Order Processing of K & S (Thailand) Co., Ltd.

By

Ms. Kanjana Sangjun

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

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

November 1999

MS (CIS)
St. Gabriel's Library

Order Processing of K&S (Thailand) Co., Ltd.

by
Ms. Kanjana Sangjun

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

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

November 1999

Project Title	Order Processing of K&S (Thailand) Co., Ltd.
Name	Ms. Kanjana Sangjun
Project Advisor	Dr. Thotsapon Sortrakul
Academic Year	November 1999

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

Approval Committee:

(Dr. Thotsapon Sortrakul)
Advisor

(Prof.Dr. Srisakdi Charmonman)
Chairman

(Air Marshal Dr. Chulit Meesajjee)
Dean and Co-advisor

(Asst.Prof.Dr. Vichit Avatchanakorn)
Member

(Assoc.Prof. Somchai Thayarnyong)
MUA Representative

November 1999

ABSTRACT

Order Processing system in the K&S Co., Ltd. is developed from the old system which has trouble and tardy shipment because officials in each section create documents manually and pass of the documents by them. The new system can help to reduce the steps and create document in each section. The information helps manager to forecast and manage sales.

The area of study of this system includes, quote and order entry, materials allocation, and create invoice and ship document. For the step of quote and order entry, the system uses EDI Technology to create transaction. EDI Technology can reduce operation and immediately create reports. The goal of EDI is to provide the link between sender and receiver of business applications with no human intervention at the receiving end.

The major reports are Quotes records, Open orders records, and sales report, etc. This output will be an efficient tool for better decision making by the management with regards to the customer issues.

SINCE1969
มหาวิทยาลัยอัสสัมชัญ

ACKNOWLEDGEMENTS

This system development project requires the cooperation of several persons. The writer would like to express gratitude to all of those who sacrifice of their valuable time in order to provide the information needed for the system.

The writer has acknowledges deep indebtedness to Dr. Thotsapon Sortrakul, the advisor of this project. As well, the author is indebted to the committee of the degree of Master of Science in Computer Information Systems, Prof.Dr.Srisakdi Charmonman, Dr.Sudhiporn Patumtaewapibal, Air Marshal Dr.Chulit Meesajjee, and Assoc.Dr.Somchai Thayarnyona for the constructive feedback and the valuable guidance on the modifications to be included in this project.

The writer is grateful to the staff of Prosoft Company for the oral interview and for providing related documents. Absolutely, without term, this project cannot be completed.

The writer also would like to thank Prosoft Co., Ltd. for the kind patronage of the Education Program and the Assumption University for the excellence in Computer Information Program.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

TABEL OF CONTENTS

Chapter	Page
ABSTRACT	i
ACKNOWLEDGEMENTS	ii
LIST OF FIGURES	v
LIST OF TABLES	vii
I. INTRODUCTION	1
1.1 Background of the project	1
1.2 Objectives of the project	1
1.3 Scope of the project	2
II. THE EXISTING SYSTEM	6
2.1 Background of the Organization	6
2.2 Existing Business Functions	6
2.3 Current Problems and Area for Improvements	8
2.4 Existing Computer System	10
III. THE PROPOSED SYSTEM	15
3.1 User Requirement	15
3.2 The Propose System	16
3.3 Process of the new system	16
3.4 Hardware and Software Requirements	18
3.5 Network Configuration	20
3.6 Security and Controls	20
3.7 Database Design	21
3.8 Cost and Benefit Analysis	26

Chapter		Page
IV.	IMPLEMENTATION	35
4.1	Project Management	35
4.2	Project Planning	35
4.3	Project Schedule	36
V.	CONCLUSIONS AND RECOMMENDATIONS	39
5.1	Conclusions	39
5.2	Recommendations	40
APPENDIX A	CONTEXT DIAGRAM OF THE NEW SYSTEM	41
APPENDIX B	DATA FLOW DIAGRAM OF THE SYSTEM	45
APPENDIX C	DATABASE DESIGN	60
APPENDIX D	OUTPUT DESIGN	62
APPENDIX E	DATA DICTIONARY	71
APPENDIX F	PROCESS SPECIFICATION	90
APPENDIX G	INPUT SCREEN	102
APPENDIX H	USER MANUAL	115
APPENDIX I	ELECTRONIC DATA INTERCHANGE	135
BIBLIOGRAPHY		139

