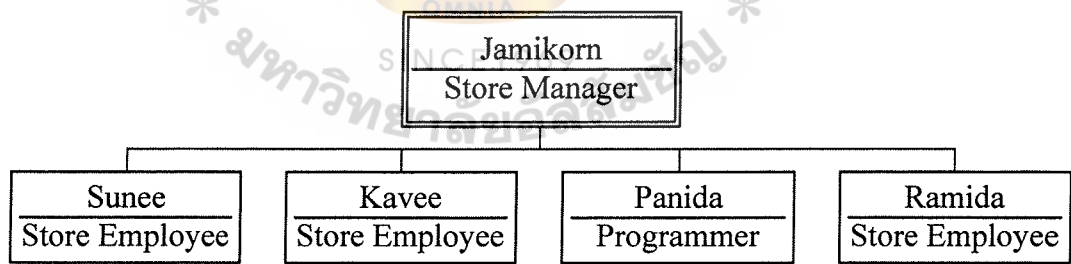


Figure 1-2 Department Chart of Marketing and Purchasing Department

1.4 Project Plan

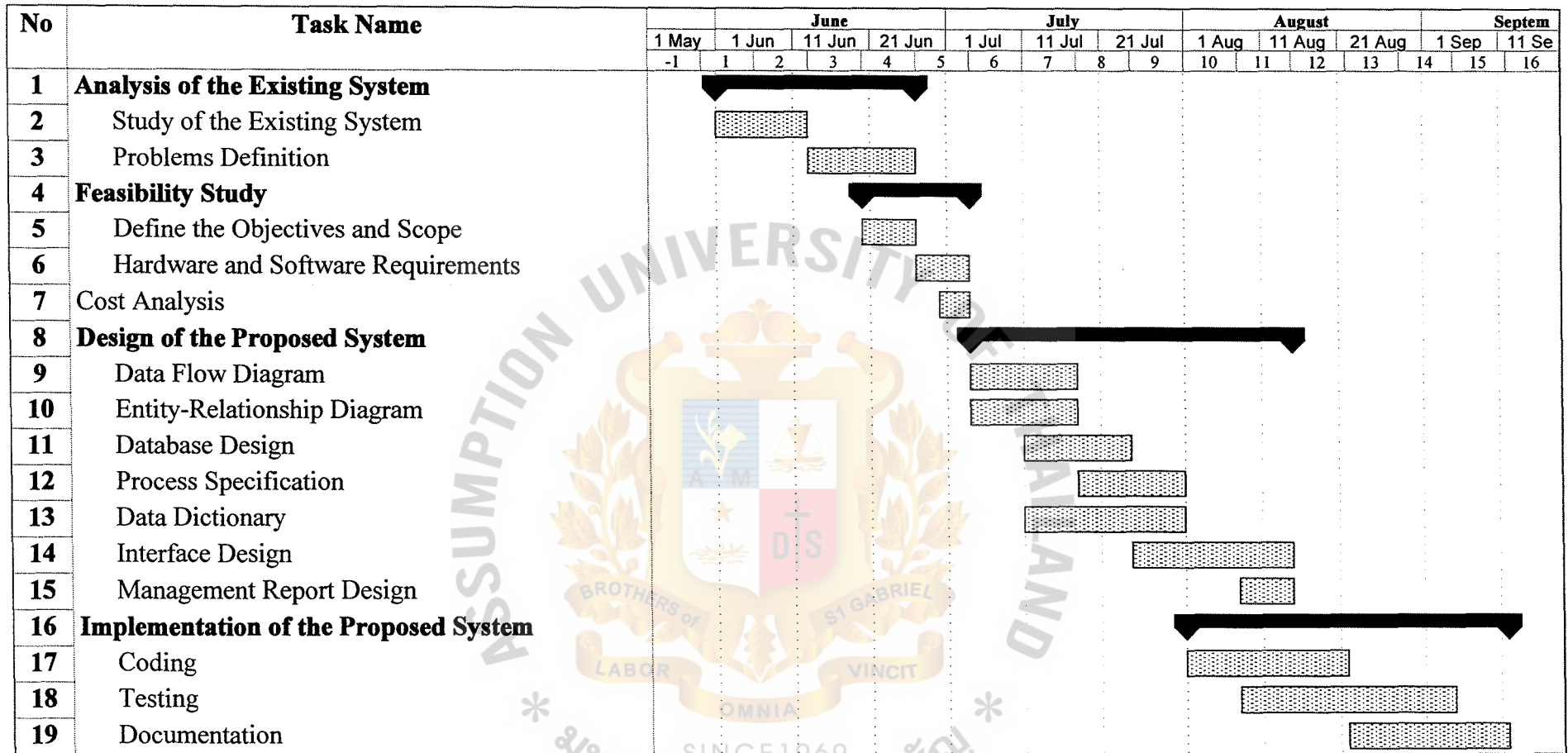


Figure 1-3 Project Plan for Kittisak Pets Mart for Inventory, Purchasing and Sales System

II. THE EXISTING SYSTEM

2.1 Background of Existing System

Currently, the information system of the company is operated manually. All information is paper-based and kept in a cabinet. Company also provides the discount for the member. To become a member of Kittisak Pets Mart, each customer has to fill out the form and it will be kept in the main folder which keeps the entire members list inside. When customer purchased the products from the store, the staff will calculate the total cost and the discount by using cash register. When products are sold, the staff manually deducts the quantity sold from the inventory document. After a manual check of the inventory with findings that the inventory level is low, the staff will ask the manager for the approval of a purchase order and then sent the purchase order to the supplier. As such, the quantity purchased and received is manually added to the inventory document.

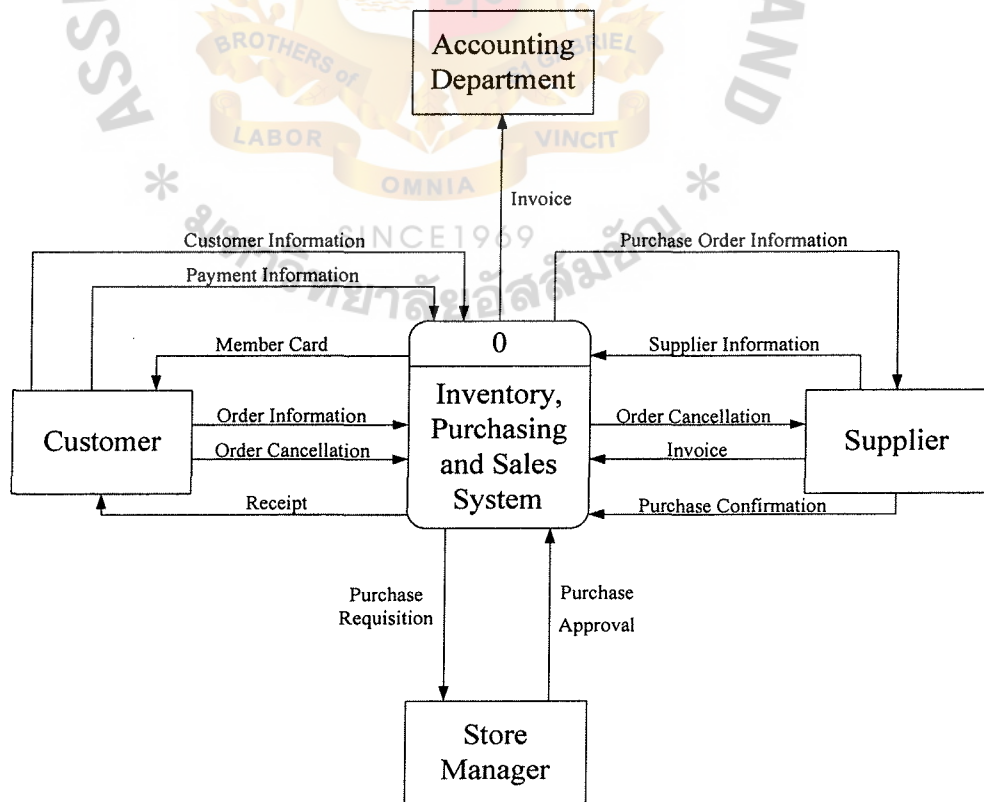


Figure 2-1 Context Diagram of Existing System

2.2 Problem Definition

(1) Ineffective Inventory Control

Due to the use of manual operation, there are some mistakes occur and lead to the ineffectiveness problem. The company finds it is time consuming task and encounter with the mismatch of actual and reality in information recording process.

(2) Duplication and Inconsistency of Information

The manually operation process can lead to the problem of information duplicating which make the data become inconsistent.



III. THE PROPOSED SYSTEM

3.1 Feasibility Study

(1) Objectives of the System

- (a) To reduce amount of paperwork involved in finding out the cost of the products and ordering it.
- (b) To decrease amount of time it takes for a staff to order new supplies.
- (c) To generate the sales report of Kittisak Pets Mart for the manager to make proper decision and solve the inventory problems.
- (d) To eliminate some unnecessary costs, to lower the operation costs.
- (e) To eliminate the extra stock that incurs cost to the company.
- (f) To make the new system more standardized and user friendly.

(2) Scope of the System

(a) Sales System:

- Add and update customer information
- Receive orders
- Generate receipt
- Calculate total payment and tax

(b) Inventory System:

- Add and update inventory information
- Centralized database
- Inventory monitoring system (reorder point, inventory level)
- FIFO inventory
- Update Stock based on sales order and purchase order

(c) Purchasing System:

- Purchase requisition
- Suppliers information

(d) Management Report:

- Sale Report (On monthly, yearly basis. Categorized by year, month)
- Customer Report (On monthly and yearly basis. Categorized by customer ID and Order ID)
- Purchase Report (On monthly and yearly basis. Categorized by Supplier ID and Purchase order ID)

(3) Hardware and Software Requirement

In table 3-1, the recommended specification will use a more powerful Pentium IV Processor with a larger Hard disk to support large amounts of data. The CD-RW is used to backup data from the system to make the system more reliable and easier to recover the system again in case of a failure. According to the system design, the company will use software application to process through all the system. Moreover, company is using the UPS to protect the loss or the instability of electricity.

According to the table 3-2, the company will use Windows XP because it provides a stable working environment to the system. Norton Antivirus 2004 is used protect the system from computer viruses. In addition, Microsoft Access, Microsoft Office will be used for keeping record of all transactions in details and uses in general office work such as issue invoice, print letter, etc.. Nero Burning Rom Program will be used to back up data into CD.

