Practical Development of Information System in Business Context:
Sales and Inventory Management System
for Sripong YangYon Company

PROJECT WRITE-UP

Prepared by

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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

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March, 2004

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Submitted in Partial Fulfillment
of the Course BIS 4995 Information System Development
Bachelor's Degree of Business Administration
in Business Information Systems Program
Assumption University

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ACKNOWLEDGEMENT

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I. INTRODUCTION

1.1 Organization's Profile

Sripong Yangyon Company was established since 1996. The company is an Agency Company which sells many brands of tires in their own shop and distributed the tires to the customer around Bangkok. To make customers satisfied, the company provides many tires and services at the company shop. The company serves both retailers and business customers around Bangkok. The products include Michelin, Bridgestone and Goodyear. The company also focuses on warehousing and transportation activities for business customers. The company's founders have a strong commitment to high standards, and to improve the profile of shipping.

The company consists of 3 types of customers:

1. The walk-in customers who visit shop

2. Existing customers who continue buying

3. Using sale representatives to approach business customers.

Supplier

Sripong Yangyon Company purchases tires from local manufacturers that located in Patumthani (Goodyear), Rayong (Bridgestone, Firestone, Michelin), Rangsit (Bridgestone), Nong Khae (Bridgestone) district.

1.2 Organization's Location

The company rent four storey commercial building. First three floors are office area and forth floor is the conference room. First floor is company's shop. It provides basic customer's service such as check tires. Second floor, there are four departments work in this floor; sale department, marketing department, financing and accounting department and service department. Third floor, there are three departments working together and one room for the manager. Forth floor, serve for conference room and

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store room. Besides office building are company's warehouse that keep all inventory in FIFO basis.

The company is situated at 59/152 Soi Udomsuk 15 Sukumvit 103 Road Bangna Bangkok Thailand 10260.

1.3 Organization's Structure
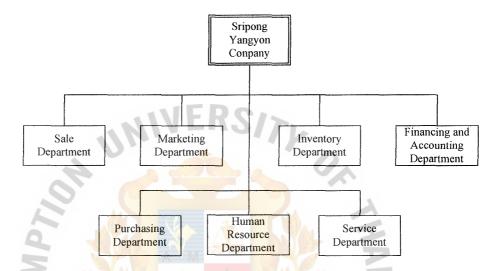
Figure1-1   Organization Chart of Sripong YangYon Company

Sripong Yangyon Company divides their organization into seven departments. Each department controls their own database independently. In this project, it focuses only on Sale, Inventory and Purchasing department.
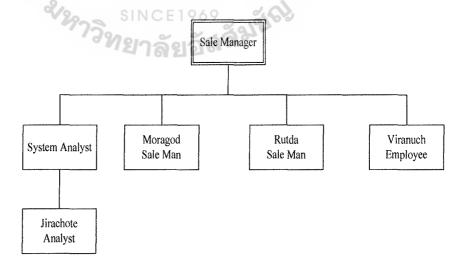
Figure1-2   Sales Department Chart of Sripong YangYon Company

All orders that initiate from telephone or e-mail will be sent to sale department. Sale department is responsible for checking customer record, check customer credit limited and accept new customers and record order. Sale representatives are responsible for contacting retail customers and business customers.
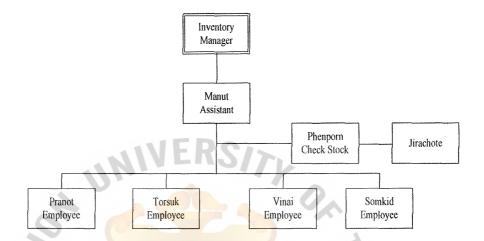
Figure1-3 Inventory Department Chart of Sripong YangYon Company

After manager receives orders, manager will send the orders to the assistant. Assistant is a person who manages the order and sends the inventory detail to the stock checker in order to check inventory level. If there is not enough inventory, stock checker will report to manager. If stocks are available, controller sends order details to employee to prepare the items for later shipment.
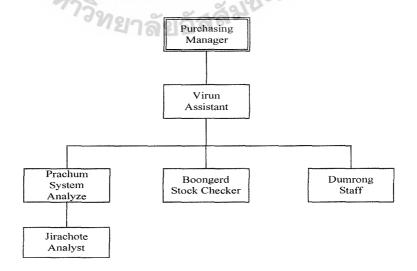
Figure1-4 Purchasing Department Chart of Sripong YangYon Company

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Manager is person who identifies what products should be purchased and then manager will send the list of purchasing to the assistant who selects the suppliers and send the information to system analyst in order to record purchasing information. After receiving the products, staff will help stock checker to check the product.

1.4 Project Plan

The tentative plan for this project: "Sales and Inventory Management System for Sripong Yangyon Company" is exhibited in Figure 1-5

ID	Task Name	Duration	November					December				January				February	
			19/10	26/10	2/11	9/11	16/11	23/11	30/11	7/12	14/12	21/12	28/12	4/1	11/1	18/1	25/1	1/2	8/2
1	**Analysis of the Existing System**	**5 days**																	
2	Study of the Existing System	2 days																	
3	Problems Definition	3 days																	
4	**Feasibility Study**	**4 days**																	
5	Define the Objectives and Scope	2 days																	
6	Hardware and Software Requirements	2 days																	
7	Cost Analysis	2 days																	
8	**Design of the Proposed System**	**58 days**																	
9	Data Flow Diagram	7 days																	
10	Entity-Relationship Diagram	5 days																	
11	Database Design	7 days																	
12	Process Specification	5 days																	
13	Data Dictionary	3 days																	
14	Interface Design	13 days																	
15	Management Report Design	25 days																	
16	**Implementation of the Proposed System**	**112 days**																	
17	Coding	59 days																	
18	Testing	60 days																	
19	Documentation	112 days																	

Figure1-5   Project Plan for Sripong Yangyon Company. Sales and Inventory Management System

II.   Existing System

2.1   Background of Existing System

Customer information regarding to the order will send to the system. After received the order, company will check the inventory items from the warehouse. If there are not enough inventories, the system will purchase item from supplier. To handle order, system will check customer's credits. If is not approved, then customer order will pass through Finance and Accounting department.

During the billing cycle, system will send invoice to the customer. After customer paid, system will automatically update customer's credits limit. Customer can cancel order anytime but before shipment. In the case business customers, if they are not satisfy, they can return the product within 1 year at original condition.
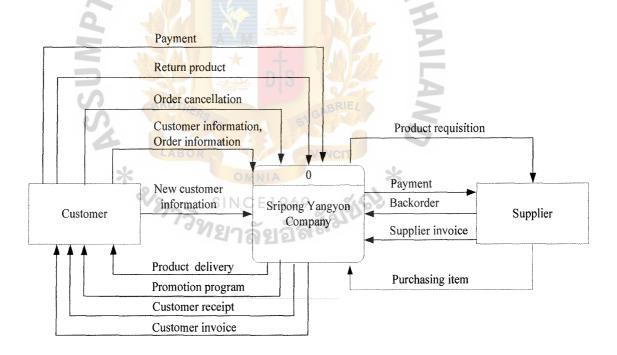
Figure2-1   Context Diagram of Existing System

2.2 PROBLEM DEFINITION

(1) Slow Processing Time

In the current situation, all of company processes are done manually which cause a lot of documentation (paper-based) and the company keeps all information and reports in a form of paper files. When the company wants to search some information, it will take time to find documents and company has to generate a new one if any correction is required. For example, customer cancellation. That will consume a lot of company resources (Man power and Office supplies, Backup and recovery procedure).

(2) Ineffective Inventory Management

All information regarding to inventory in the company are facing many problems. The company does not have an efficient inventory system to help the company in making decision in issuing a new purchase. It lacks of inventory monitoring to determine the reorder point.

(3) No Centralized Database at Site

Company's database is kept in the format of papers. Problems are difficult to change the information and taking long time to search for documents. When manager uses information for making any decision, employees have to look from many departments to acquire the information since information is kept in different locations.

III. THE PROPOSED SYSTEM

3.1 Feasibility Study

(1) Objectives of the System

(a) To study the existing system of the company.

(b) To understand the processes and work flows in the operation of the company (Sales, Inventory and Delivery)

(c) To identity problems of existing system which cause inefficient operations to the company.

(d) To provide a computerized system to manage the sale module and other sub module that can support the requirement of the users.

(e) To purchase products according to the reorder point and to eliminate the extra stock that incurs cost to the company.

(f) To eliminate some unnecessary costs, to lower the operation costs.

(g) To implement information system in the organization for developing and expanding the scalability in the future.

(h) To provide new information system in helping the manager to make proper decision and solve the problems.

(2) Scope of the System

(a) Sales System:

- Add new customers

- Receive orders

- Return orders and Order cancellation

- Generate bills (invoice, receipt, picking bill)

- Check customer credits status

- Calculate total payment and tax

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- Update customer credits

- Edit, update customer information

- Backorder (In case that the company does not have the product or stockless situation)

(b) Inventory System:

- Centralized database

- Inventory monitoring system (reorder point, inventory level)

- FIFO inventory

- Update Stock based on sales order and purchase order

- Add, Edit new inventory

(c) Purchasing System:

- Purchase requisition

- Suppliers information

(d) Management Report:

- Sale Report (On daily, monthly, yearly basis. Categorized by Date, Customer ID, Product Brand and Product type)

- Customer Report (On yearly basis. Categorized by customer ID and Invoice ID)

- Purchase Report (On monthly and yearly basis. Categorized by Supplied ID and Purchase order ID)

- Inventory Report (On weekly and monthly basis. Categorized by Product Brand, Product)

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(3)   Hardware and Software Requirement

In table 3-1, the recommended specification will use a more powerful Pentium IV Processor with a lager 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. All computers will be linked to each other by using company's LAN. As stated in the below table, computer in every department will have the same specification. 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 and it also supports full capacity of using network. Norton Antivirus Corporate Edition 8.1 is used protect the system from computer viruses and this version also supports anti-virus network management. To update the virus definition file, just update only at the server computer then the other entire computers of the company will be updated automatically. For Norton Firewall, it will be used to protect outsider from coming into the internal network system without permission. The information system requires Visual Basic 6.0 to run. 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. For Microsoft Internet Explorer, is used for connecting to both Intranet and Internet. Finally, The Win Zip is used for compressing and decompressing files, and Nero Burning Rom Program will be used to back up data into CD.