LIST OF FIGURES

Figure		Page
1.1	Project Plan Schedule	4
2.1	Organization Chart of K&S (Thailand) Co., Ltd.	12
2.2	Context Diagram of the Existing System	13
2.3	Data Flow Diagram of the Existing System	14
3.1	Context Diagram of the New System	23
3.2	Data Flow Diagram of the New System	24
3.3	Computer Network Configuration of the New System	25
3.4	Cost – Benefit Analysis Graph	31
3.5	Break Even Point Analysis of the New System	34
A.1	Context Diagram of the New System	42
B.1	Data Flow Diagram of the New System	42
B.2	Level 1 of Process 3.0; Check credit limit	46
B.3	Level 1 of Process 4.0; Allocation & Issues	47
B.4	Level 2 of Process 4.1; Materials Allocate	48
B.5	Level 2 of Process 4.2; Issues Inventory	49
B.6	Level 1 of Process 5.0; Create Requisition Order	50
B.7	Level 1 of Process 7.0; Print Quotation Report	51
B.8	Level 1 of Process 8.0; Print Customer Order Report	52
B.9	Level 1 of Process 9.0; Print Allocation Report	53
B.10	Level 1 of Process 10.0; Print Customer Details Report	54
B.11	Level 1 of Process 11.0; Print Invoice Entry Report	55
B.12	Level 1 of Process 12.0; Print Monthly Sales Report	56

Figure		Page

B.13	Level 1 of Process 13.0; Print Requisition Order Report	57
B.14	Level 1 of Process 14.0; Print Commission Report	58
C.1	Entity Relationship Diagram (E – R Diagram)	61
D.1	Output Design of the Invoice Entry Report	63
D.2.	Output Design of the Customer Detail Report	64
D.3	Output Design of the Monthly Sales Report	65
D.4	Output Design of the Requisition Order Report	66
D.5	Output Design of the Commission Report	67
D.6	Output Design of the Customer Order Report	68
D.7	Output Design of the Allocation Report	69
D.8	Output Design of the Quotation Report	70
G.1	System Screen for User Login	103
G.2	Main Menu	104
G.3	Quotation Entry Input Screen	105
G.4	Quotation Entry (Detail) Input Screen	106
G.5	Allocation Entry Input Screen	107
G.6	Allocation Entry (Detail) Input Screen	108
G.7	Order Entry Input Screen	109
G.8	Order Entry (Detail) Input Screen	110
G.9	Delivery Entry Input Screen	111
G.10	Delivery Entry (Detail) Input Screen	112
G.11	Invoice Entry Input Screen	113
G.12	Invoice Entry (Detail) Input Screen	114
H.1	System Screen for User Login	116

Figure		Page

H.2	Main Menu	117
H.3	Quotation Entry Input Screen	118
H.4	Quotation Entry (Detail) Input Screen	119
H.5	Allocation Entry Input Screen	121
H.6	Allocation Entry (Detail) Input Screen	122
H.7	Order Entry Input Screen	124
H.8	Order Entry (Detail) Input Screen	125
H.9	Delivery Entry Input Screen	127
H.10	Delivery Entry (Detail) Input Screen	128
H.11	Invoice Entry Input Screen	130
H.12	Invoice Entry (Detail) Input Screen	132
H.13	Menu Report Screen	134

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

LIST OF TABLES

Table		Page
3.1	Cost of the New System	29
3.2	Cost and Benefit Analysis	30
3.3	Annual Cost Comparison	32
3.4	Break – Even Analysis	33
3.5	Cost of Existing and Proposed System Analysis	34
4.1	The propose system plan schedule	33
E.1	File description of Customer	72
E.2	File Description of Quote	73
E.3	File Description of Medical & Supply.	74
E.4	File Description of Order.	75
E.5	File Description of Allocation.	77
E.6	File Description of Payment.	78
E.7	File Description of Issues.	79
E.8	File Description of Invoice.	80
E.9	File Description of Requisition.	81
E.10	File Description of Warehouse.	82
E.11	File Description of Salesman.	83

ASSUMPTION UNIVERSITY OF THAILAND
มหาวิทยาลัยอัสสัมชัญ
SINCE1969

I. INTRODUCTION

1.1 Project Background

Order Processing is the process of matching customer demand with inventory at correct prices and delivery system. This project is the new descriptive system that selects EDI technology to help revising the old system. The EDI Technology is used to process the order entry from customer. The new system forces all customers, who want to join the business, to key in order entry via the network system depending on the providers who serve EDI service. After receiving the data from customer, the company will retrieve it and then proceed with the step of processing.

The project emphasizes improving the existing customer order processing system operation of K&S (Thailand) Co., LTD. At present, the service in each company is important to customers in case of delivery system. The customer order processing system is a part of the delivery system that concerns the business in case of customer order process, supplies purchase order, delivery schedule, implementation plan and several concerned factors.