Table 3-1 Hardware Requirement for Server Computer

HARDWARE	SPECIFICATION
CPU	Intel Pentium 4 2.4A GHz
MEMORY	Kingston 256M DDR RAM
HARD DISK	Seagate ATA100 40 gigabytes (GB)
CD-ROM DRIVE	Lite ON CD-RW 52x32x52
FLOPPY DRIVE	SONY Floppy Disk drive 3.5 inch
DISPLAY ADAPTER	Inno3D TNT2 32M PCI
DISPLAY	Samsung 753s 17"
UPS	Unisave Uni 500
PRINTER	HP LaserJet 1015 Series

Table 3-2 Software Requirements for Server Computer

SOFTWARE	SPECIFICATION
Operating System	Microsoft Windows XP Professional Corporate Edition
Applications	<p>Ahead Nero Burning ROM</p> <p>Microsoft Internet Explorer (integrated with OS)</p> <p>Microsoft Office System 2003 Professional Edition</p> <p>Norton Antivirus 2004</p>

(4) Cost Analysis

Cost analysis formulated on the cost of the system that come from non-operating (e.g. Fixed costs) and operating costs (e.g. Salary, Utility expenses).

(a) System Costs of Existing System

Table 3-3 Cost of Existing System, Baht

Cost	Year				
	1	2	3	4	5
Fixed Costs:					
Hardware					
Cash Register (Casio PCR-T465)	1,680.00	1,680.00	1,680.00	1,680.00	1,680.00
Software	-	-	-	-	-
Implementation Cost					
Training Cost	-	-	-	-	-
Maintenance Costs	200.00	500.00	500.00	600.00	900.00
Total Fixed Costs	1,880.00	2,180.00	2,180.00	2,280.00	2,580.00
Operating Costs:					
Staff					
Manager 1 @15,000/month	180,000.00	198,000.00	216,000.00	234,000.00	252,000.00
Sales Staff 1 @7,500/month	90,000.00	99,000.00	108,000.00	117,000.00	126,000.00
Inventory Staff 2 @6,000/month	144,000.00	158,400.00	172,800.00	187,200.00	201,600.00
Accounting Staff @10,000/month	120,000.00	132,000.00	144,000.00	156,000.00	168,000.00
Paper	1,670.00	2,150.00	2,560.00	2,850.00	3,050.00
Utility	18,600.00	19,530.00	20,460.00	21,390.00	22,320.00
Opportunities Cost	40,000.00	45,000.00	50,500.00	56,550.00	63,510.00
Other expenses	1,450.00	2,015.00	2,506.50	2,927.00	3,120.75
Total Operating Costs	595,720.00	656,095.00	716,826.50	777,917.00	839,600.75
Total Cost of Existing System	597,600.00	658,275.00	719,006.50	780,197.00	842,180.75

(b) System Costs of Proposed System

Table 3-4 Cost of Proposed System, Baht

Cost	Year				
	1	2	3	4	5
Fixed Costs:					
Hardware					
Pentium IV 2.4 GHz	3,298.00	3,298.00	3,298.00	3,298.00	3,298.00
Monitor 17" Flatron	1,050.00	1,050.00	1,050.00	1,050.00	1,050.00
Printer Laser HP	2,040.00	2,040.00	2,040.00	2,040.00	2,040.00
Software					
Window XP Professional	1,580.00	1,580.00	1,580.00	1,580.00	1,580.00
MS-Office XP	2,980.00	2,980.00	2,980.00	2,980.00	2,980.00
Implementation Cost Development Cost(400Hrs@200)	100,000.00	-	-	-	-
Training Cost(10Hrs@250)	2,500.00	-	-	-	-
Maintenance Costs	500.00	450.00	800.00	1,100.00	2,100.00
Total Fixed Costs	113,948.00	11,398.00	11,748.00	12,048.00	13,048.00
Operating Costs:					
Staff					
Manager @15,000/month	180,000.00	198,000.00	216,000.00	234,000.00	252,000.00
Sale Staff@7,500/month	90,000.00	99,000.00	108,000.00	117,000.00	126,000.00
Accounting Staff @10,000/month	120,000.00	132,000.00	144,000.00	156,000.00	168,000.00
Paper	950.00	1,150.00	1,340.00	1,450.00	1,580.00
Utility	20,160.00	21,168.00	22,176.00	23,184.00	24,192.00
Opportunities Cost	30,000.00	33,000.00	45,200.00	52,350.00	58,700.00
Other expenses	950.00	1,250.00	2,225.00	2,888.00	3,122.00
Total Operating Costs	442,060.00	485,568.00	538,941.00	586,872.00	633,594.00
Total Cost of Proposed System	556,008.00	496,966.00	550,689.00	598,920.00	646,642.00

(c) The Comparison of Accumulated System Costs between Existing System and Proposed System

Table 3-5 Accumulated System Costs of Existing System for 5 years, Baht.

Year	Total Annual Cost	Accumulated Cost
1	597,600.00	597,600.00
2	658,275.00	1,255,875.00
3	719,006.50	1,974,881.50
4	780,197.00	2,755,078.50
5	842,180.75	3,597259.25

Table 3-6 Accumulated System Costs of Proposed System 5 years, Baht.

Year	Total Annual Cost	Accumulated Cost
1	556,008.00	556,008.00
2	496,966.00	1,052,974.00
3	550,689.00	1,603,663.00
4	598,920.00	2,202,583.00
5	646,642.00	2,849,225.00

Table 3-7 The Comparison of Accumulated System Costs, Baht.

Year	Accumulated Existing System Cost	Accumulated Proposed System Cost
1	597,600.00	556,008.00
2	1,255,875.00	1,052,974.00
3	1,974,881.50	1,603,663.00
4	2,755,078.50	2,202,583.00
5	3,597259.25	2,849,225.00

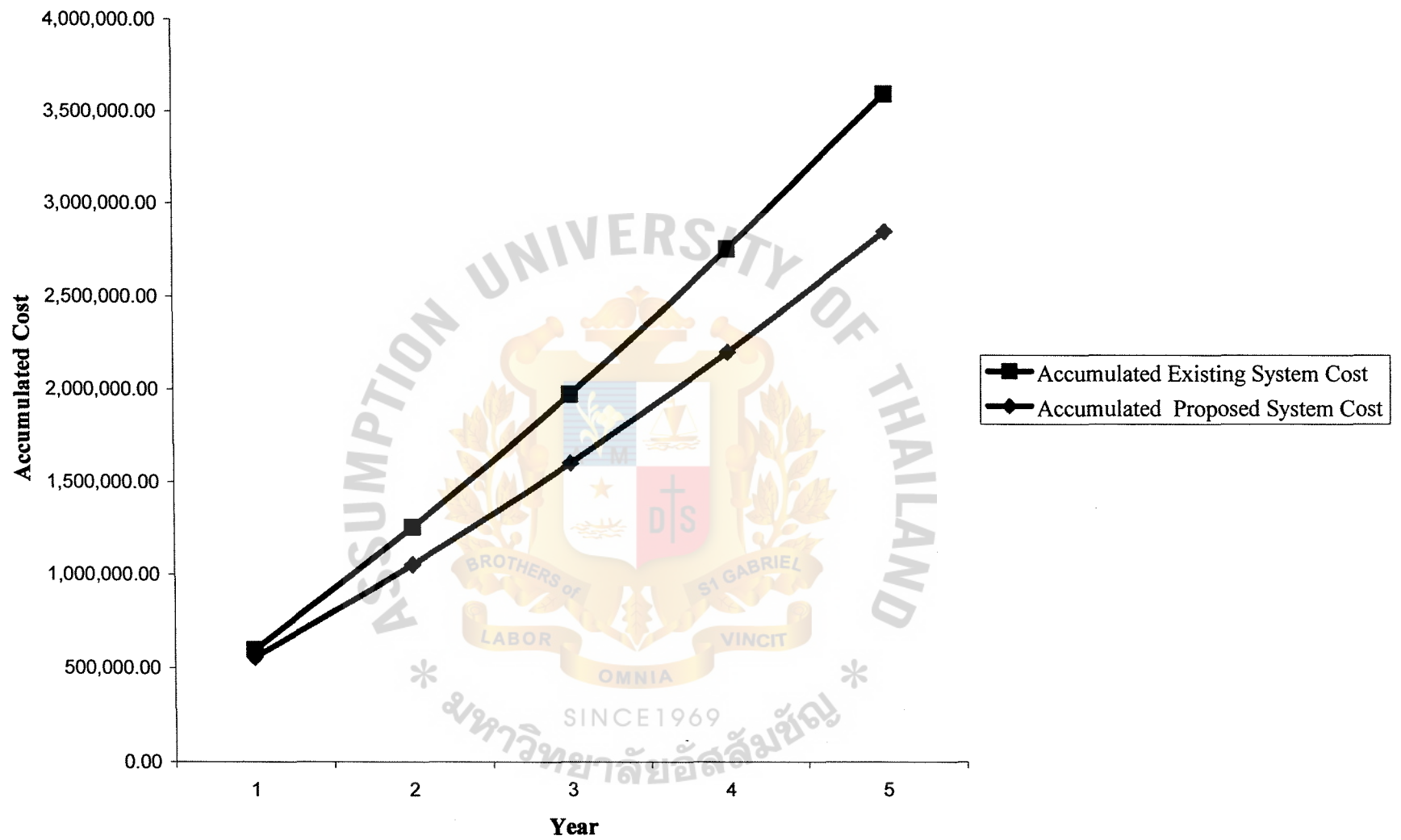


Figure 3-1 Break-even Analysis

The proposed system can help company to reduce unnecessary expenses (e.g. salary expenses, other expenses and opportunity cost). Total annual cost of proposed system tends to increase faster than total cost of Existing system since the new system can save more costs. Even though the utilities expenses are higher than the existing system, the salary cost can be reduced much more.

The result of the Break-even Analysis from above line graph can demonstrated that if company implements the proposed system, company can reduce a lot of its expenses. Though company have to invest its fixed cost much higher than the existing system in the first year, however, new system can save more operating costs than the existing system. (Additional costs are increased in the smaller proportions when compare to the existing system) In the long-run, company can save more and more in the future with lower opportunity cost. Finally, the new proposed system can help the company and management to save costs and lead to successful in the long run.