Table 3-1 Hardware Requirement for Server Computer

HARDWARE	SPECIFICATION
CPU	Pentium IV 2.66-Gigahertz (MHz)
MEMORY	512 megabytes (MB) – DDR RAM
HARD DISK	Seagate ATA100 40 gigabytes (GB)
CD-ROM DRIVE	Liteon CD-RW 52x24x52
FLOPPY DRIVE	SONY Floppy Disk drive 3.5 inch
DISPLAY ADAPTER	SIS 16 megabytes (MB)
DISPLAY	LG 500G 15" 256-color monitor and video adapter
UPS	UNITEC U-save 800VA / 3years
PRINTER	HP LaserJet 1300 Series
ETHERNER HUB	CISCO Switch 100 Mb
COMMUNICATION	LAN Cable

Table 3-2   Software Requirements for Server Computer

SOFTWARE	SPECIFICATION
Operating System	Microsoft Windows XP Professional Edition
Applications	Ahead Nero Burning ROM Microsoft Internet Explorer (integrated with OS) Microsoft Office XP Norton Antivirus Corporate Edition 8.1 Norton Personal Firewall Win Zip 8.1 Visual Basic 6.0 Crystal Reports 8.5

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Table 3-3 Hardware Requirement for Client Computer

HARDWARE	SPECIFICATION
CPU	Celeron 1.3 Gigahertz (GHz)
MEMORY	128 megabytes (MB) – DDR RAM
HARD DISK	Seagate ATA100 20 gigabytes (GB)
CD-ROM DRIVE	ASUS CDROM 52X
FLOPPY DRIVE	SONY Floppy Disk drive 3.5 inch
DISPLAY ADAPTER	SIS 16 megabytes (MB)
DISPLAY	LG 500G 15" 256-color monitor and video adapter
UPS	UNITEC U-save 800VA / 3years
PRINTER	HP LaserJet 1300 Series

Table 3-4   Software Requirements for Client Computer

SOFTWARE	SPECIFICATION
Operating System	Microsoft Windows XP Professional Edition
Application	Microsoft Internet Explorer (integrated with OS)
	Microsoft Office XP
	Norton Antivirus Corporate Edition 8.1
	Norton Personal Firewall
	Win Zip 8.1
	Visual Basic 6.0
	Crystal Reports 8.5

(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 3-5   Cost of Existing System, Baht

Cost	Year				
	1	2	3	4	5
Fixed Costs:					
Hardware:					
Workstation					
Celeron 1.3 GHz	1,182.00	1,182.00	1,182.00	1,182.00	1,182.00
Monitor 15"	1,400.00	1,400.00	1,400.00	1,400.00	1,400.00
Printer HP LaserJet	11,310.00	11,310.00	11,310.00	11,310.00	11,310.00
Software:					
Microsoft Windows 98	640.00	640.00	640.00	640.00	640.00
Microsoft Office 97	2,020.00	2,020.00	2,020.00	2,020.00	2,020.00
Implementation Cost					
Training Cost (10 Hrs x 200)	2,000.00	-		-	-
Maintenance Costs	-	-	-	4,000.00	5,000.00
Total Fixed Cost	18,552.00	16,552.00	16,552.00	20,552.00	21,552.00
Operating Costs:					
Staff (salary per month)					
Manager 3 @ 15,000	540,000.00	577,800.00	618,246.00	661,523.22	707,829.85
Assistant 3 @ 10,000	360,000.00	385,200.00	412,164.00	441,015.48	471,886.56
Sales Officers 3 @ 8,000	288,000.00	308,160.00	329,731.20	352,812.38	377,509.25
Inventory Officers 4 @ 7,000	336,000.00	359,520.00	384,686.40	411,614.45	440,427.46
Purchasing Officers 2 @	192,000.00	205,440.00	219,820.80	235,208.26	251,672.83
Paper	5,400.00	7,560.00	10,584.00	14,817.60	20,744.64
Utility	2,500.00	3,000.00	3,600.00	4,320.00	5,184.00
Opportunity Cost	50,000.00	65,000.00	84,500.00	109,850.00	142,805.00
Other expense	6,643.00	7,307.30	8,038.03	8,841.83	9,726.02
Total Operating Cost	1,780,543.00	1,918,987.30	2,071,370.43	2,240,003.22	2,427,785.61
Total Cost of Existing System	1,799,095.00	1,935,539.30	2,087,922.43	2,260,555.22	2,449,337.61

(b) System Costs of Proposed System

Table 3-6 Cost of Proposed System, Baht

Cost	Year				
	1	2	3	4	5
Fixed Costs:					
Hardware:					
1 Server Computer					
Pentium IV 2.66 GHz	10,725.00	10,725.00	10,725.00	10,725.00	10,725.00
Monitor 15"	4,300.00	4,300.00	4,300.00	4,300.00	4,300.00
3 Client Computers					
Celeron 1.3 GHz	5,500.00	5,500.00	5,500.00	5,500.00	5,500.00
Monitor 15"	10,800.00	10,800.00	10,800.00	10,800.00	10,800.00
Etherner Hub	19,539.00	19,539.00	19,539.00	19,539.00	19,539.00
Printer HP LaserJet	11,310.00	11,310.00	11,310.00	11,310.00	11,310.00
Software:					
Microsoft Window XP	5,990.00	5,990.00	5,990.00	5,990.00	5,990.00
Microsoft Office XP	20,410.00	20,410.00	20,410.00	20,410.00	20,410.00
Norton Antivirus 8.1	13,650.00	13,650.00	13,650.00	13,650.00	13,650.00
Norton Personal Firewall	2,339.61	2,339.61	2,339.61	2,339.61	2,339.61
Win zip 8.1	1,620.00	1,620.00	1,620.00	1,620.00	1,620.00
Ahead Nero Burning Rom	195.00	195.00	195.00	195.00	195.00
Visual Basic 6.0	18,330.00	18,330.00	18,330.00	18,330.00	18,330.00
Crystal Reports 8.5	16,769.61	16,769.61	16,769.61	16,769.61	16,769.61
Implementation Cost					
Development Cost	150,000.00	-	-	-	-
Training Cost (20 Hrs x 350)	7,000.00	-	-	-	-
Maintenance Costs					
Total Fixed Cost	**298,478.22**	**141,478.22**	**141,478.22**	**141,478.22**	**141,478.22**
Operating Costs:					
Staff (Salary per month)					
Manager 3 @ 18,000	648,000.00	693,360.00	741,895.20	793,827.86	849,395.81
Sales Officers 3 @ 8,000	288,000.00	308,160.00	329,731.20	352,812.38	377,509.25
Inventory Officers 4 @ 7,000	384,000.00	410,880.00	439,641.60	470,416.51	503,345.67
Purchasing Officers 2 @	192,000.00	205,440.00	219,820.80	235,208.26	251,672.83
Paper	4,343.00	5,211.60	6,253.92	7,504.70	9,005.64
Utility	14,000.00	16,800.00	20,160.00	24,192.00	29,030.40
Opportunity Cost	30,000.00	24,000.00	19,200.00	15,360.00	12,288.00
Other expense	6,643.00	7,307.30	8,038.03	8,841.83	9,726.02
Total Operating Cost	**1,566,986.00**	**1,671,158.90**	**1,784,740.75**	**1,908,163.55**	**2,041,973.63**
Total Cost of Proposed System	**1,865,464.22**	**1,812,637.12**	**1,926,218.97**	**2,049,641.77**	**2,183,451.85**

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

Table 3-7. Accumulated System Costs of Existing System for 5 Years, Baht.
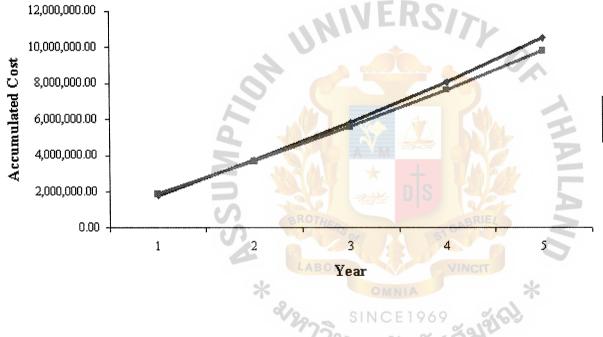
Year	Total Annual Cost	Accumulated Cost
1	1,799,095.00	1,799,095.00
2	1,935,539.30	3,734,634.30
3	2,087,922.43	5,822,556.73
4	2,260,555.22	8,083,111.95
5	2,449,337.61	10,532,449.56

Table 3-8. Accumulated System Costs of Proposed System for 5 Years, Baht.

Year	Total Annual Cost	Accumulated Cost
1	1,865,464.22	1,865,464.22
2	1,812,637.12	3,678,101.34
3	1,926,218.97	5,604,320.31
4	2,049,641.77	7,653,962.08
5	2,183,451.85	9,837,413.93

Table 3-9. The Comparison of Accumulated System Costs, Baht.

Year	Accumulated Existing System Cost	Accumulated Proposed System Cost
1	1,799,095.00	1,872,233.22
2	3,734,634.30	3,678,101.34
3	5,822,556.73	5,604,320.31
4	8,083,111.95	7,653,962.08
5	10,532,449.56	9,837,413.93

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Figure3-1   Break-even Analysis

The proposed system can help company to reduce unnecessary expenses (e.g. salary expenses, utilities expenses, other expenses and opportunity cost). Total annual cost of Proposed system tend to increase slower than total cost of Existing system since the new system can save more costs.

The result of the Break-even Analysis from above line graph can demonstrated that if company implements the proposed system, company can break-even in 2 years Though company have to invest much higher than the existing system in the first year, however, in the long run, in year 2 – 5, new system can save more 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.

*Assume:

– Salary expenses is growth rate at 7% each year

– Paper expenses is growth rate at 40% each year for existing system and growth rate at 20% each year for proposed system.

– Utility expenses are growth rate is 20% each year.

– Opportunity costs is increase 30% each year for existing system and decrease 20% each year for proposed system.

– Other expenses are increase 10% each year.