The process cycle of order processing normally includes receiving orders from customers, checking the availability of stock, shipping, and processing invoices. During order processing, the information inquiry of the order is needed for customer and concerned people. Customer Order processing system should provide the appropriate information and can generate report for management level to forecast the trend of business.

1.2 Objectives of the Project

The objectives of the project on the Customer Order Processing System are as follows:

1. To analyze the existing system and to design the new system for improving the efficiency of operation.
2. To determine the information and system requirement by interviewing the concerned staff, observing the expectation from management level and investigation of the hard data.
3. To design low cost microcomputer-based information system.
4. To develop the computerized system that can reduce the existing process, time consumption and provide the report that covers major aspecs and to satisfy the management level and user requirement.
5. To develop and test the software package for customer order processing system.

1.3 Scope of the Project

The project will cover the major parts of the Customer Order Processing System which includes;

1. Create Quotation and Order
   - Create quotation and send to customers via network.
   - Retrieve data about quote from customers sending file to create new order.
2. Maintain Customer
   - Create the new customer account.
   - Purge the old customer account which is non-active and non-remaining for more than 5 years.
3. Update Inventory
   - Promptly allocate inventory in stock for stock available.
   - Promptly update the inventory based on FIFO basis when picked confirmation process.

4. Shipment

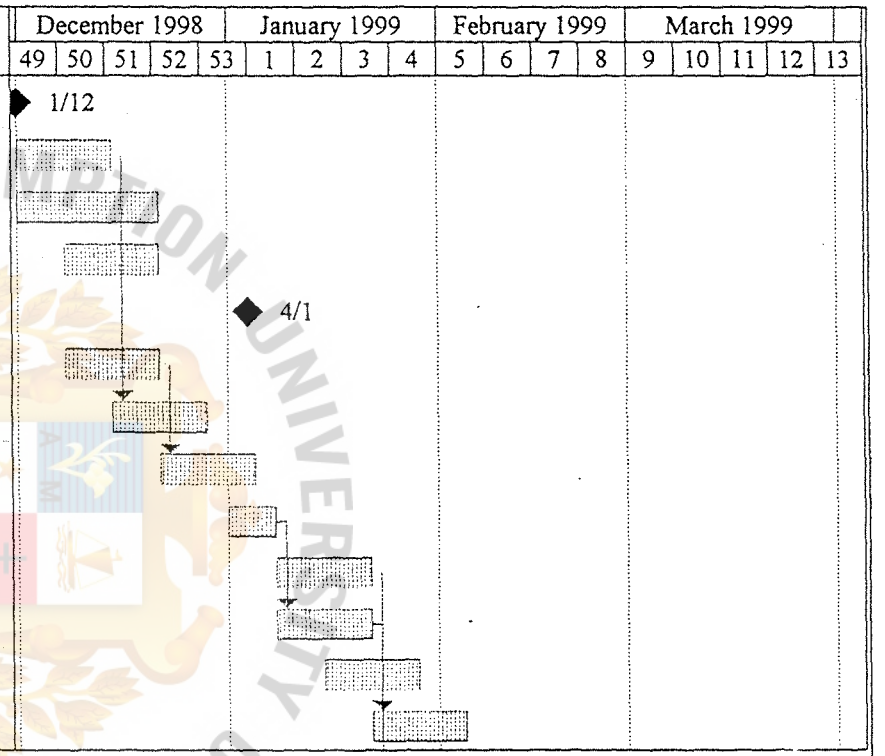
   - Create ship document sand invoice.

5. Requisition Order

   - Create requisition order when inventory is not enough.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

ID	Task Name
1	System analysis
2	- Problem definition and solution identification
3	- Develop physical work flow of the existing system
4	- Identify the contents of the existing data stores
5	Detail Analysis and Design :
6	- Develop the context diagram
7	- Develop the logical DFD of the new system
8	- Identify the process specifications
9	- Identify the data dictionary
10	- Identify the entity relationship diagram
11	- Develop the database design and normalization
12	- Develop the structure chart
13	- Identify the module specifications