3.2 System Design

(1) Data Flow Diagram

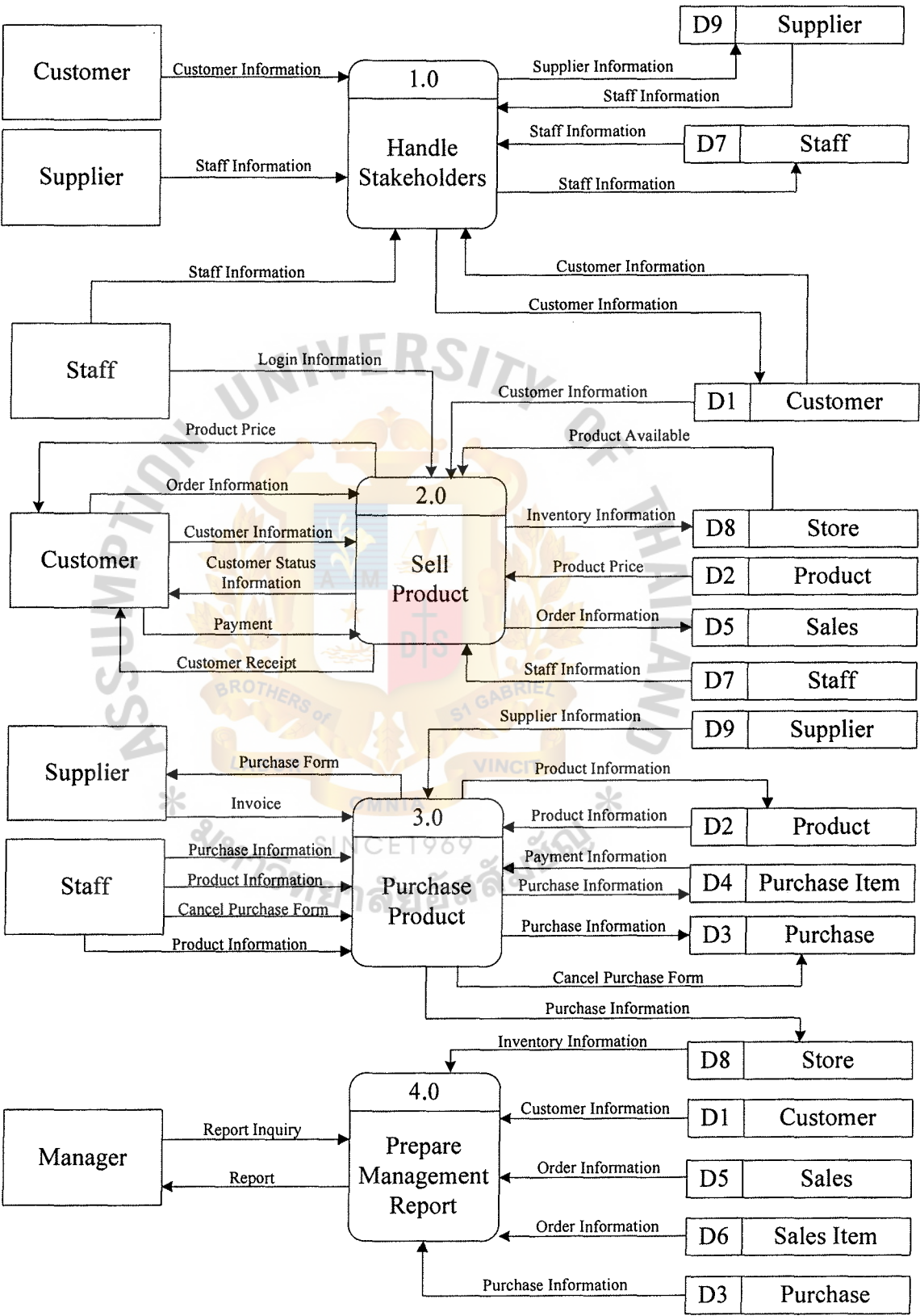


Figure 3-2 Data Flow Diagram – Level 0

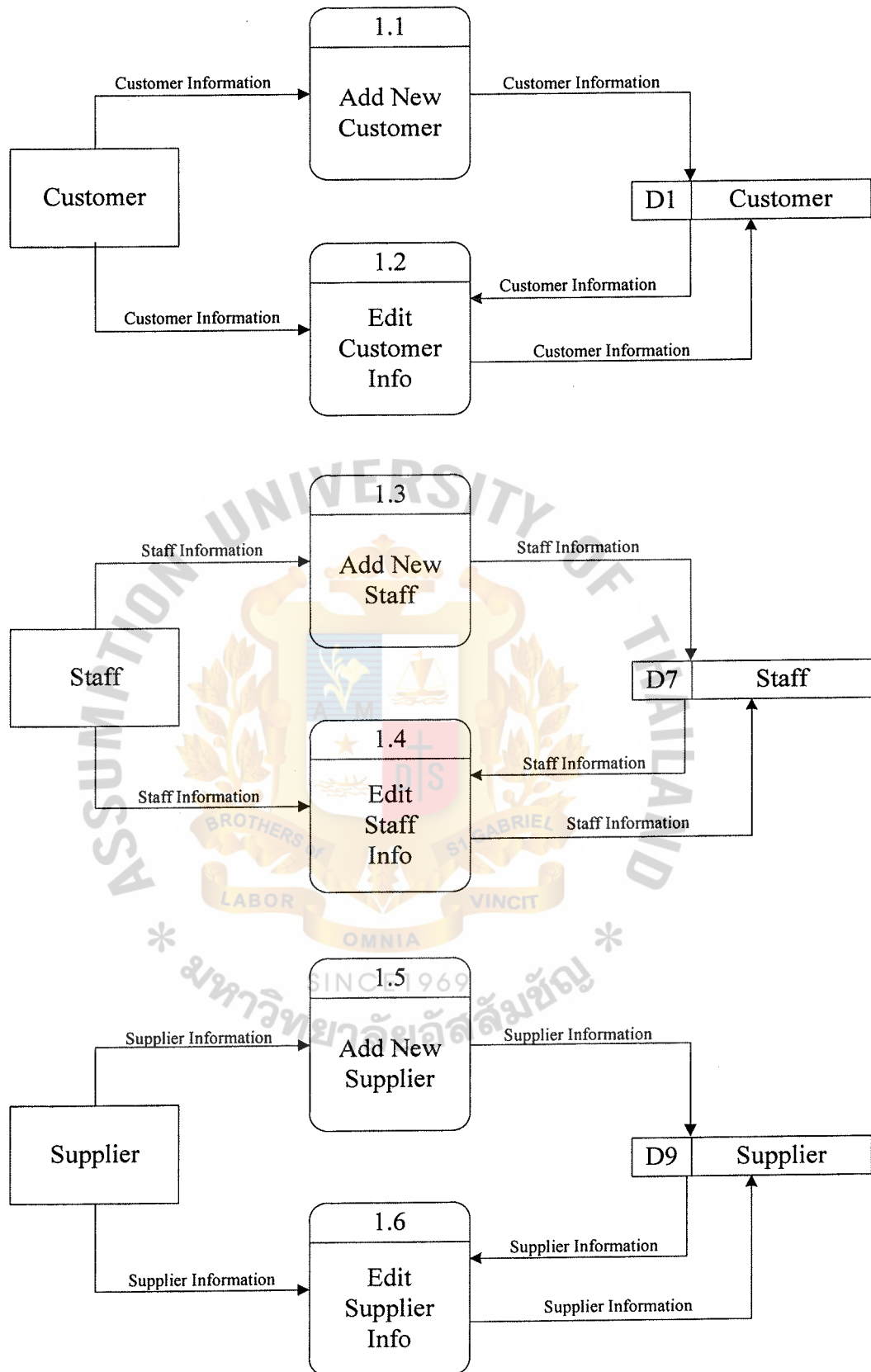


Figure 3-3 Data Flow Diagram – Level 1 for Process 1

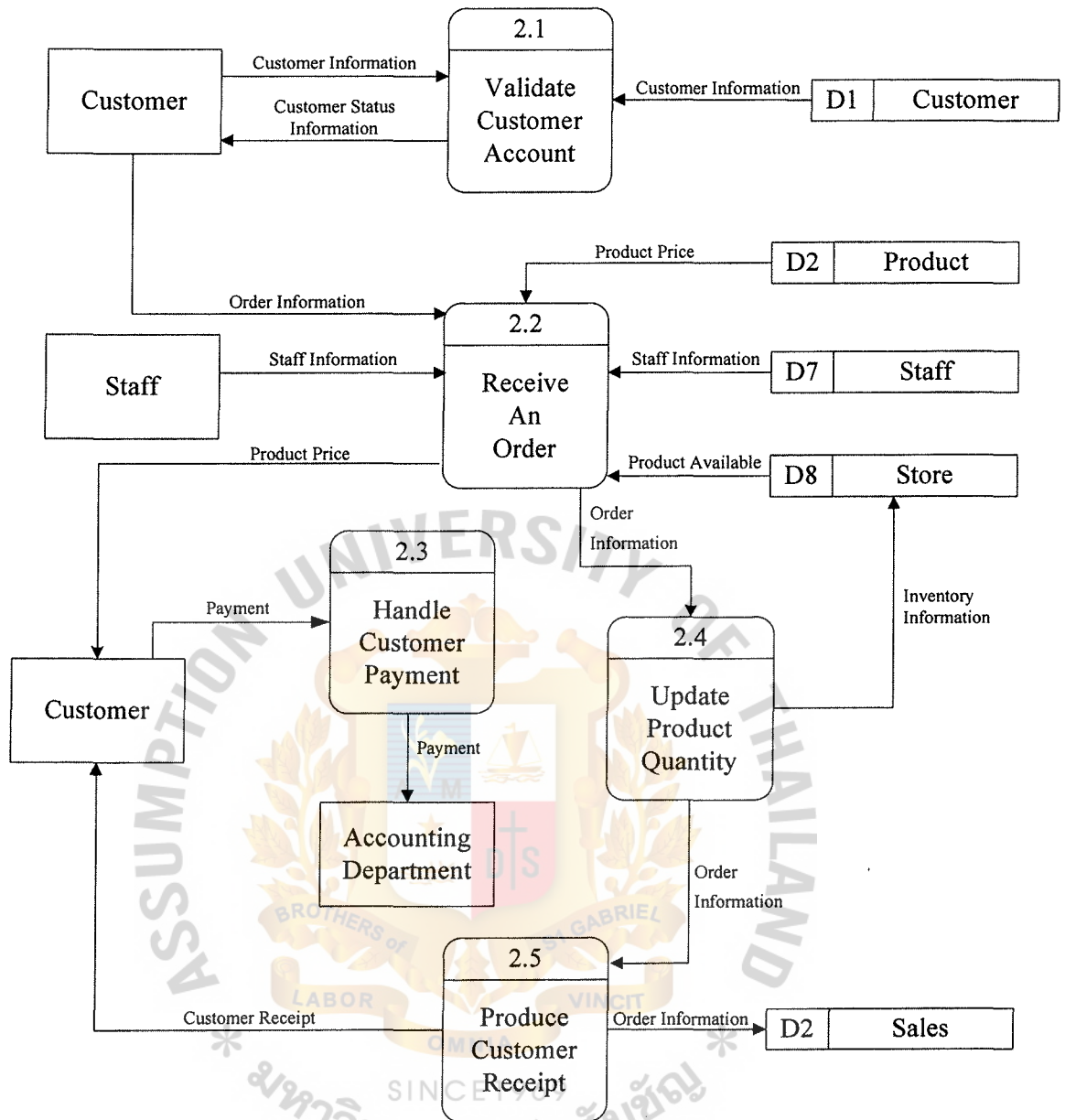


Figure 3-4 Data Flow Diagram – Level 1 for Process 2

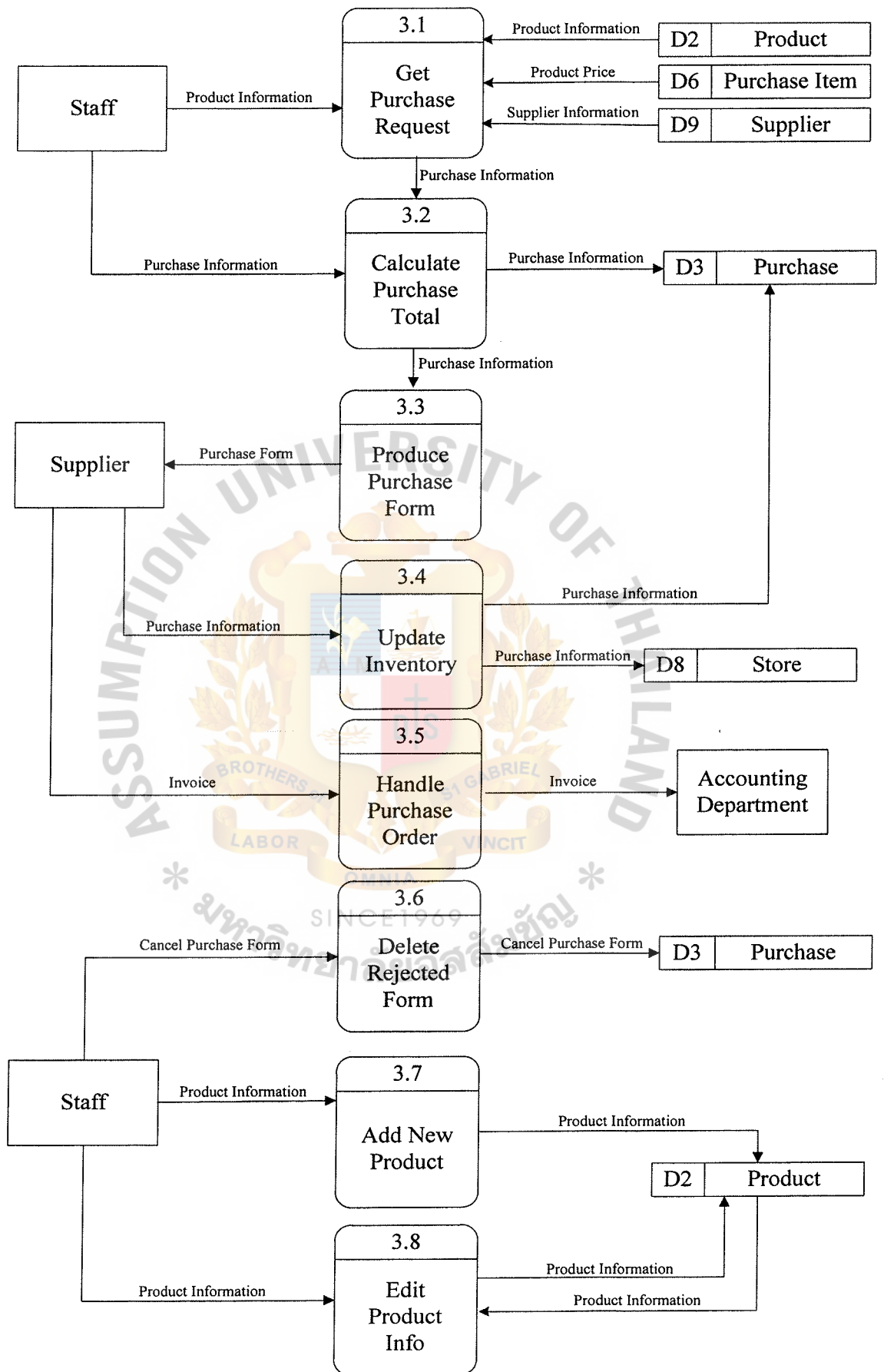


Figure 3-5 Data Flow Diagram – Level 1 for Process 3

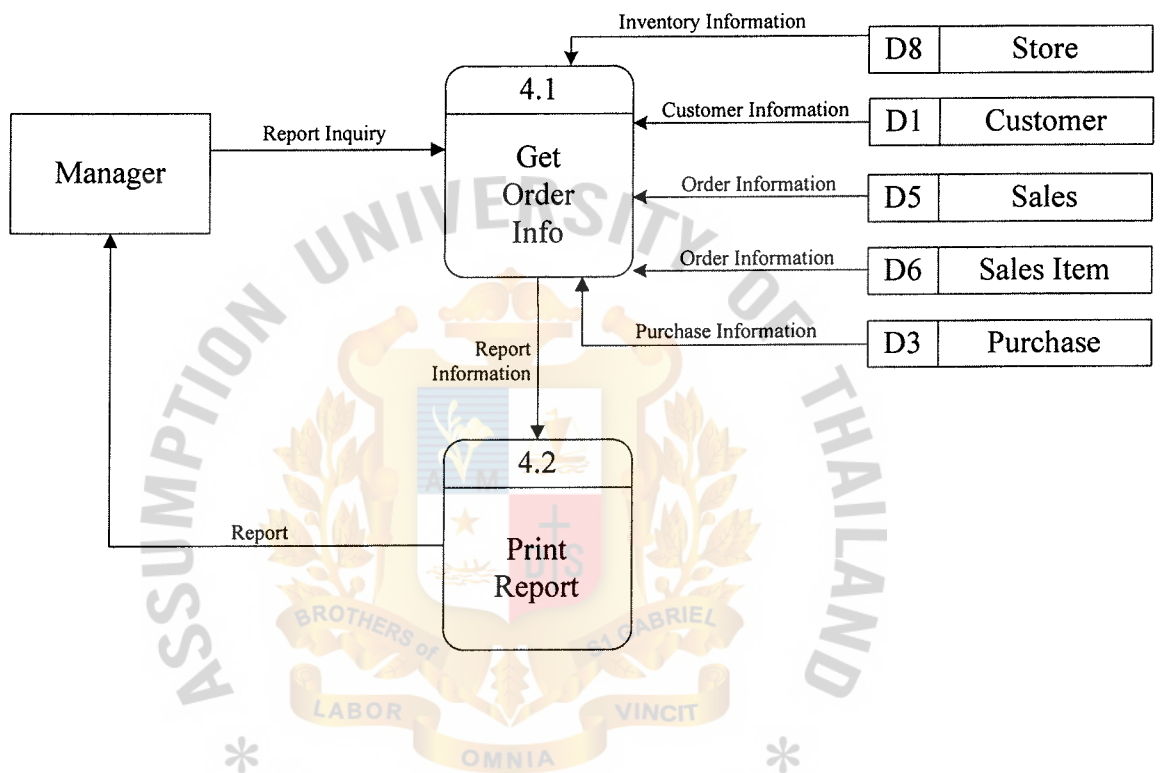


Figure 3-6 Data Flow Diagram – Level 1 for Process 4

(2) Entity-Relationship Diagram

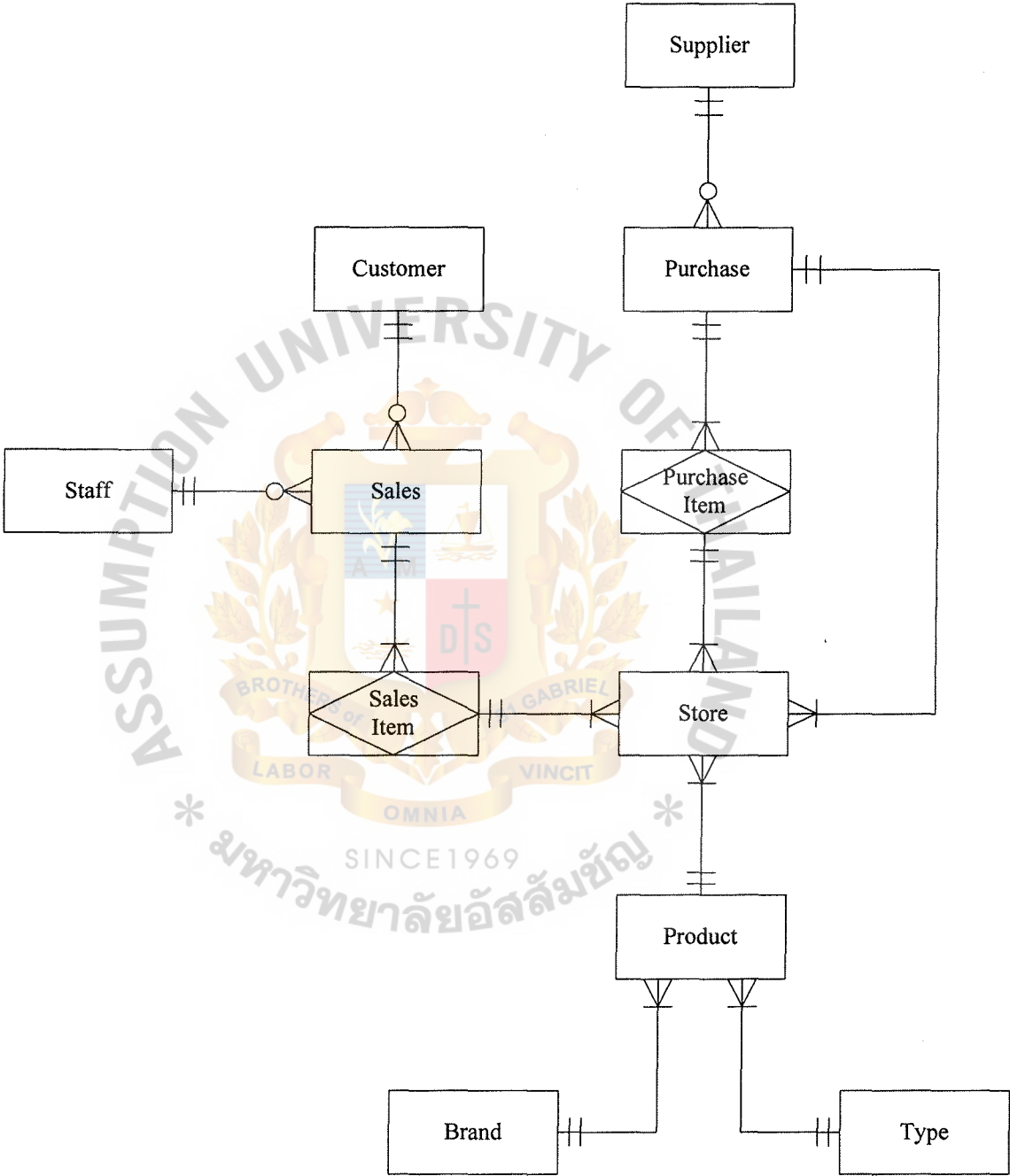


Figure 3-7 Entity-Relationship Diagram

(3) Database Design

For this information system there are all together eleven tables or relations (refer to Appendix A for Database Design):

- Brand Table: It stores information about the brand of each product. (Appendix A-1)
- Customer Table: It stores general information of each customer. (Appendix A-2)
- Sales Item Table: It stores the list of product and quantity of each sales order. (Appendix A-3)
- Sales Table: It stores information about each sales order made by customers and details of the order. (Appendix A-4)
- Product Table: It stores information of each product detail. (Appendix A-5)
- Purchase List Table: It stores the list of product and quantity of each purchase order. (Appendix A-6)
- Purchase Order Table: It stores the information about purchase detail that the company buys from suppliers. (Appendix A-7)
- Store Table: It keeps track of all the products in and out using FIFO method. (Appendix A-8)
- Supplier Table: It stores general information of supplier. (Appendix A-9)
- Type Table: Its stores the classification type of each product. (Appendix A-10)
- Staff Table: It stores general information of each staff. (Appendix A-11)

(4) Interface Design

For this information systems there are refer to Appendix D for Database Design:

- Customer List Form: It is used to add, delete and search customer information. (Appendix D-1)
- Log In Form: It is used to check the permission to enter the system. (Appendix D-2)
- Product Brand Form: It is used to create, delete and search the product brand. (Appendix D-3)
- Product in store Form: It is used to check the product in the inventory. (Appendix D-4)
- Product List Form: It is used to add, delete and search the product information. (Appendix D-5)
- Product Type Form: It is used to create, delete and search the product type. (Appendix D-6)
- Purchase Order Form: It is used to create, search and print the purchase order form to the supplier. (Appendix D-7)
- Sales Product Form: It is used to create and print the sales order form to the customer. (Appendix D-8)
- Supplier List Form: It is used to add, delete and search the supplier information. (Appendix D-9)
- User List Form: It is used to create the username and give the permission to the staff to enter in any functions. (Appendix D-10)
- Change Password Form: It is used to change the password of the staff. (Appendix D-11)

- Customer Report Form: It is used to search and print the report of customer order form. (Appendix D-12)
- Main Menu Form: It is a main menu of the system.(Appendix D-13)

(5) Report Design

For the following management report designs, refers to Appendix E for the figure Report Design:

(a) Customer Report: (Appendix E-1)

This report shows the summary report of all type of customer within the company. Consist of 2 parts, which are column header and details.

- Column header: Show the list of information that regarding to the customer details.