3.2 System Design

(1) Data Flow Diagram
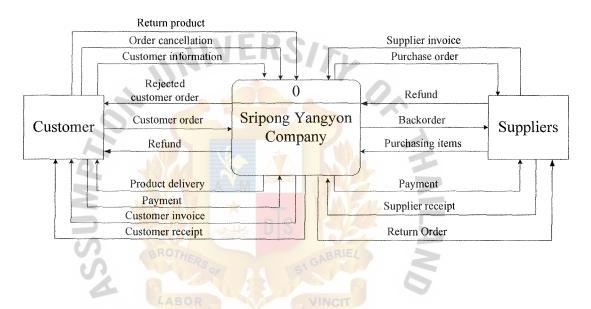
Figure 3-2 Context Diagram of Proposed System
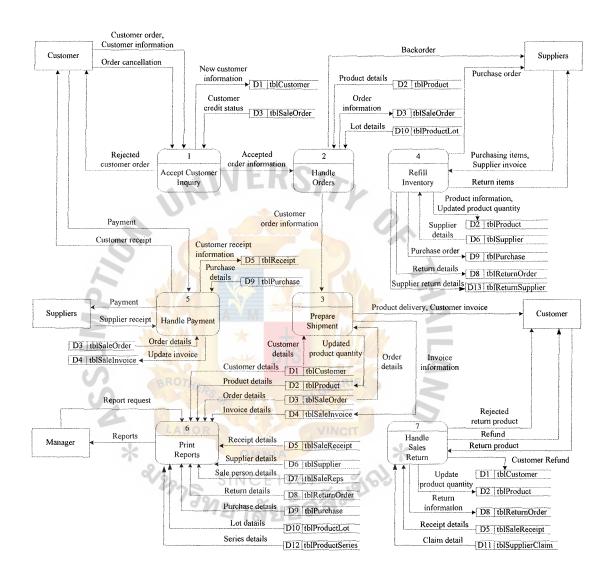
Figure 3-3   Data Flow Diagram – Level 0

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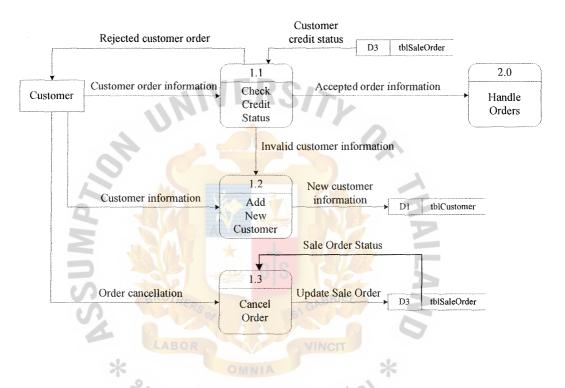
Figure 3-4   Data Flow Diagram – Level 1 for Process 1

20
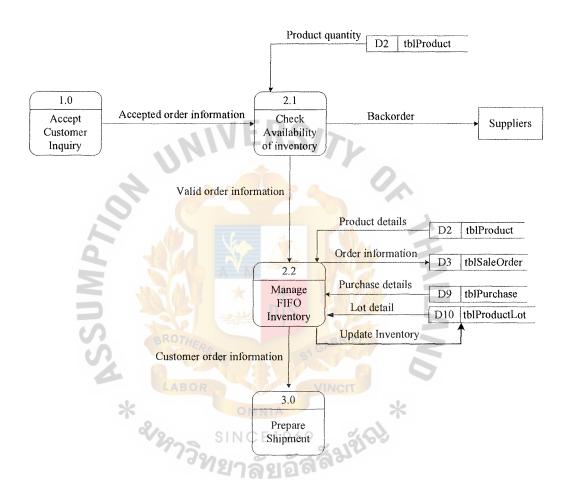
Figure 3-5   Data Flow Diagram – Level 1 for Process 2

21
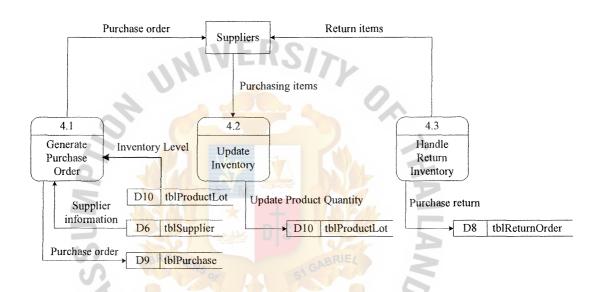
Figure 3-6   Data Flow Diagram – Level 1 for Process 4
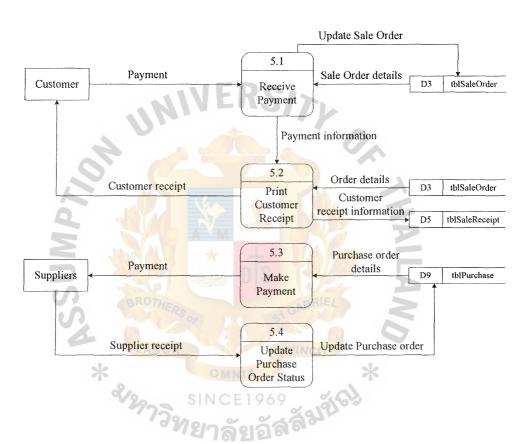
Figure 3-7 Data Flow Diagram – Level 1 for Process 5
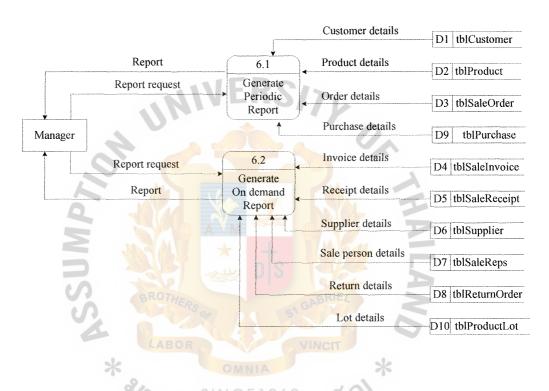
Figure 3-8   Data Flow Diagram – Level 1 for Process 6
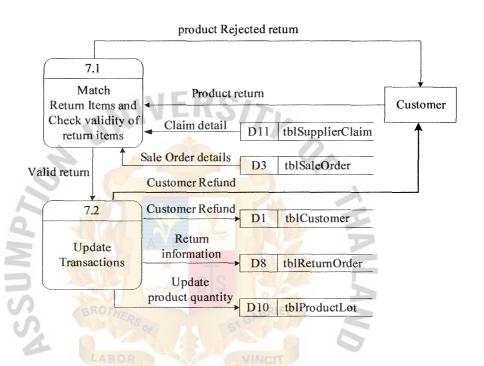
Figure 3-9   Data Flow Diagram – Level 1 for Process 7

(2)   Entity-Relationship Diagram
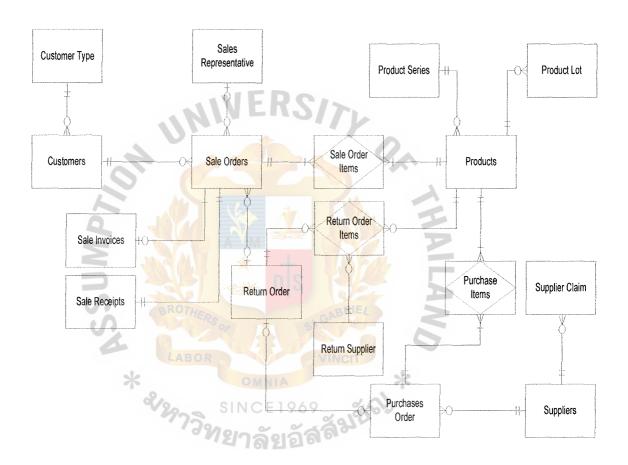
Figure4-0   Entity-Relationship Diagram

(3)   Database Design

Each column of a table represents an attribute or characteristic of an entity. Each row of a table represents an instance of the entity. An important property of the relational model is that it represents logical relationships between entities by values stored in the columns of the corresponding tables.

Using logical database design also helps in transforming the conceptual data model (E-R Diagram) to a logical model (relational database). It represents entities as a relation and sets the identifier of the entity as primary key of the relation in order to be unique and a single value in each row and some non-key attributes of the relation as foreign key to link between two relations. Then, it represents relationships and normalizes or refines the relations to avoid the problems of redundancy data and errors or inconsistencies when updating tables that contain redundant data. Finally, it will merge the relations in order to minimize the redundancy of data (Rob, Coronel 2000:136)

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

- Customer Table: Customer Table: It stores general information about customer. (Appendix C-1)

- Customer Type Table: It stores the classification type of customer. (Appendix C-1)

- Supplier Table: It stores general information of supplier. (Appendix C-6)

- Purchase Order Table: It stores the information about purchase detail that the company buys from suppliers. (Appendix C-11)

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- Products Table: It stores information of product details which the company has stored in the warehouse. (Appendix C-3))

- Product Series Table: It stores information about product series in order to divide line of product in to category. (Appendix C-3)

- Product Lot Table: It keeps track of all the. products in and out using FIFO method. (Appendix C-3)

- Sale Invoices Table: It stores information about invoice and payment information which is used to check whether the customer have made payment for each invoice or not. (Appendix C-2)

- Sale Order Table: It stores information about each order made by customers and details of the order. (Appendix C-4)

- Sales Representative Table: It stores information about sale person in the company. (Appendix C-9)

- Sale Receipt Table: It stores information about receipt that customer already paid and will be use as reference. (Appendix C-10)

- Supplier Claim Table: It stores the claim rate of each product in case of returning the defective products to the suppliers. (Appendix C-6)Purchase Item Table: It stores information about purchase item in details. (Appendix C-13)

- Return Order Item Table: It stores information about item that customer and company will return to supplier. (Appendix C-13)

- Return Order Table: It stores information about return information that the customers return to the company as well as

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the purchase return that company made with the suppliers. (Appendix C-7) Claim Table: It stores the claim rate of each product in case of returning the defective products to the suppliers. (Appendix C-6)

(4)   Interface Design

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

- Customer Information form: It is used to find the customer
information.(Appendix D-1)

- Customer Sale Order Form: It is used to place new customer order.
(Appendix D-2)

- Confirm Customer Sale Order Form: It is used to confirm new sale
order. (Appendix D-3)

- Customer Sale Order View Form: Show all sale order details and also
show each sale order. (Appendix D-4)

- Add new customer Form: It is used to add new customer. (Appendix
D-4)

- Customer view Form: It is used to show all customer information.
(Appendix D-5)

- Sale Order Return Form: It is used to return product from customer by
using claim rate to calculate refund of the customer. (Appendix D-6)

- Sale Order Receipt Form: It is used to record sale receipt from
customer by calculates net payment, discount and vat. (Appendix D-7)

- Main Form: It is a main menu of system. (Appendix D-8)

- Administrator Form: It is a menu of administrator part. (Appendix D-9)

- Customer Form: It is a menu of transaction of customers. (Appendix
D-10)

- Supplier Form: It is a menu of transaction of suppliers. (Appendix D-11)

- Product Form: It is a menu of processing of product. (Appendix D-12)

- Sale Representative From: It is a menu of transaction of sale representative. (Appendix D-13)

- Report Main Form: It is a menu of report management use for only manager (Appendix D-14)

- Login Form: It is used for login to the system. (Appendix D-15)

- Adding Product Form: It is used to add new product Items. (Appendix D-16)

- Product View Form: It is used to show all product details in order to provide to the customer and also check available of product and lot detail. (Appendix D-17)

- Picking Slip Form: It is used to prepare for printing picking slip. (Appendix D-18)

- Sale Invoice Form: It is used to prepare for printing invoice by sale order. (Appendix D-19)

- Product Lot Form: It is used to show the details of each product lot information. (Appendix D-20)

- Return Item View Form: It is used to view all return order and each return order from sale order and purchase order. (Appendix D-21)

- Purchase Order Form: It is used to place new purchase order to supplier. (Appendix D-22)

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- Purchase Order View Form: It is used to view all purchase order details or select item in order to check each purchase order and also print entire or each purchase order. (Appendix D-23)

- Editing Supplier Form: It is used to modify and update supplier's information. (Appendix D-24)

- Canceling Purchase Order Form: It is used to select the purchase order to be cancellations. (Appendix D-25)

- Purchase Order Receipt Form: It is used to record purchase order receipt. (Appendix D-26)

- Editing Sale Representative Form: It is used to modify, set up and update sale representative information. (Appendix D-27)

- User View Form: It is used to view all users in the system. (Appendix D-28)

- Editing User Form: It is used to change customer credit term or credit. (View all history record) (Appendix D-29)

- Customer Management Form: It is used to change customer credit term or credit. (Appendix D-30)

- Product Management Form: It is used to change general product information. (Appendix D-31)

(5)　Management Report Design

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

(a)　Sale Order Report: (Appendix E-1, E-2, E-3, E-4)

This sale order report will be used for manager to determine the sale growth of each product in the company. This report consists of 3 parts which are Header, Column header and details.

- Header: Show the type of particular sale order bases on criteria that manger wish to print.

- Column header: Show the list of details that this report will be print and arrange in the tabular format.

- Details: Show the information necessary for the manager to see details of each sale order.

(b)　Customer Report: (Appendix E-5, E-6)

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 customer's information and credit limit.

(c)　Inventory Report: (Appendix E-7, E-8, E-9)

This summary report shows the details of each product detail and remaining quantity which divide into 3 sections and each section have 3 parts.

- On each supplier brand name: This report shows the lists of particular supplier that our company holds in the warehouse and the remaining quantity.

- On each product series: This report shows the lists of particular product ID. and details of lot number and lot quantity and lot sold (FIFO inventory).

- On other case: It shows reports that are not categorized in other report sections. The manager can choose for the particular report needed. For example, Lists of product that below the reorder point or the Top 5 product sold.

(d) Purchase Report: (Appendix E-10)

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

- Header: Show the print date and supplier 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 purchase order details, the total amount and due date of each purchase order

IV. SYSTEM IMPLEMENTATION

4.1   Overview of the System Implementation

New system of Sripong Yangyon Company will be implemented in the some part of the department first to test whether it is compatible with organization or not. By implementing the sale module in Sale department first. This is a kind of **"Pilot (distributed) Operation."** If the company finds that there is no problem at pilot site then rest of the company can use new system in full-range. The company decides to implement this way because it incurs less risk if the system fails. It is better to implements very confidently and carefully.

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.

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V. CONCLUSION AND RECOMMENDATION

5.1 Conclusions

The objectives of the proposed system of Sripong Yangyon Company are to reduce man power, managing well inventory control (FIFO) and centralize database system.

From observing the new system, the company found that it can reduce the work of officers significantly. Because computerized system provides an effectively control for all work processes. No delay of work (because no people during the process), as well as centralized database system which is easy to maintain and update.

Inventory control management of company is doing better than the existing system. Because the new system can track the inventory level before it ran out of the stock. So, company can reduce cost of inventory shortage and cost of holding high inventory level.

The final stage of Sripong Yangyon Company's new system is to monitor performance of the system whether after the implementation it can help the company to gain advantage over the competitors as well as an efficient production control. (Produce more products in shorter period of times, productivity is increasing). Least but not last it also needs to ensure that the final product of company meet the customers' expectation as customer are the key factor to the successes of the company.

5.2 Recommendations

The new system of Sripong YangYon Company in the future can be improved by integrating with other processes from other department within the company. (E.g. Human resource management department, Finance and Accounting department, Marketing department and Services department) In the future, the new system can be

use for the entire company (One program, fit to all) and going through the Enterprise Resources Planning (ERP) modeling that everyone in the organization will have the same goals, same commitments and same achievements by use this new system to bring the successful ahead the competitors in the coming year.

APPENDIX A
DATA DICTIONARY FOR DATA FLOW DIAGRAMS
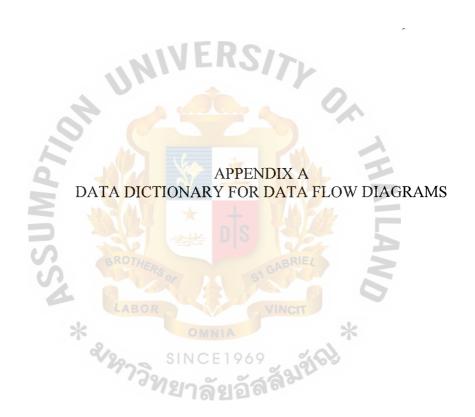
Table A-1   Data Dictionary of Sales and Inventory Management System

Data items	Meaning
Accepted order information	The order that already proof (so_ID + cus_ID + date + pdt_Qty + pdt_sellPrice + pdt_setPrice)
Backorder	Information of the order that the company does not have the product or stockless situation Alias to Accepted order information
Claim detail	The detail of the claim (so_ID + Pdt_ID + Sup_UR +Sup_CR)
Customer credit free	Credit use for next purchasing
Customer credit status	Credit status of the customer
Customer detail	The detail of customer Alias to Customer information
Customer information	Customer's information (cus_ID + cus_TypeID + cus_Fname + cus_Lname + Cus_Address + Cus_Zip + cus_Phone + cus_Fax + cus_Email + cus_Creditlimit + cus_Creditstatus)
Customer invoice	The invoice given to customer Alias to Invoice Information
Customer order	Customer place new order Alias to Accepted order information

Data items	Meaning
Customer order information	The information of customer order Alias to Accepted order information
Customer receipt	Customer's receipt
Customer receipt information	Receipt that print to the customer (rec_ID + rec_Date + rec_Discount + rec_Vat + rec_Amount)
Invalid customer information	Customer information does not exist in database Alias to customer information
Invoice detail	The detail of invoice Alias to invoice information
Invoice information	Inventory Information (inv_ID + so_ID + rec_ID + inv_Date + inv_DueDate + inv_CreditTerm)
Lot Detail	The amount that use for calculation
New customer information	The customer register to the companyAlias to customer information
Order cancellation	Order is cancelled by customer
Order detail	Alias to Accepted order information
Order information	Customer's order Alias to Accepted order information
Payment	Customer pay for invoice that they order to the company or company pay for invoice to supplier
Payment information	The payment detail that prepare to print Alias to customer receipt information

Data items	Meaning
Product delivery	Product are delivered to the customer
Product detail	Alias to product information
Product information	Product that customer order to the company (pdt_No + Pdt_ID + pdt_TypeID + pdt_Name + pdt_Detail + pdt_size + pdt_MinLevel + pdt_UseLife + pdt_CostPrice+ pdt_SetPrice + pdt_Avail + pdt_IsLock + pdt_Shelf)
Product quantity	The amount that customer order to the company
Purchase detail	Purchase order information
Purchasing item	Purchasing item from suppliers
Purchase order	Order that send to the suppliers (po_ID + po_Qty + po_Date + po_Time)
Purchase order detail	Alias to purchase order
Purchase return	Return to supplier
receipt detail	Alias to customer receipt information
Reject customer order	The rejection of customer
Reject return product	The company reject the order of customer
Report	The document that necessary submit to manager
Report request	Manager request any information
Return Detail	Alias to Return information
Return information	The information that involve with return to our company (re_ID + ref_ID + re_Date + pdt_ID + pdt_Qty + pdt_cR)

Data items	Meaning
Return item	The item that return to suppliers
Return product	The product that customer return to the company
Sale person detail	Sale representative information (rep_ID + rep_Fname + rep_Lname + rep_Address + rep_Zip + rep_Mphone + rep_Hphone + rep_DOB + rep_HireDate+ rep_Salary)
Series detail	The number use for define the product
Supplier detail	Supplier's information (sup_ID + sup_Bname + sup_Cname + sup_Address + sup_Zip + sup_Phone + sup_Fax + sup_Email + sup_Homepage + sup_WareHouse)
Supplier invoice	The supplier sent the invoice to the company
Supplier receipt	Alias to customer receipt information
Supplier return detail	The information that return to supplier
Update invoice	Alias to invoice information
Update product quantity	The product quantity has been updated Alias to product quantity
Update purchase order	The order has been updated
Valid order information	The order that everything correct after checking Alias to Accepted order information

APPENDIX B

PROCES SSPECIFICATION

Table B-1 Process Specification for Process 1.0

Process Name:	Accept Customer Inquiry
Data In:	(1) Customer Order, Customer Information (2) Order Cancellation (3) Customer Credit Status
Data Out:	(1) New Customer Information (2) Accepted order information (3) Rejected customer order
Process:	(1) Receive customer information (2) Receive customer order (3) Check customer credit status (4) Accepted or Rejected customer order
Attachment:	(1) Customer (2) Process 2.0 (3) Data Store D1 (4) Data Store D3

Table B-2 Process Specification for Process 1.1

Process Name:	Check Credit Status
Data In:	(1) Customer order information (2) Customer credit status
Data Out:	(1) Accept order information (2) Invalid customer information (3) Rejected customer order
Process:	(1) Get order information (2) Check credit status (3) Accepted or Rejected customer order
Attachment:	(1) Customer (2) Process 2.0 (3) Data Store D3

Table B-3 Process Specification for Process 1.2

Process Name:	Add New Customer
Data In:	(1) Customer information (2) Invalid customer information
Data Out:	(1) New customer information
Process:	(1) Record new customer information
Attachment:	(1) Customer (2) Data Store D1

Table B-4 Process Specification for Process 1.3

Process Name:	Cancel Order
Data In:	(1) Order Cancellation (2) Sale Order Status
Data Out:	(1) Update Sale Order
Process:	(1) Handle customer order cancellation
Attachment:	(1) Customer (2) Data Store D3

Table B-5 Process Specification for Process 2.0

Process Name:	Handle Orders
Data In:	(1) Accepted order information (2) Product details (3) Lot details
Data Out:	(1) Order information (2) Backorder (3) Customer order information
Process:	(1) Get product details (2) Check availability of inventory (3) Manage FIFO inventory (4) Backorder
Attachment:	(1) Supplier (2) Process 1.0 (3) Process 3.0 (4) Data Store D2 (5) Data Store D3 (6) Data Store D10

Table B-6 Process Specification for Process 2.1

Process Name:	Check Availability of inventory
Data In:	(1) Accepted order information (2) Product Quantity
Data Out:	(1) Backorder (2) Valid order information
Process:	(1) Get product quantity (2) Check inventory level (3) Backorder
Attachment:	(1) Supplier (2) Process 1.0 (3) Data Store D2

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Table B-7 Process Specification for Process 2.2

Process Name:	Manage FIFO Inventory
Data In:	(1) Valid order information (2) Product Details (3) Purchase details (4) Lot details
Data Out:	(1) Order information (2) Customer order information (3) Update Inventory
Process:	(1) Get product lot detail (2) Assign order according to FIFO inventory
Attachment:	(1) Process 3.0 (2) Data Store D2 (3) Data Store D3 (4) Data Store D9 (5) Data Store D10