- Detail: Show the details about what the selected customer had purchased.

(b) Purchase Order Report: (Appendix E-2)

This report shows the lists of transaction that our company made with each supplier. Consist of 3 parts, which are header, column header and details.

- Header: Show the print date, supplier's name that manager wish to print, received date and pay date
- Column header: Show the column name of each detail that will be show in the details part in the tabular form.
- Details: Show the detail of purchase order details, the total amount and the staff's name.

(c) Sales Order Report: (Appendix E-3)

This report shows the lists of transaction that our company made with each customer. Consist of 3 parts, which are header, column header and details.

- Header: Show the print date, customers name that manager wish to print.
- Column header: Show the column name of each detail that will be show in the details part in the tabular form.
- Details: Show the detail of sales order details, the total amount and the staff's name.

(d) Summary Report: (Appendix E-4)

This report shows the list of products that has been sold in each selected month and shows the net profit of each product. Consist of 3 parts, which are header, column header and details.

- Header: Show the month that manger wish to print.
- Column header: Show the column name of each detail that will be show in the details part in the tabular form.
- Details: Show the detail of summary details, the total amount and the net profit.

IV. SYSTEM IMPLEMENTATION

4.1 Overview of the System Implementation

New system of Kittisak Pets Mart will be implemented in a whole part of the company that is why the company will use the direct cutover method. With this method, the old system will be terminated and the new system takes over immediately. Point out that direct cutover usually is the least expensive method because the company operates only one system at a time, but direct cutover involves more risk than other methods, direct cutover requires the company to put all its eggs into one basket. The main question is whether the risk would involve minor operational difficulties, or major errors that could cause the new system to terminate abnormally with no way to return to the old system. Point out that timing is very important when using a direct cutover strategy. Since the system has few users and the company has nothing to loose, we decide to use this method.

4.2 Test Plan

In order to ensure the new system is applicable for employees in the company. Programmer tries to detect any errors that might cause any damages to the system and some event that users might accidentally enter. This is the listed of checking processes that programmer had tests:

- Checking for input validation. By not allowing user to input wrong data into the system. By providing an error message to the user that what they have been done, and what action should be done next.
- Providing default value to decrease mistake in the imputing process.
- Not allow user to input some data that can cause damage to the new system.
(e.g. user tries to type non-numeric character in the price box)

- Not allow user to go to other processes or pages except the one that they are interacting at a time.
- Security concern by providing the login phases to protect outsider to come in the system.



V. CONCLUSION AND RECOMMENDATION

5.1 Conclusions

The old process of the system has a lot of problems because the implementation is still based on manual process. For this old system, there are a lot of mistakes and error occur and also time consuming. Therefore, developing new system is needed. The new system makes use of the technology of computer to apply to make more efficient system. This program is created to facilitate company. This program will support employee to work with efficiency. All information will be kept in database that is more consistent than manual work and is also easy to create, edit and retrieve the information.

5.2 Recommendation

In this inventory record system, users still have to key in some entries which mistakes can be occurred. User training should be arranged to make the job more accurate and efficiency.

APPENDIX A
DATABASE DESIGN



Table A-1 Brand Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	ID	AutoNumber	Y	Y			PK	
2	Name	Text(50)						
3	Remark	Memo						

Table A-2 Customer Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Cust_ID	Text(10)	Y	Y			PK	
2	Cust_Name	Text(50)	Y					
3	Cust_Address	Text(80)			Y			
4	Cust_Tel	Text(9)						

Table A-3 Sales Item Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Sales_Item_ID	Text(10)	Y	Y			PK	
2	ProductID	Text(5)	Y				FK	Product
3	Sales_Quantity	Number(Integer)						

Table A-6 Purchase List Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	POID	Text(13)	Y	Y			PK	
2	ProductID	Text(13)	Y				PK	
3	Cost	Number(Single)				B#,##0.00		
4	Quantity	Number(Integer)						
5	Discount	Number(Single)				B#,##0.00		
6	VAT	Number(Single)				B#,##0.00		
7	Net	Number(Single)				B#,##0.00		

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Table A-7 Purchase Order Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	ID	Text(13)	Y	Y			PK	
2	SupplierID	Text(5)	Y				FK	Supplier
3	OrderDate	Date/Time				99/99/0000;0;_		
4	ReceiveDate	Date/Time				99/99/0000;0;_		
5	PayDate	Date/Time				99/99/0000;0;_		
6	Status	Number(Byte)						
7	Receive	Number(Byte)						
8	Paid	Number(Byte)						
9	PerDiscount	Long Integer						
10	PerVat	Long Integer						

Table A-8 Store Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	POIDID	Text(10)	Y	Y			PK	
2	ProductID	Text(5)	Y	Y			PK	
3	Stock	Number(Integer)						
4	Status	Number(Byte)						

Table A-9 Supplier Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	ID	Text(5)	Y	Y			PK	
2	ThaiName	Text(255)						
3	EnglishName	Text(255)						
4	Address	Memo						
5	Cantact	Text(50)						
6	Telephone	Text(9)						
7	Email	Text(50)						
8	Homepage	Text(255)						
9	Fax	Text(9)						
10	Remark	Memo						

Table A-10 Type Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	ID	AutoNumber	Y	Y			PK	
2	Name	Text(50)						
3	Remark	Memo						

Table A-11 Staff Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	ID	AutoNumber	Y	Y			PK	
2	Name	Text(50)						
3	Password	Text(50)						
4	PerAdd	Number(Integer)						
5	PerEdit	Number(Integer)						
6	PerDelete	Number(Integer)						
7	PerReport	Number(Integer)						



APPENDIX B
PROCESS SPECIFICATION

Table B-1 Process Specification for Process 1.0

Process Name:	Handle Stakeholders
Data In:	(1) Customer Information (2) Staff Information (3) Supplier Information
Data Out:	(1) Customer Information (2) Staff Information (3) Supplier Information
Process:	(1) Get necessary customer data and assign new customer ID (2) Edit the customer information (3) Get necessary supplier data and assign new supplier ID (4) Edit the supplier information (5) Get necessary staff data and assign new staff ID (6) Edit the staff information
Attachment:	(1) Staff (2) Customer (3) Supplier (4) Data Store D1 (5) Data Store D7 (6) Data Store D9