Table B-8 Process Specification for Process 3.0

Process Name:	Prepare Shipment
Data In:	(1) Customer order information (2) Customer details (3) Order details
Data Out:	(1) Updated product quantity (2) Invoice information (3) Product delivery (4) Customer Invoice
Process:	(1) Prepare picking bill (2) Remove product from inventory (3) Prepare customer invoice
Attachment:	(1) Customer (2) Process 2.0 (3) Data Store D1 (4) Data Store D2 (5) Data Store D3 (6) Data Store D4

Table B-9 Process Specification for Process 3.1

Process Name:	Print Picking bill, Customer Invoice
Data In:	(1) Customer order information (2) Customer details (3) Order details
Data Out:	(1) Updated product quantity (2) Invoice information (3) Product delivery (4) Customer invoice
Process:	(1) Generate picking bill and send to warehouse (2) Generate Customer invoice
Attachment:	(1) Customer (2) Process 2.0 (3) Data Store D1 (4) Data Store D2 (5) Data Store D3 (6) Data Store D4

Table B-10 Process Specification for Process 4.0

Process Name:	Refill Inventory
Data In:	(1) Supplier details (2) Purchasing items (3) Supplier invoice
Data Out:	(1) Purchase order (2) Product information (3) Updated product quantity (4) Return details (5) Return items
Process:	(1) Get product Information (2) Generate purchase order (3) Receive purchasing item, supplier invoice (4) Return product
Attachment:	(1) Supplier (2) Data Store D2 (3) Data Store D6 (4) Data Store D9 (5) Data Store D8 (6) Data store D13

Table B-11 Process Specification for Process 4.1

Process Name:	Generate Purchase Order
Data In:	(1) Supplier information (2) Inventory Level
Data Out:	(1) Purchase order
Process:	(1) Generate purchase order (2) Get Supplier information
Attachment:	(1) Supplier (2) Data Store D6 (3) Data Store D9 (2) Data Store D10

Table B-12 Process Specification for Process 4.2

Process Name:	Update Inventory
Data In:	(1) Purchasing items
Data Out:	(1) Updated product quantity
Process:	(1) Assign purchased items into the warehouse (FIFO) (2) Updated product quantity
Attachment:	(1) Supplier (2) Data Store D10

Table B-13 Process Specification for Process 4.3

Process Name:	Handle Return Inventory
Data In:	-
Data Out:	(1) Purchases Return (2) Return items
Process:	(1) Record return details
Attachment:	(1) Supplier (2) Data Store D8

Table B-14 Process Specification for Process 5.0

Process Name:	Handle Payment
Data In:	(1) Order details (2) Payment (3) Purchase details (4) Supplier receipt
Data Out:	(1) Customer receipt (2) Payment (1) Update invoice, receipt
Process:	(1) Receive payment from customer (2) Payment to supplier (3) Updated customer invoice
Attachment:	(1) Customer (2) Supplier (3) Data Store D3 (4) Data Store D4 (5) Data Store D5 (6) Data Store D9

Table B-15 Process Specification for Process 5.1

Process Name:	Receive Payment
Data In:	(1) Payment (2) Sale order details
Data Out:	(1) Update sale order (2) Payment information
Process:	(1) Update sale order (2) Get sale order details
Attachment:	(1) Customer (2) Process 5.2 (3) Data Store D3

Table B-16 Process Specification for Process 5.2

Process Name:	Print Customer Receipt
Data In:	(1) Order details
Data Out:	(1) Customer receipt information (2) Customer receipt
Process:	(1) Print customer receipt (2) Record payment transaction
Attachment:	(1) Customer (2) Process 5.1 (3) Data Store D3 (4) Data Store D5

Table B-17 Process Specification for Process 5.3

Process Name:	Make Payment
Data In:	(1) Purchase order details
Data Out:	(1) Payment
Process:	(1) Get purchase order details
Attachment:	(1) Supplier
	(2) Data Store D9

Table B-18 Process Specification for Process 5.4

Process Name:	Update Purchase Order Status
Data In:	(1) Supplier receipt
Data Out:	(1) Updated purchase order
Process:	(1) Update purchase order status
Attachment:	(1) Supplier
	(2) Data Store D9

Table B-19 Process Specification for Process 6.0

Process Name:	Print Report
Data In:	(1) Report Request (2) Customer details (3) Product details (4) Order details (5) Invoice details (6) Receipt details (7) Supplier details (8) Return details (9) Purchase details
Data Out:	(1) Report
Process:	(1) Generate report (Periodic, On demand)
Attachment:	(1) Manager (2) Data Store D1 (3) Data Store D2 (4) Data Store D3 (5) Data Store D4 (6) Data Store D5 (7) Data Store D6 (8) Data Store D7 (9) Data Store D8 (10) Data Store D9 (11) Data Store D10 (12) Data Store D12

Table B-20 Process Specification for Process 6.1

Process Name:	Generate Periodic Report
Data In:	(1) Report request (2) Customer details (3) Product details (4) Order Details (5) Purchase details
Data Out:	(1) Report
Process:	(1) Generate periodic report to manager
Attachment:	(1) Manager (2) Data Store D1 (3) Data Store D2 (4) Data Store D3 (5) Data Store D9

Table B-21 Process Specification for Process 6.2

Process Name:	Generate on Demand Report
Data In:	(1) Report request (2) Invoice details (3) Receipt details (4) Supplier details (5) Sale person details (6) Return details (7) Lot details
Data Out:	(1) Report
Process:	(1) Generate on demand report to manager
Attachment:	(1) Manager (2) Data Store D4 (3) Data Store D5 (4) Data Store D6 (5) Data Store D7 (6) Data Store D8 (7) Data Store D10

Table B-22 Process Specification for Process 7.0

Process Name:	Handle Sale Return
Data In:	(1) Receipt details (2) Claim details (3) Product return
Data Out:	(1) Product rejected return (2) Refund (3) Update product quantity (4) Return information (5) Customer refund
Process:	(1) Check return product status (2) Update product lot (3) Record customer refund amount
Attachment:	(1) Customer (2) Data Store D1 (3) Data Store D2 (4) Data Store D5 (5) Data Store D8 (6) Data Store D11

Table B-23 Process Specification for Process 7.1

Process Name:	Match Return Items and Check Validity of Return Items
Data In:	(1) Product return (2) Claim details (3) Sale order details
Data Out:	(1) Product rejected return (2) Valid return
Process:	(1) Check return product status with claim rate (2) Match return product with sale order
Attachment:	(1) Customer (2) Data Store D3 (3) Data Store D11

Table B-24 Process Specification for Process 7.2

Process Name:	Update Transaction
Data In:	(1) Valid return
Data Out:	(1) Customer Refund (2) Update product quality (3) Return information
Process:	(1) Record customer refund amount (2) Record return information
Attachment:	(1) Process 7.1 (2) Data Store D1 (3) Data Store D8 (4) Data Store D10

APPENDIX C

DATA DICTIONARY FOR DATABASE DESIGN

Table C-1 Customer Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Cus_ID	Char (8)	Y	Y		Cu-99999	PK	
2	Cus_TypeID	Byte	Y	Y		9		
3	Cus_Fname	Varchar (20)						
4	Cus_Lname	Varchar (20)						
5	Cus_Address	Varchar (40)						
6	Cus_Zip	Varchar(5)				9999		
7	Cus_Phone	Varchar(12)			Y	(99)-999-9999		
8	Cus_Fax	Varchar(12)				(99)-999-9999		
9	Cus_Email	Varchar (30)						
10	Cus_Creditlimit	Double			Y	#,###,###		
11	Cus_CreditFree	Double				#,###,###		
12	Cus_pDis	Single			Y			
13	Cus_tDis	Single			Y			
14	Cus_tNet	Varchar(7)			Y			
15	IsLock	Boolean						

Table C-2 Type Customers Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Cus_TypeID	Integer				9	PK	
2	Cus_TypeDetails	Varchar(30)	Y	Y		Po-99999		
3	Cus_CreditLimit	Double			Y	Pd-9999-9999		
4	Cus_cDis	Single			Y			
5	Cus_pDis	Single			Y			
6	Cus_tNet	Single			Y			

Table C-3   Sale Invoice Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Inv_ID	Char (8)	Y	Y		Iv-99999	PK	
2	So_ID	Char (8)	Y	Y		So-99999	FK	Sale Order Table
4	Inv_Date	Date				99-99-9999		
5	Inv_DueDate	Date				99-99-9999		
6	Inv_Ship	Varchar(50)						

Table C-4   Product Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Pdt_ID	Char (12)	Y	Y		Pd-9999-9999	PK	
2	Mnu_ID	Char(10)	Y	Y		9999999999		
3	Sup_ID	Char (8)	Y	Y		Su-99999	FK	Supplier Table
4	Series_ID	Byte				9		
5	Pdt_Size	Byte				###/##		
6	Pdt_Details	Varchar(30)						
7	Pdt_SellPrice	Double				#,###,###		
8	Pdt_UseLife	Byte				9		
9	Pdt_MinLevel	Integer				(99)-999-9999		
10	Pdt_Shelf	Char(4)				9999		
11	Pdt_IsLock	T/F						

TableC-5 Sale Order Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	So_ID	Char (8)	Y	Y		So-99999	PK	
2	Cust_ID	Char (8)	Y	Y		Cu-99999	FK	Customer Table
3	So_Date	Date				99-99-9999		
4	So_Time	Time			Y	99.99		
5	So_Status	Byte						
6	So_LStatus	Byte						
7	So_BuyType	Varchar(10)						
8	So_Discount	Single						
9	So_VAt	Single						
10	Rep_ID	Single	Y	Y		Sp-99999	FK	Sale Representative
11	Inv_ID	Single	Y	Y		Iv-99999	FK	Sale Invoice Table
12	Rec_ID	Single	Y	Y		Sr-99999	FK	Receipt Table

Table C-6 Sale Order Item Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	So_ID	Char (8)	Y	Y		So-99999	PK,FK	Sale Order Table
2	Pdt_ID	Char (12)	Y	Y		Pd-9999-9999	PK,FK	Product Table
3	Lot_Num	Integer				99		
4	Pdt_Qty	Integer				#,###		
5	Pdt_SellPrice	Double				#,###,###		
6	Pdt_SetPrice	Double				#,###,###		

Table C-7   Supplier Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Sup_ID	Char (8)	Y	Y		Su-99999	PK	
2	Sup_Bname	Varchar (30)						
3	Sup_Cname	Varchar (30)						
4	Sup_Address	Varchar (50)						
5	Sup_Zip	Char(5)				99999		
6	Sup_Phone	Varchar(12)				(99)-999-9999		
7	Sup_Fax	Varchar(12)				(99)-999-9999		
8	Sup_Email	Varchar(30)			Y			
9	Sup_Homepage	Varchar(30)			Y			
10	Sup_Con	Single				9		
11	Sup_ConValue	Double				#,###,###		
12	Sup_pDis	Single			Y	99		
13	Sup_tDis	Single			Y	99		
14	Sup_tNet	Single			Y			

Table C-8   Return Order Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Re_ID	Char (8)	Y	Y		Ro-99999	PK	
2	Ref_ID	Char(8)	Y	Y		Cu-9999	FK	Customer Table
3	Re_Type	Integer				9		
4	Re_Date	Date				99-99-9999		
5	Re_Value	Double				#,###,###		
6	Move_Date	Date				99-99-9999		
7	IsMove	Boolean						

Table C-9   Return Order Items Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Re_ID	Char (8)	Y	Y		Re-99999	PK,FK	Sale Return Table
2	Re_Doc	Char(8)				So-99999	FK	Sale Order Table
3	Pdt_ID	Char (12)	Y	Y		Pdt_99999999	PK,FK	Product Table
4	Lot_ID	Integer				9		
5	Pdt_Qty	Integer				#,###		
6	Pdt_cR	Single						
7	reSup_ID	Char(8)	Y	Y		Rs-99999	FK	

Table C-10   Sale Representative Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Rep_ID	Char (8)	Y	Y		Sp-99999	PK	
2	Rep_Fname	Varchar (20)						
3	Rep_Lname	Varchar (20)						
4	Rep_Address	Varchar (50)						
5	Rep_Zip	Char(5)				99999		
6	Rep_Mphone	Varchar(12)			Y	(99)-999-9999		
7	Rep_Hphone	Varchar(12)			Y	(99)-999-9999		
8	Rep_Email	Varchar(12)						
9	Rep_DOB	Date				99-99-9999		
10	Rep_HireDate	Date				99-99-9999		
11	Rep_Salary	Integer				##,###		
12	Rep_ComRate	single						

Table C-11 Sale Receipts Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Rec_ID	Char (8)	Y	Y		Sr-9999	PK	
2	Rec_Date	Date				99-99-9999		
3	Rec_Total	Double				#,###,###		
4	Rec_Discount	Double						
5	Rec_Vat	Double						
6	Rec_Amount	Double				#,###,###		
7	Rec_Dis	Single						
8	Rec_DisMove	Boolean						
9	Rec_IsLate	Boolean						

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Table C-12 Purchase Order Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Po_ID	Char (8)	Y	Y		Po-99999	PK	
2	Sup_ID	Char (8)	Y	Y		Su-99999	FK	Supplier Table
3	Po_Inv	Char(8)				Sv-99999		
4	Po_InvDate	Date				99-99-9999		
5	Po_InvDueDate	Date				99-99-9999		
6	Po_Rec	Single				99999		
7	Po_RecDate	Date				99-99-9999		
8	Po_Date	Date				99-99-9999		
9	Po_Time	Time				99.99		
10	Po_Status	Byte				9		
11	Po_LStatus	Bye				9		
12	Po_ConType	Integer				9		
13	Po_ConValue	Double				#,###,###		
14	Po_Vat	Single						
15	Po_CreditTerm	Varchar(7)						

Table C-13 Purchase Order Item Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Po_ID	Char (8)	Y	Y		Po-99999	PK,FK	Purchase Order Table
2	Pdt_ID	Char (12)	Y	Y		Pd-9999-9999	PK,FK	Product Table
3	Pdt_Qty	Integer				#,###		
4	Pdt_Cost	Single				#,###,###		

Table C-14   Product Info Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Info_ID	Char (4)	Y	Y		In99	PK	
2	Info_Detail	Varchar(30)						
3	Info_Min	Single				9999		
4	Info_Max	Single				9999		

Table C-15   Product Lot Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Pdt_ID	Char (8)	Y	Y		Pd-99999-9999	PK,FK	Product Table
2	Lot_Num	Integer				99		
3	Po_ID	Char(8)	Y	Y		Po-99999	PK,FK	Purchase Order Table
4	Lot_Date	Date				99-99-9999		
5	Lot_Cost	Double				#,###,###		
6	Lot_Qty	Single				999		
7	Lot_Sold	Double				#,###,###		
8	Lot_Return	Integer						

Table C-16   Product Series

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Sup_ID	Char (8)	Y	Y		Su-99999	PK,FK	Supplier Table
2	Series_ID	Varchar(3)				9		
3	Series_Name	Varchar (20)						
4	Series_Lock	Boolean				T/F		

Table C-17   Supplier Claim

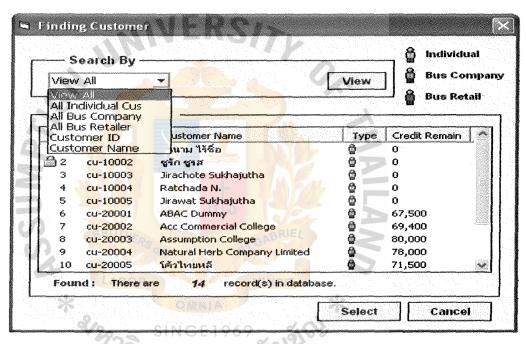| No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Sup_ID	Char (8)	Y	Y		Su-99999	PK,FK	Supplier Table
2	Sup_UR	Single						
3	Sup_CR	Single						

APPENDIX D
INTERFACE DESIGN

Figure D-1   Customer Information Search Form
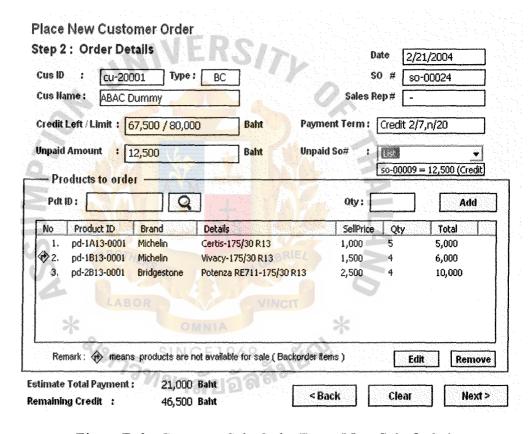
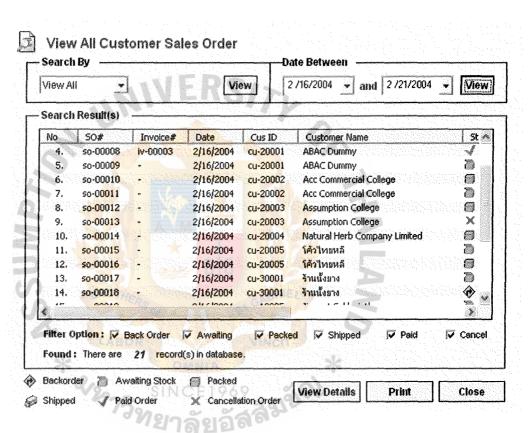Figure D-2 Customer Sale Order Form (New Sale Order)

Place New Customer Order

Step 3 : Order Summary

Date : 2/21/2004

Cus ID : cu-20001

Order Details

No	Product ID	Brand	Details	SellPrice	Qty	Total
1.	pd-1A13-0001	Michelin	Certis-175/30 R13	1,000	5	5,000
2.	pd-2B13-0001	Bridgestone	Potenza RE711-175/30 R13	2,500	4	10,000

Transaction Complete

New Sale Order # so-00024 and so-00025 (Backorder)
Has been successful placed!!

OK

Term of payment : Credit 2/7, baht

Discount : 0 % baht

Vat : 7 % baht

Net Payment : 16,050 baht

View Backorder

< Back

Confirm

Figure D-3   Confirm Customer Sale Order Form

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Figure D-4 Customer Sale Order View Form

Figure D-5   Add New customer Form
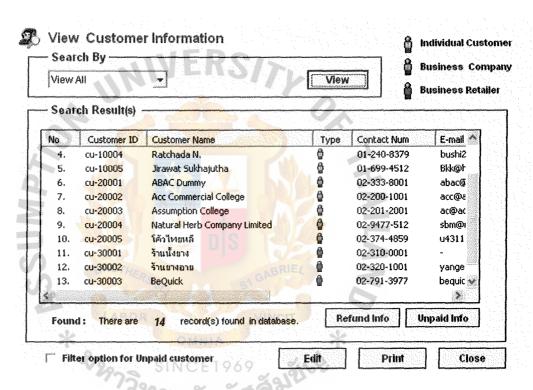
Figure D-6   Customer view Form

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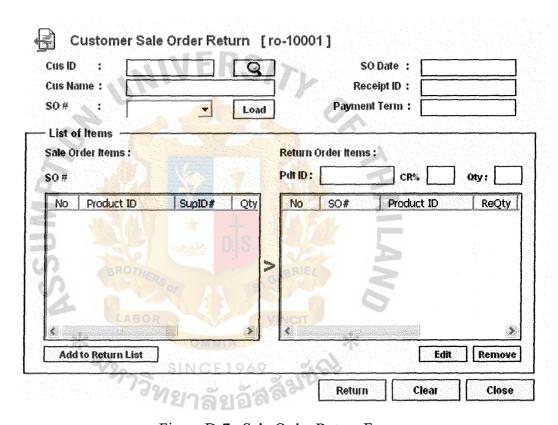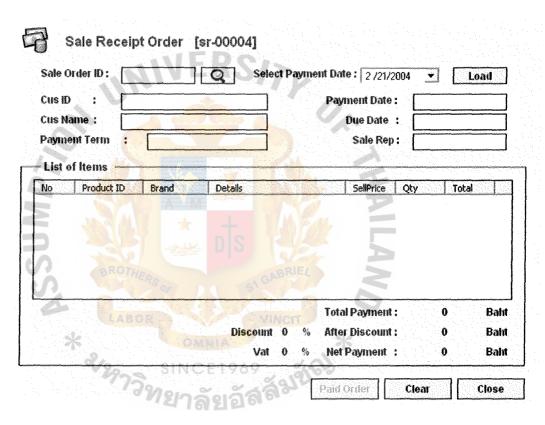
Figure D-7   Sale Order Return Form