Table B-2 Process Specification for Process 1.1

Process Name:	Add New Customer
Data In:	(1) Customer Information
Data Out:	(1) Customer Information

Process:	(1) Add new customer into the database
Attachment:	(1) Customer (2) Data Store D1

Table B-3 Process Specification for Process 1.2

Process Name:	Edit Customer Information
Data In:	(1) Customer Information
Data Out:	(1) Customer Information
Process:	(1) Edit member information in the database
Attachment:	(1) Customer (2) Data Store D1

Table B-4 Process Specification for Process 1.3

Process Name:	Add New Staff
Data In:	(1) Staff Information
Data Out:	(1) Staff Information
Process:	(1) Add new staff into database
Attachment:	(1) Staff (2) Data Store D7

Table B-5 Process Specification for Process 1.4

Process Name:	Edit Staff Information
Data In:	(1) Staff Information
Data Out:	(1) Staff Information
Process:	(1) Edit staff information in the database

Attachment:	(1) Staff (2) Data Store D7
-------------	--------------------------------

Table B-6 Process Specification for Process 1.5

Process Name:	Add New Supplier
Data In:	(1) Supplier Information
Data Out:	(1) Supplier Information
Process:	(1) Add new supplier into database
Attachment:	(1) Supplier (2) Data Store D9

Table B-7 Process Specification for Process 1.6

Process Name:	Edit Supplier
Data In:	(1) Supplier Information
Data Out:	(1) Supplier Information
Process:	(1) Edit supplier information in the database
Attachment:	(1) Supplier (2) Data Store D9

Table B-8 Process Specification for Process 2.0

Process Name:	Sell Product
Data In:	(1) Login Information (2) Product Available (3) Order Information (4) Customer Information (5) Payment

	(6) Product Price (7) Staff Information (8) Customer Information
Data Out:	(1) Product Price (2) Customer Status Information (3) Customer Receipt (4) Inventory Information (5) Order Information
Process:	(1) Check validation of the customer (2) Calculate the order total (3) Produce the customer's receipt (4) Update the inventory
Attachment:	(1) Customer (2) Staff (3) Data Store D1 (4) Data Store D2 (5) Data Store D5 (6) Data Store D7 (7) Data Store D8

Table B-9 Process Specification for Process 2.1

Process Name:	Validate Customer Account
Data In:	(1) Customer Information
Data Out:	(1) Customer Status Information
Process:	(1) Check whether customer already exist in database

Attachment:	(1) Customer (2) Data Store D1
-------------	-----------------------------------

Table B-10 Process Specification for Process 2.2

Process Name:	Receive An Order
Data In:	(1) Order Information (2) Staff Information (3) Product Price (4) Product Available
Data Out:	(1) Product Price (2) Order Information
Process:	(1) Compute the total price by using sales information
Attachment:	(1) Staff (2) Customer (3) Data Store D4 (4) Data Store D7 (5) Data Store D8 (6) Process 2.4

Table B-11 Process Specification for Process 2.3

Process Name:	Handle Customer Payment
Data In:	(1) Payment
Data Out:	(1) Payment
Process:	(1) Get customer payment and check whether how much have to change

Attachment:	(1) Customer (2) Accounting Department
-------------	---

Table B-12 Process Specification for Process 2.4

Process Name:	Update Product Quantity
Data In:	(1) Order Information
Data Out:	(1) Inventory Information (2) Order Information
Process:	(1) Update product in the inventory
Attachment:	(1) Process 2.2 (2) Process 2.5 (3) Data Store D8

Table B-13 Process Specification for Process 2.5

Process Name:	Produce Customer Receipt
Data In:	(1) Order Information
Data Out:	(1) Customer Receipt (2) Order Information
Process:	(1) Produce customer receipt
Attachment:	(1) Data Store D2 (2) Process 2.4 (3) Customer

Table B-14 Process Specification for Process 3.0

Process Name:	Purchase Product
Data In:	<ul style="list-style-type: none"> (1) Purchase Information (2) Cancel Purchase Form (3) Product Information (4) Supplier Information
Data Out:	<ul style="list-style-type: none"> (1) Purchase Form (2) Product Information (3) Purchase Information (4) Cancel Purchase Form
Process:	<ul style="list-style-type: none"> (1) Get purchase request (2) Calculate total price of purchase order (3) Produce purchase form (4) Update inventory (5) Add/Edit Product information in the database
Attachment:	<ul style="list-style-type: none"> (1) Supplier (2) Staff (3) Data Store D2 (4) Data Store D3 (5) Data Store D4 (6) Data Store D8 (7) Data Store D9

Table B-15 Process Specification for Process 3.1

Process Name:	Get Purchase Request
Data In:	(1) Product Information (2) Product Price (3) Supplier Information
Data Out:	(1) Purchase Information
Process:	(1) Get purchase request from the staff
Attachment:	(1) Staff (2) Data Store D2 (3) Data Store D6 (4) Data Store D9 (5) Process 3.2

Table B-16 Process Specification for Process 3.2

Process Name:	Calculate Purchase Total
Data In:	(1) Purchase Information
Data Out:	(1) Purchase Information
Process:	(1) Calculate the total price of purchase order
Attachment:	(1) Staff (2) Data Store D3 (3) Process 3.1 (4) Process 3.3

Table B-17 Process Specification for Process 3.3

Process Name:	Produce Purchase Form
Data In:	(1) Purchase Information
Data Out:	(1) Purchase Form
Process:	(1) Produce purchase form to the supplier
Attachment:	(1) Supplier (2) Process 3.2

Table B-18 Process Specification for Process 3.4

Process Name:	Update Inventory
Data In:	(1) New Product Delivery
Data Out:	(1) Date of Arrival (2) Purchase ID, Quantity
Process:	(1) Update the product inventory
Attachment:	(1) Supplier (2) Data Store D3 (3) Data Store D8

Table B-19 Process Specification for Process 3.5

Process Name:	Handle Purchase Order
Data In:	(1) Invoice
Data Out:	(1) Invoice
Process:	(1) Handle purchase order and give it to accounting department
Attachment:	(1) Supplier (2) Accounting Department

Table B-20 Process Specification for Process 3.6

Process Name:	Delete Rejected Form
Data In:	(2) Cancel Purchase Form
Data Out:	(2) Cancel Purchase Form
Process:	(2) Cancel the rejected purchase form
Attachment:	(3) Staff (4) Data Store D3

Table B-21 Process Specification for Process 3.7

Process Name:	Add New Product
Data In:	(1) Product Information
Data Out:	(1) Product Information
Process:	(1) Add new product information to the database
Attachment:	(1) Staff (2) Data Store D2

Table B-22 Process Specification for Process 3.8

Process Name:	Edit Product Information
Data In:	(1) Product Information
Data Out:	(1) Product Information
Process:	(1) Edit product information in the database
Attachment:	(1) Staff (2) Data Store D2

Table B-23 Process Specification for Process 4.0

Process Name:	Produce Management Report
Data In:	<ul style="list-style-type: none"> (1) Report Inquiry (2) Customer Information (3) Order Information (4) Inventory Information (5) Purchase Information
Data Out:	<ul style="list-style-type: none"> (1) Report
Process:	<ul style="list-style-type: none"> (1) Retrieve information from the database (2) Produce the report
Attachment:	<ul style="list-style-type: none"> (1) Manager (2) Data Store D1 (3) Data Store D3 (4) Data Store D5 (5) Data Store D6 (6) Data Store D8

Table B-24 Process Specification for Process 4.1

Process Name:	Get Order Info
Data In:	<ul style="list-style-type: none"> (1) Report Inquiry (2) Customer Information (3) Order Information (4) Purchase Information (5) Inventory Information
Data Out:	<ul style="list-style-type: none"> (1) Report Information

Process:	(1) Retrieve information from the database
Attachment:	(1) Manager (2) Data Store D1 (3) Data Store D3 (4) Data Store D5 (5) Data Store D6 (6) Data Store D8 (7) Process 4.2

Table B-25 Process Specification for Process 4.2

Process Name:	Print Report
Data In:	(1) Report Information
Data Out:	(1) Report
Process:	(2) Print Report
Attachment:	(1) Process 4.1 (2) Manager



Table C-1 Data Dictionary of Inventory, Purchasing and Sales System

Data items	Meaning
BrandID	The number to identify brand of the product
BrandName	The name of the brand
BrandRemark	The remark of one brand
Cancel Order	The order that has been canceled
Cust Address	The address of the customer
Cust Contact	The name of the customer whom the company can contact
Cust ID	The number to identify one customer
Customer Information	Customer's Information (Cust ID + Cust Name + Cust Contact + Cust Address + Cust Tel)
Cust Name	Customer First Name + Customer Last Name
Customer Status Info	The error when customer ID does not exist in the database
Cust Tel	The telephone number of the customer
Customer First Name	The first name of customer
Customer Last Name	The last name of customer
Customer Receipt	The receipt provide to customers
Date of Arrival	The date that the products arrived
New Member Info	The information of new customer
New Purchase Delivery	The new product that has been delivered
New Product Info	The information of new product
Out of stock	Product is run out of stock
Payment	Cash pay for product order
PerAdd	Permission to add information
PerEdit	Permission to edit information
PerDelete	Permission to delete information
PerReport	Permission to retrieve the report
Product BrandID	The number to identify one brand of the product

Data items	Meaning
Product Information	Product's Information (ProductID + Product BrandID + Product TypeID + ProductName + ProductSell + ProductPicture + ProductRemark)
Product Price	The selling price of the product
Product Quantity on hand	Product quantity left in the inventory
Product TypeID	The number to identify one type of the product
ProductID	The number to identify one product
ProductName	The name of the product
ProductPicture	The picture of one product
ProductRemark	The remark of one product
ProductSell	The selling price of the product
Purchase Order Paid	The status of purchase order whether paid or not paid
Purchase Order Pay Date	The date to pay for purchase product
PurchaseOrderReceiveDate	The purchase product receiving date
PurchaseOrderRecived	The status of purchase order whether received or not
PurchaseOrderStatus	The status of purchase order whether approve or not
Purchase List Cost	The total price of one purchase order
Purchase List Discount	The discount price of one purchase order
Purchase List Quantity	The quantity of each product in one purchase order
Purchase List VAT	The vat of one purchase order
Purchase Order Date	The date of purchasing
Purchase Order ID	The number to identify one purchase form
Purchase Form	3 copied form that list out product's name, quantity and price for supplier
Report	Management report
Sales Info	Sales's Information (Sales ID + Cus ID + Sales Date + Sales Total + Sales Vat + Sales Net + Sales Discount)
Sales Date	The ordering date
Sales Discount	The discount price of one order