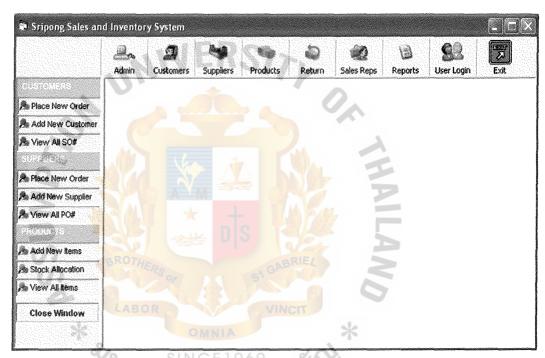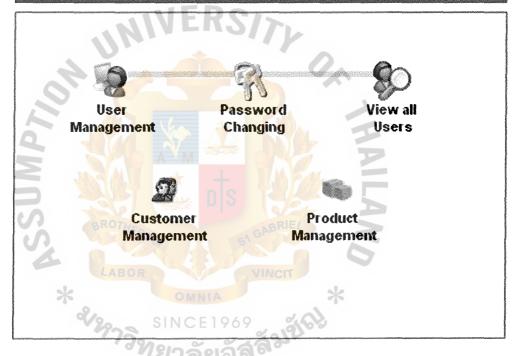Figure D-8   Sale Order Receipt Form
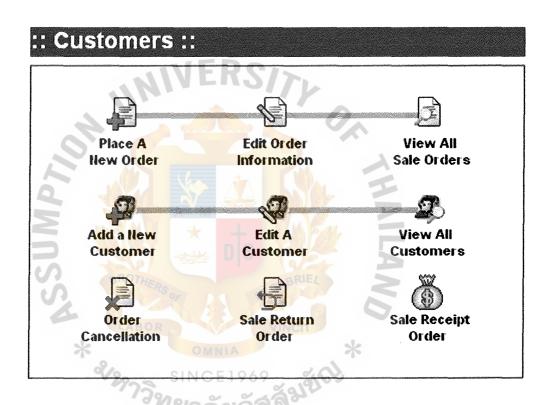
Figure D-9   Main Form

Figure D-10 Administrator Form

:: Customers ::

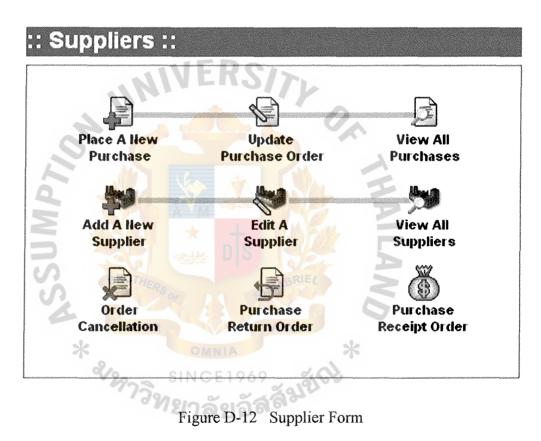Place A New Order

Edit Order Information

View All Sale Orders

Add a New Customer

Edit A Customer

View All Customers

Order Cancellation

Sale Return Order

Sale Receipt Order

Figure D-11   Customer Form

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Figure D-12   Supplier Form

:: Products ::

Register
New Product

Edit A
Product

View All
Products

Orders to
Pick and Pack

Orders to
Ship

Receive Order
from Supplier

Stock
Allocation
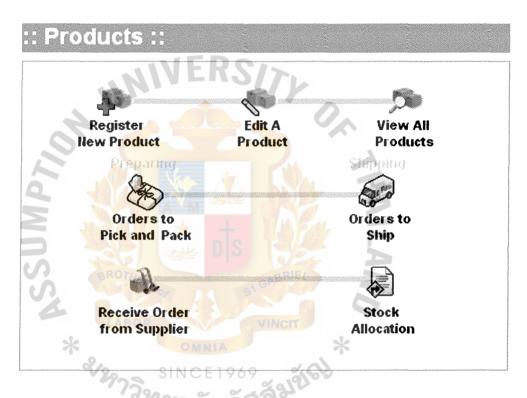
Figure D-13   Product Form

86

Figure D-14   Sale Representative From
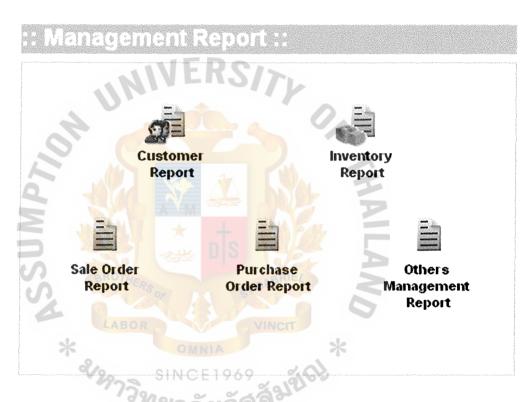
Figure D-15   Report Main Form

Figure D-16   Login Form

Register New Product Information

Product Information

Brand Name :	su-00001 Michelin
Series :	MXF Sport
- Section Height :	175 mm
- Aspect Ratio :	45 %
- Rim Diameter :	13 inch
- Useful Life :	2 Year(s)

Mnu Code : 10517545132

Sell Price : 1,200.00 baht

Minimum Qty : 10 Unit(s)

Keeping Zone : z01E

Product Status
- ⦿ Ready for sale ◯ Lock

Save   Clear   Close

Figure D-17   Adding Product Form
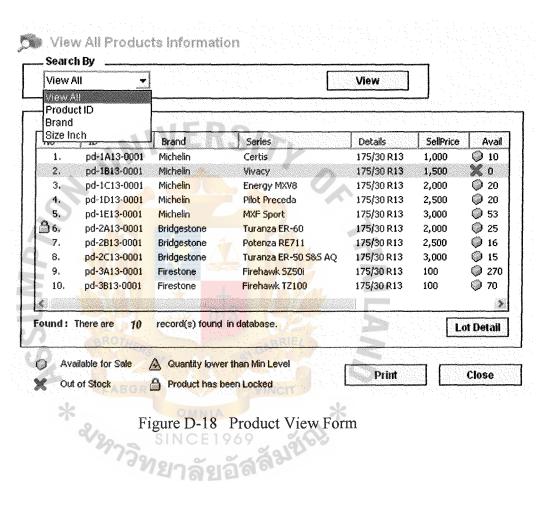
Figure D-18   Product View Form

Preparing for Printing Picking Slip

Select Sale Order : `so-00009`   [Load]   (Awaiting Order Status)

Customer Name : `ABAC Dummy`   Order Date : `2/16/2004`

Payment Term : `Credit 2/7,n/20`

List of Items

No	Product ID	Brand	Product Details	Qty	Location
1.	pd-1B13-0001	Michelin	175/30 R 13	4	z102
2.	pd-1C13-0001	Michelin	175/30 R 13	3	z103
3.	pd-3A13-0001	Firestone	175/30 R 13	5	zf01

[🖶]   [Clear]   [Close]
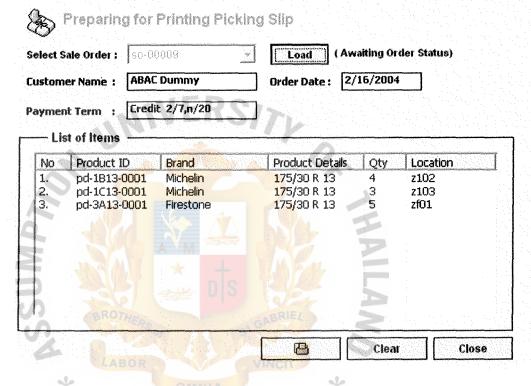
Figure D-19   Picking Slip Form

Preparing for Issuing Invoice and Shipment   [iv-00005]

Select Sale Order :	so-00010	**Load**
Customer Name :	Acc Commercial College	
Payment Term :	Cash 5 %	
Issue Date :	2/21/2004	
Due Date :	2/21/2004	

Ship To :

St Louis Soi 3 Sathorn Road
Bangkok10110

List of Items

No	Product ID	Brand	Product Details	Price	Qty	Total
1.	pd-1A13-0001	Michelin	175/30 R 13	1,000	2	2,000
2.	pd-1D13-0001	Michelin	175/30 R 13	2,500	2	5,000
3.	pd-3B13-0001	Firestone	175/30 R 13	100	5	500

Discount 5   %   Vat 7   %

Total Payment : 7,500 baht		
Net Payment : 7,624 baht	**Clear**	**Close**

Figure D-20   Sale Invoice Form

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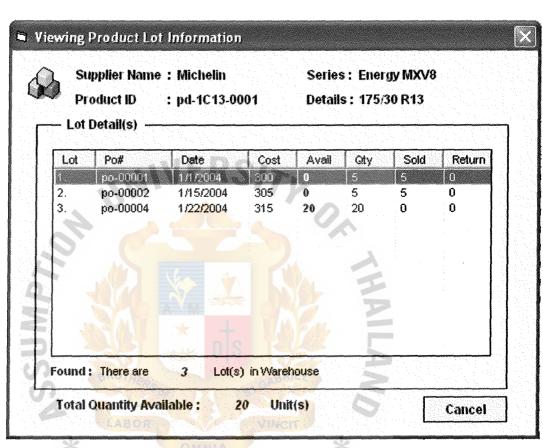
Figure D-21   Product Lot Form
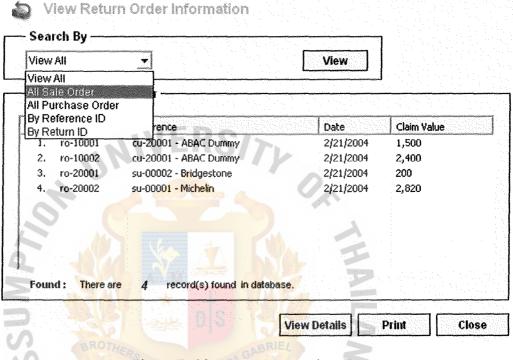
Figure D-22   Return Item View Form

Place New Purchase Order

Step 1 : Purchase Details

Supplier ID :	su-00001 Michelin ▾ [Load]
Business Name :	Michelin

Date 2/21/2004
PO # po-00010

Mininum Order :	20	Units	Credit Term : 2 / 20 ,n / 60
Unpaid Amount :	61,900	Baht	Unpaid PO# : [List of Unpaid ▾]

List of Unpaid
1. po-00002 = 5,100
2. po-00004 = 31,300
3. po-00009 = 25,500

Products to order

Pdt ID : [   ] 🔍   Purchase Price : [   ]   Qty : [   ]

No	Product ID	Mnu ID	Details	Cost	Qty	Total
1.	pd-1A13-0001	#1011753013	Certis-175/30 R13	1,000	10	10,000
2.	pd-1C13-0001	#1031753013	Energy MXV8-175/30 R13	1,500	20	30,000

[Edit] [Remove]

Estimate Total Payment : 40,000 Baht
Quantity Order : 30 Unit(s)

[Clear] [Next >]

Figure D-23   Purchase Order Form

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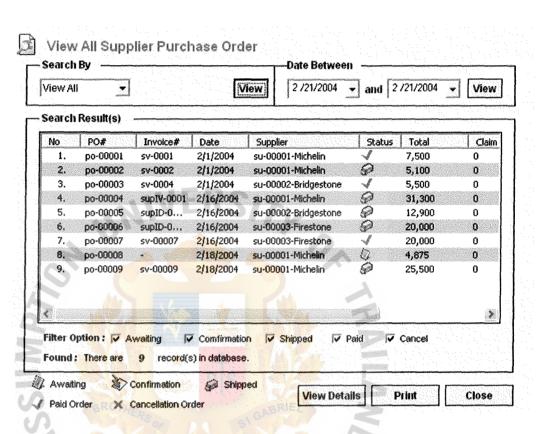
Figure D-24   Purchase Order View Form