Data items	Meaning
Sales ID	The number to identify one order
Sales Item ID	The number to identify the list of each order
Sales Net	The net price of the order
Sales Quantity	The quantity of each product in one order
Sales Total	The total price of one order
Sales Vat	The vat of one order
Sales Date	Alias to Ord Date
Staff Info	Staff's Information (Staff ID + Staff Name + Staff Password + PerAdd + PerEdit + PerDelete + PerReport)
Staff ID	The number to identify type of one staff
Staff Name	The name of the staff
Staff Password	Password of one staff
Stock in hand	Product is available and can be used
StoreStatus	The status of the product whether to sell or not to sell
StoreStock	The quantity of the product on hand
Supplier Information	Supplier's Information (SupplierID+ SupplierThaiName + SupplierEnglishName+ SupplierAddress+ SupplierContact + SupplierTelephone+ SupplierEmail +SupplierHomepage + SupplierFax + SupplierRemark)
SupplierAddress	Supplier's Address
SupplierContact	The supplier officer whome contact
SupplierEmail	Supplier's E-mail Address
SupplierEnglishName	Supplier's English name
SupplierFax	Supplier's Fax number
SupplierHomepage	Supplier's Homepage
SupplierID	The number to identify one supplier
SupplierRemark	The remark of one supplier
SupplierTelephone	Supplier's Telephone number
SupplierThaiName	Supplier's Thai name

Data items	Meaning
TypeID	The number to identify type of one product
TypeName	The type name of one product
TypeRemark	The remark of one type



APPENDIX D
INTERFACE DESIGN



Customer list

ID	Name
00001	โจซามา บินลาติน
00002	สุเทพย์ วงศ์คำเหลา

Customer Detail

Customer ID: 00001

Name: โจซามา บินลาติน

Address: 24/5 ถ.งามวงศ์วาน งามงาม 15432

Telephone: 028394859

Email: binladen1111@hotmail.com

Fax: 029384930

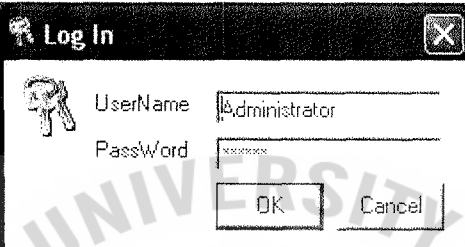
Remark:

Find What: Find FindNext

All: 2 Record

Add Delete Update Cancel

Figure D-1 Customer List Form



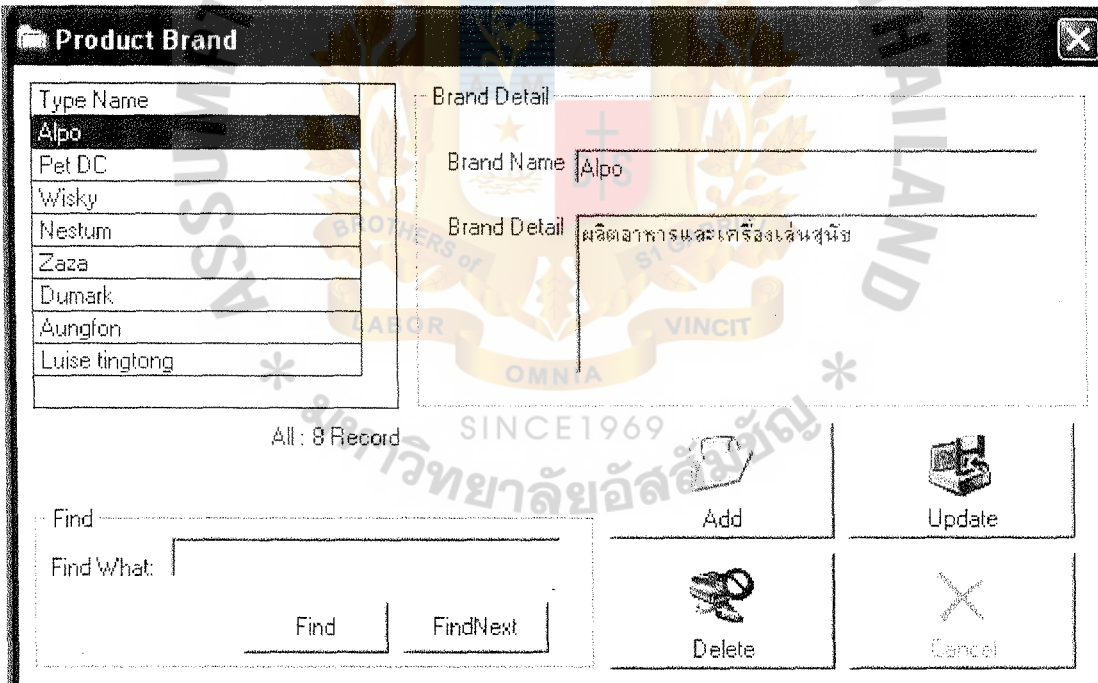
Log In

UserName: administrator

Password: [masked]

OK Cancel

Figure D-2 Log In Form



Product Brand

Type Name
Alpo
Pet DC
Whisky
Nestum
Zaza
Dumark
Aungfon
Luise tingtong

Brand Detail

Brand Name: Alpo

Brand Detail: ผลิตภัณฑ์อาหารและเครื่องเล่นสุนัข

All : 8 Record

Find: Find What: [] Find FindNext

Add Update Delete Cancel

Figure D-3 Product Brand Form

Product in store

PD-ID	Product ID	Name	Type	Brand	Quantity	Fund	Price
PD-0000000002	6384726109382	พรีไบโอ ซัสกโกเนลิต 300กรัม	Food	Alpo	20	160	200
PD-0000000001	3394019283746	ชุดนมบ้านลายสก็อตส์	Coat	Luise tingtor	9	2140	250
PD-0000000004	3948716382973	น้สัหนึ่งดำมยาว	Toy	Pet DC	69	770	920
PD-0000000002	6384726109385	สาค่ายสไปรูจินา 100 กรัม	Food	Alpo	19	562	800
PD-0000000005	6384726109385	สาค่ายสไปรูจินา 100 กรัม	Food	Alpo	90	535	800
PD-0000000006	6384726109385	สาค่ายสไปรูจินา 100 กรัม	Food	Alpo	100	802	800
PD-0000000004	6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	0	482	600
PD-0000000005	6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	59	535	600

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THAILAND
NSA
BROTHERS of
LABOR
VINCIT
OMNIA
SINCE 1969
มหาวิทยาลัยอัสสัมชัญ

All : 8 Record

Figure D-4 Product in store Form

Product list

ID	Brand	Name
3394019283746	Luise tinglong	ชุดแม่บ้านลายสก๊อตสี
3948716382973	Pet DC	น้สักรีด้ามยาว
6377837627366	Zaza	พาราเซตามอล 500 ml
6384726109382	Alpo	ฟรีไบโอ ซ็อกโกนัต 300กรัม
6384726109385	Alpo	สากย่างสไปรูรินา 100 กรัม
7485827361251	Luise tinglong	erfgfdhfdgf

Product Detail

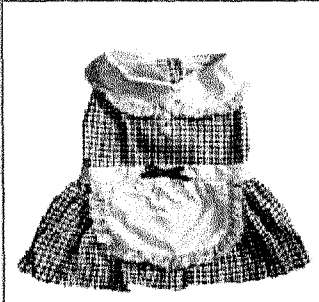
Product ID: 3394019283746

Brand: Luise tinglong

Type: Coat

Name: ชุดแม่บ้านลายสก๊อตสี

Price: 250.00



Detail: ชุดสูทมาตรฐานสำหรับสุภาพสตรี ใส่สุภาพสง่างาม
ผลิตจากใยมะพร้าวเกรด A สะดวกความจำนนยอดเยี่ยม

Find:

Select Product Type: []

Find What: []

Find FindNext

All : 6 Record

Add Delete Update Cancel

Figure D-5 Product List Form

Product Type

Type Name
Food
Medic
Cleaner
Toy
Coat

Type Detail

Type Name: Food

Type Detail: ผลิตภัณฑ์อาหารสัตว์

All: 5 Record

Find: Find What: Find FindNext

Add Update Delete Cancel

Figure D-6 Product Type Form

Petmart - [Purchase Order]

Database Product Report User Windows

Product in Store Purchase Order Sales Supplier Customer Log Out

PO-ID	Supplier
PO-0000000001	บริษัท ตั้งตงจี จำกัด
PO-0000000002	บริษัท สดาร์โลโก้ประเทศไทย จำกัด
PO-0000000003	บริษัท สดาร์โลโก้ประเทศไทย จำกัด
PO-0000000004	ทจก. วิสาเดนาจาวรรณสงคราม
PO-0000000005	บริษัท ตั้งตงจี จำกัด
PO-0000000006	บริษัท สดาร์โลโก้ประเทศไทย จำกัด

All: 6 Record

Find Find What Find FindNext

Add Delete Update Cancel

Purchase Order Detail

PO-ID: PO-0000000001 Date: 20 กันยายน 2547

Supplier: บริษัท ตั้งตงจี จำกัด
00002 Tung tong chee Co., Ltd

Pay Date: 20 กันยายน 2547 Received Date: 20 กันยายน 2547

Discount: 0 % VAT: 7 %

Product list

Product	Cost	Quantity
Product ID: Brand: Type: Price:		

Product Name	Type	Brand	Cost	Quantity	Discount	VAT	Nett
ชุดแม่บ้านลายสก็อตส์	Coat	Luise tington	2000	10	0	1400	21400

All: 1 Record

Receive Status Paid Status

Print PO Cancel PO

Before Discount: 20,000.00
Discount: 000.00
VAT: 1,400.00
Total: 21,400.00

Figure D-7 Purchase Order Form

Petmart - [Sales Product]

Database Product Report User Windows

Product in Store Purchase Order Sales Supplier Customer Log Out

Sales Order Detail

SO-ID: 50-0000000007 Date: 20 กันยายน 2547

Customer: ซูเพย์ วงศ์คำแหง Discount: 5 %

00002

Update

Product list

Product: พาราเซตามอล 500 ml Quantity: 2

Product ID: 6377837627366 Brand: Zaza Type: Medic Price: 600.00

Add Delete

Product ID	Product Name	Type	Brand	Price	Quantity	Discount	Nett
3394019283746	ชุดหมอน้ำลายสกลัด	Coat	Luise tington	250	2	25	475