Figure D-25   Editing Supplier Form

Figure D-26 Canceling Purchase Order Form

Purchase Receipt Order

| Purchase ID : | po-00006 | 🔍 | Select Payment Date : | 2/21/2004 ▼ | Load |

Receipt ID :			Invoice ID :	supID-0003
Supplier ID :	su-00003 - Firestone		Issue Date :	2/16/2004
Credit Term :	1 / 30 ,n / 65		Due Date :	4/21/2004

List of Items

No	Product ID	Product Details	Price	Qty	Total
1.	pd-3A13-0001	Firehawk SZ50i - 175/30 R13	100	100	10,000
2.	pd-3B13-0001	Firehawk TZ100 - 175/30 R13	100	100	10,000

	Total Payment :	20,000	Baht
Discount 1 %	After Discount :	19,800	Baht
Vat 7 %	Net Payment :	21,186	Baht

| Record | Clear | Close |

Figure D-27   Purchase Order Receipt Form

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Figure D-28   Editing Sale Representative Form
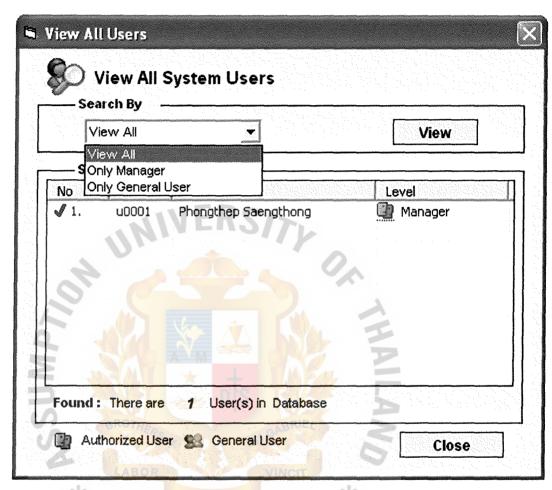
Figure D-29 User View Form

Figure D-30   Editing User Form

Figure D-31   Customer Management Form

Figure D-32   Product Management Form

APPENDIX E
MANAGEMENT REPORT DESIGN

SRIPONG YANGYON

Sale Order Report

Type : All Type

Date	Order ID	CusID	Customer Name	Paid By	Discount	Status	Total
05/01/2004	so-00005	cu-30001	Neo Motor Company	Credit	2/10,n/30	Shipped	27,820.00
01/01/2004	so-00004	cu-20002	Metro System Co, Ltd.	Credit	2/7,n/20	Paid	22,256.00
26/01/2004	so-00006	cu-20004	Toyota Thailand Co, Ltd.	Cash	5	Paid	16,671.00
12/02/2004	so-00009	cu-30003	Lenzo Company	Credit	2/10,n/30	Awaiting	14,552.00
13/02/2004	so-00010	cu-30002	Seang Thong Motor	Credit	2/10,n/30	Awaiting	13,910.00
01/02/2004	so-00008	cu-20003	Pentel Stationery	Credit	2/7,n/20	Shipped	12,412.00
31/01/2004	so-00007	cu-10003	Prateep Taveesupapo	Cash	0	Paid	5,992.00
01/01/2004	so-00003	cu-10002	Jirachote Sukhajutha	Cash	0	Paid	5,778.00

Figure E-1   Sale Order Report (All Customer type)

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SRIPONG YANGYON

Sale Order Report

Paid By Cash

Date	Order ID	CusID	Name	Type	Discount	Status	Total
01/01/2004	so-00003	cu-10002	Jirachote Sukhajutha	Individual Customer	0	Paid	5,778.00
26/01/2004	so-00006	cu-20004	Toyota Thailand Co, Ltd.	Business Company	5%	Paid	16,671.00
31/01/2004	so-00007	cu-10003	Prateep Taveesupapong	Individual Customer	0	Paid	5,992.00

Figure E-2   Sale Order Report (Paid by cash only)

SRIPONG
YANGYON

Sale Order Report

Paid By   Credit

Date	Order ID	CusID	Name	Type	Discount	Status	Total
01/01/2004	so-00004	cu-20002	Metro System Co, Ltd.	Business Company	2/7,n/20	Paid	20,800.00
05/01/2004	so-00005	cu-30001	Neo Motor Company	Business Retail	2/10,n/30	Shipped	26,000.00
01/02/2004	so-00008	cu-20003	Pentel Stationery	Business Company	2/7,n/20	Shipped	11,600.00
12/02/2004	so-00009	cu-30003	Lenzo Company	Business Retail	2/10,n/30	Awaiting	13,600.00
13/02/2004	so-00010	cu-30002	Seang Thong Motor	Business Retail	2/10,n/30	Awaiting	13,000.00

Figure E-3   Sale Order Report (Paid by credit only)

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SRIPONG YANGYON

Customer Report

Status : Paid

Date	Order ID	CusID	Customer Name	Type	Paid By	Discount	Total
01/01/2004	so-00003	cu-10002	Jirachote Sukhajutha	Individual Customer	Cash	0	5,778.00
01/01/2004	so-00004	cu-20002	Metro System Co, Ltd.	Business Company	Credit	2/7,n/20	20,800.00
26/01/2004	so-00006	cu-20004	Toyota Thailand Co, Ltd.	Business Company	Cash	5%	16,671.00
31/01/2004	so-00007	cu-10003	Prateep Taveesupapon	Individual Customer	Cash	0	5,992.00

Figure E-4 Sale Order Report (Status paid only)

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SRIPONG YANGYON

Customer Report

Customer Type : Business Retail

Customer ID	Customer Name	Address	Zip	Phone	Credit	Remain
cu-30001	Neo Motor Company	Rama III Rd, Bkk Thailand	14200	02-3374512	150,000	128,800
cu-30002	Seang Thong Motor	Rama VI Rd, Bkk Thailand	10740	02-7448564	150,000	137,000
cu-30003	Lenzo Company	Rama IX Rd, Bkk Thailand	10230	02-9504112	150,000	136,400
cu-30004	BeQuick	Rama III Rd, Bkk Thailand	10410	02-2225555	150,000	-
cu-30005	CockPit	Silom 4, Bkk Thailand	10650	02-4555454	150,000	-

Figure E-5   Customer Report (Customer type)

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SRIPONG
YANGYON

Customer Report

Customer ID.	: cu-30003	Phone	:	02-9504112
Customer Type	: Business Retail	Fax	:	02-9504113
Name	: Lenzo Company	Email	:	LenZo@hotmail.com
Address	: Rama IX Rd, Bkk Thailand			
Zip	: 10230			

Date	OrderID	Paid By	Discount	Vat	Total	Status	InvDate	DueDate
12/02/2004	so-00009	Credit	2/10,n/3	7%	14,552.00	Shipped	24/02/2004	25/03/2004

Credit Limit	150,000.00
Use	14,552.00
Remain	135,448.00

Figure E-6 Customer Report (Specific Customer)

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SRIPONG YANGYON

Inventory Report

Supplier Name: Michelin

Supplier ID.	Product ID.	Series Name	Details	UseLife	Price	Remaining
su-00001	pd-1A13-0001	Certis	175/30 R 13	2	1,000.00	32
su-00001	pd-1B13-0001	Vivacy	175/30 R 13	2	1,200.00	30
su-00001	pd-1C13-0001	Energy MXV8	175/30 R 13	2	1,400.00	30
su-00001	pd-1D13-0001	Pilot Preceda	175/30 R 13	2	1,600.00	30
su-00001	pd-1E13-0001	MXF Sport	175/30 R 13	2	1,800.00	20

Figure E-7   Inventory Report (Supplier brand name)

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SRIPONG YANGYON

Inventory Report
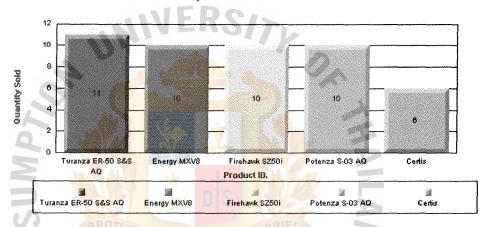
Supplier ID	Supplier Name	Product ID	Series Name	Details	UseLife	Price
su-00001	Michelin	pd-1813-0001	Vivacy	175/30 R13	2	1,200.00

Date	LotNum	Cost	Qty	Sold	Return	Remain
01/12/2003	0	0.00	0	0	0	0
22/12/2003	1	1,000.00	20	10	0	10
07/01/2004	2	1,000.00	20	0	0	20
					Remaining	30

Figure E-8   Inventory Report (Specific product series)

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SRIPONG YANGYON

Top 5 Product Sold

Date	Product ID	Name	Details		Price	Qty Sold	Total Value
05/01/2004	pd-1A13-0001	Certis	175/30	13	1,000.00	6	4,000.00
05/01/2004	pd-1B13-0001	Vivacy	175/30	13	1,200.00	6	4,800.00
01/01/2004	pd-1C13-0001	Energy MXV8	175/30	13	1,400.00	10	2,800.00
01/01/2004	pd-1D13-0001	Pilot Preceda	175/30	13	1,600.00	6	6,400.00
05/01/2004	pd-2A13-0001	Turanza ER-60	175/30	13	1,200.00	4	4,800.00

Figure E-9   Inventory Report (Top 5 sold)

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Purchase Order Report

Date	Name	PO ID	CreditTerm	Status	Total	InvDate	Due Date	RecDate
01/12/2003	Michelin	po-00001	2 / 20 ,n / 60	Shipped	120,000.00	22/12/2003	20/02/2004	Not paid
05/12/2003	Bridgestone	po-00002	2 / 30 ,n / 60	Shipped	104,000.00	23/12/2003	21/02/2004	Not paid
09/12/2003	Firestone	po-00003	1 / 30 ,n / 65	Shipped	58,000.00	24/12/2003	27/02/2004	Not paid
01/01/2004	Michelin	po-00004	2 / 20 ,n / 60	Shipped	64,000.00	07/01/2004	07/03/2004	Not paid
01/01/2004	Bridgestone	po-00005	2 / 30 ,n / 60	Shipped	48,000.00	07/01/2004	07/03/2004	Not paid
01/01/2004	Firestone	po-00006	1 / 30 ,n / 65	Shipped	34,000.00	07/01/2004	12/03/2004	Not paid
23/01/2004	Michelin	po-00007	2 / 20 ,n / 60	Shipped	24,000.00	26/01/2004	26/03/2004	Not paid
23/01/2004	Bridgestone	po-00008	2 / 30 ,n / 60	Shipped	56,000.00	26/01/2004	26/03/2004	Not paid
23/01/2004	Firestone	po-00009	1 / 30 ,n / 65	Shipped	24,000.00	26/01/2004	31/03/2004	Not paid

Figure E-10   Purchase Report (All Supplier purchase order)

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