All: 1 Record

Before Discount: 500.00

Discount: 025.00

Total 475.00

Figure D-8 Sales Product Form

Supplier list

ID	ThaiName	EnglishName
00001	ทจก.บิลาดินลาวรุ่งสงคราม	Birladen Ltd.,Part
00002	บริษัท ตั้งตงฉีจำกัด	Tung tong chee Co.,Ltd
00003	บริษัท สตาร์ไลท์ประเทศไทย จำกัด	Starlight Co.,Ltd

Find: Find What: Find FindNext

All: 3 Record

Supplier Detail

Supplier ID: 00003

Thai Name: บริษัท สตาร์ไลท์ประเทศไทย จำกัด มหาชน

English Name: Starlight Co.,Ltd

Address: 382/2 ต.ช้างกลาง อ.ศรีภูมิ อ.เมือง จ.เชียงใหม่ 50271

Contact:

Telephone: 054874839

Email:

HomePage: <http://www.starlight.co.th>

Fax: 054672615

Detail: จำหน่ายเวชภัณฑ์สำหรับสุนัขหลากหลาย

Add Delete Update Cancel

Figure D-9 Supplier List Form

User list

UserName	Name
Administrator	Administrator
gfdgfdg	gfdgfdhfd
S.dfmvddst	ศาสตราจารย์

All : 3 Record

Find What:

Remark:

User Detail

UserName:
 Pass'Word:
 Name:
 Position:
 Permission:
☒ Purchase Manage
☒ Sales Product
☒ Delete Data
☒ Report Look
☒ Access Main Data ☒ Manage User

Figure D-10 User List Form



A screenshot of a 'Change Password' dialog box. The dialog has a title bar with a close button (X). Inside, there are three text input fields labeled 'Old Password', 'New Password', and 'Confirm'. At the bottom, there are two buttons: 'OK' and 'Cancel'. The dialog is overlaid on a background featuring a large, faint watermark of the Assumption University of Thailand crest and logo.

Change Password

Old Password

New Password

Confirm

OK Cancel

Figure D-11 Change Password Form

CustomerReport


ID	Name
00001	โธษามา ขันลาตัน
00002	สุเทพย์ วงศ์คำเพลา

Find

What

Find

FindNext



Print Customer Order

All: 2 Record

Customer Detail

Customer ID

00002

Name

สุเทพย์ วงศ์คำเพลา

Address

987/765 หมู่บ้านกันดานเจริญ
ช.กันดาน ต.ตึกดาน อ.ท่ากระดาน
จ.นครราชสีมา

Telephone

058236521

Email

xxxx@hotmail.com

Fax

Remark

แปะค่าอาหารหมาไว้ 50 บาท

SO-ID	Product ID	Product Name	Type	Brand	Order Date	Quantity	Net
SO-0000000007	3394019283746	เสื้อผูกคอกสุนัข อีลฟา แขนยาว	Coat	Luise tingl	9/1/2004	3	6840
SO-00000000013	3394019283746	เสื้อผูกคอกสุนัข อีลฟา แขนยาว	Coat	Luise tingl	9/20/2004	1	2280
SO-00000000013	3948716382973	ผ้าพันคอสุนัขยาว	Toy	Pet DC	9/20/2004	2	1748
SO-00000000013	6384726109382	ฟรีไบโอ ซ็อกโกเนดัด 300กรัม	Food	Alpo	9/20/2004	2	380
SO-00000000014	6377837627368	พาราเซตามอล 500 ml	Medic	Zaza	9/20/2004	1	600
SO-00000000014	6384726109382	ฟรีไบโอ ซ็อกโกเนดัด 300กรัม	Food	Alpo	9/20/2004	1	200
SO-00000000015	6384726109385	สาค่ายสไปรริญา 100 กรัม	Food	Alpo	9/20/2004	1	760

All: 7 Record

Total

12,808.00

Figure D-12 Customer Report Form

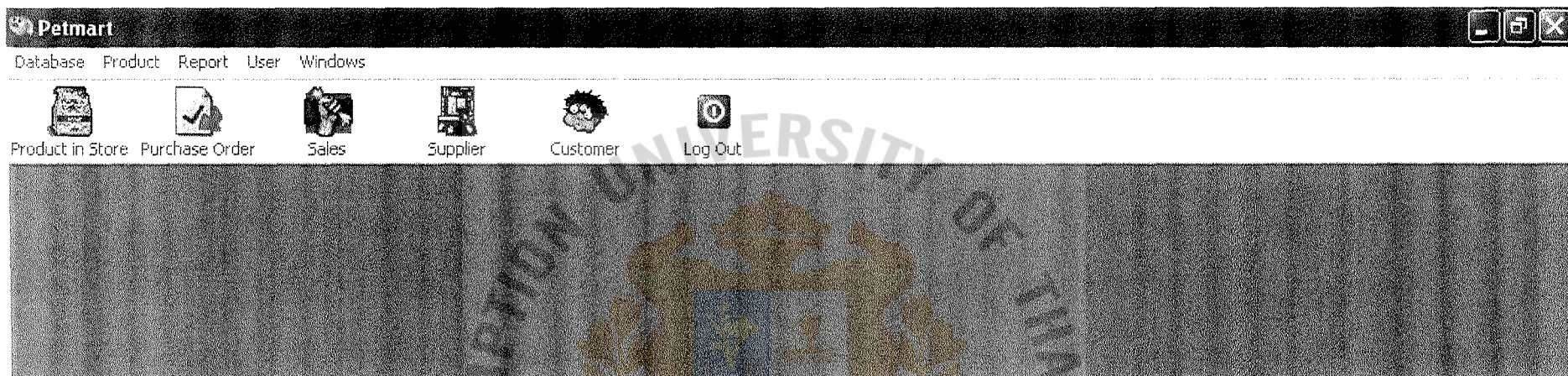


Figure D-13 Main Menu Form



APPENDIX E
MANAGEMENT REPORT DESIGN

Customer ID : 00001

โอชามา บินลาดิน Tel : 028394859
binladen1111@hotmail.com

Product List

Product ID	Product Name	Type	Brand	Order Date	Quantity Net	
3948716382973	แล้หน้งด้ามยาว	Toy	Pet DC	01/09/47	1	874.00
6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	20/09/47	1	570.00
3394019283746	เสื้อสูทหลุยส์ อัลฟา แชนยาว	Coat	Luise tingtong	20/09/47	1	2,280.00
3948716382973	แล้หน้งด้ามยาว	Toy	Pet DC	20/09/47	1	874.00

Total : 4,598.00 Bath

Figure E-1 Customer Report

Purchase Order ID:PO-0000000005

วันที่ 20 กันยายน 2547

บริษัท ตั้งตงฉีจำกัด

Receive Date : 20 กันยายน 2547
Pay Date : 20 กันยายน 2547

Product List

ProductID	Product Name	Type	Brand	Cost	Quantity Nett	
6384726109382	ฟรีบิโอ ซ็อกโกแลต 300กรัม	Food	Alpo	100.00	20	2,140.00
6384726109385	สาหร่ายสไปรulina 100 กรัม	Food	Alpo	500.00	90	48,150.00
6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	500.00	60	32,100.00

Total : 77,000.00 Bath
Discount 0% : 000.00 Bath
VAT 7% : 5,390.00 Bath
Total : 82,390.00 Bath

Staff : สราวุธ ทองย่อน

Figure E-2 Purchase Order Report

Sale Order ID : SO-0000000013

วันที่ 20 กันยายน 2547

สุเทพย์ วงศ์คำเหลา

Product List

Product ID	Product Name	Type	Brand	Price	Quantity	Net
6384726109382	ฟรีไบโอ ซ็อกโกแลต 300กรัม	Food	Alpo	200.00	2	380.00
3394019283746	เสื้อสูทหลุยส์ อัลฟา แขนยาว	Coat	Luise tingtong	2,400.00	1	2,280.00
3948716382973	เสื้อหนังดำมยาว	Toy	Pet DC	920.00	2	1,748.00
6384726109385	สารละลายโปรตีน 100 กรัม	Food	Alpo	800.00	5	3,800.00
6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	600.00	2	1,140.00

Staff : สราวุธ ทองอ่อน

Total : 9,348.00 Bath

Figure E-3 Sales Order Report

Year :2547

วันที่ 20 กันยายน 2547

Month :กันยายน

Product List

ProductID	Product Name	Type	Brand	Date	Net	Profit
6384726109382	ฟรีไบโอ ซ็อกโกแลต 300กรัม	Food	Alpo	01/09/47	190.00	030.00
6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	01/09/47	1,140.00	070.00
3394019283746	เสื้อสูทหลุยส์ อัลฟา แขนยาว	Coat	Luise tingtong	01/09/47	6,840.00	420.00
3948716382973	เสื้อหนังดำมยาว	Toy	Pet DC	01/09/47	874.00	104.00
6384726109382	ฟรีไบโอ ซ็อกโกแลต 300กรัม	Food	Alpo	20/09/47	200.00	040.00
6384726109385	สารละลายโปรตีน 100 กรัม	Food	Alpo	20/09/47	800.00	238.00
3948716382973	เสื้อหนังดำมยาว	Toy	Pet DC	20/09/47	920.00	150.00
6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	20/09/47	600.00	065.00
6384726109382	ฟรีไบโอ ซ็อกโกแลต 300กรัม	Food	Alpo	20/09/47	1,900.00	300.00
6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	20/09/47	600.00	065.00
3948716382973	เสื้อหนังดำมยาว	Toy	Pet DC	20/09/47	920.00	150.00
6384726109385	สารละลายโปรตีน 100 กรัม	Food	Alpo	20/09/47	800.00	238.00
6377837627366	พาราเซตามอน 500 ml	Medic	Zaza	20/09/47	570.00	035.00
3394019283746	เสื้อสูทหลุยส์ อัลฟา แขนยาว	Coat	Luise tingtong	20/09/47	2,280.00	140.00
3948716382973	เสื้อหนังดำมยาว	Toy	Pet DC	20/09/47	874.00	104.00

Profit : 2,149.00 Bath

Total : 19,508.00 Bath

Figure E-4 Summary Report