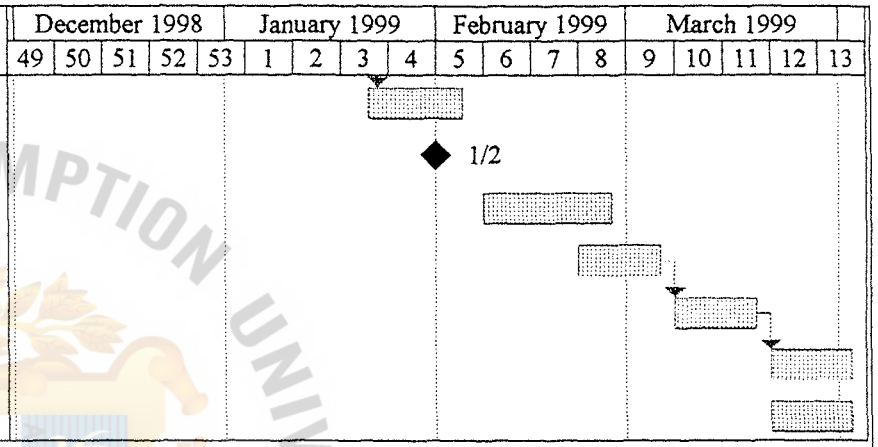


Project: projectplan
Date: Fri 10/12/99

Task		Rolled Up Task		Project Summary	
Progress		Rolled Up Milestone		Split	
Milestone		Rolled Up Progress		Rolled Up Split	
Summary		External Tasks			

Figure 1.1. Project Plan Schedule.

ID	Task Name
14	- Design the screen and report layouts
15	Implementation
16	- Programming
17	- Data Conversion
18	- Testing
19	- Trainning
20	- Documentation



Project: projectplan
Date: Fri 10/12/99

Task		Rolled Up Task		Project Summary	
Progress		Rolled Up Milestone		Split	
Milestone		Rolled Up Progress		Rolled Up Split	
Summary		External Tasks			

Figure 1.1. Project Plan Schedule (continue).

II. THE EXISTING SYSTEM

2.1 Background of the organization.

K&S (Thailand) Co., Ltd., do as business about medical and medical supplies. We are buying the products from vendors. In addition, we have employees in several departments, totaling about 100 persons. The company policy of the organization will be Top-down to each head department and then within department according to the method of each department. The loss of information will be the responsibility of the head of the department. The information such as sales report, planning, budgeting and financial report from each department will be Bottom-up to CEO through the head of the department.

The organization chart was set up with the concept of segregation of duties and responsibilities. The Finance department has to prepare purchase order, to buy at the lowest prices. The Warehouse department will control stock available and ship product to customers. If the products are lower than the minimum stock, this department will prepare the requisition order to send to the Finance Department. All of these are examples of job in K&S Company. In addition, the Finance department has to revise the purpose of the internal control and competitive advantages. The functions of the Finance department are to collect and prepare financial reports to Board of Directors

2.2 Existing Business Functions

The functions of the officers are performed manually, for example, sales department creates order and picking list manual by, and some functions are performed by the computer system such as financial department print invoice. The existing system is summarized by the Context Diagram.

Context Diagram of the existing system

1. Customers send purchase order to sales department.
2. Sales department will revise the credit limit of each customer. If over the amount, the orders are rejected. The customer contact information is received by the Finance department.
3. The Warehouse prepares the product for sending to customer, following the picking list of the sales department. The Warehouse sends delivery order slip to the Finance department to create invoice.
4. The Finance department creates invoice. The Warehouse ships the product and invoice to the customers.
5. Management receives sales summary reports at the end of the month.

Data Flow Diagram (Level 0) of the existing system

Process 1.0: Receive order

Sales department receives customer orders from customer.

Process 2.0: Check credit limit

Finance department checks debt of customer from customer file. If over the amount, the orders are rejected. After the approval, the finance department creates the customer order, using the file: customer and order.

Process 3.0: Prepare inventory

The Warehouse prepares the product on order for sending to customer, checks stocks of inventory, uses medical & supply file, and creates the picking list.

Process 4.0: Delivery inventories

The Warehouse sends delivery order slip to the Finance department. The Finance department creates invoice for customer. After preparing the documents, the Warehouse will send delivery note and invoice to customer.

Process 5.0: Print report

Management prints sales summary report by using the file: customer, order, commission and salesperson.

Benefits and Weaknesses of the Existing System

Benefits of the Existing System

- Personnel for the existing system are familiar with manual work.
- Manual reports can be easily prepared through Microsoft Excel, which is a simple worksheet application.

Weaknesses of the Existing System

- There is no database in the company.
- The information or data cannot be retrieved on a timely basis.
- Information cannot be retrieved from other departments.
- No flexibility when information is needed; Management demand new format report.
- Information in the form of computer file cannot be shared with other departments.

2.3 Current Problems and Areas of Improvement

Current Problems

The current problems of the existing system can be summarized as follows:

1. Work or processing was too slow because staff takes time to wait for checking inventory, credit limit manually.

2. Customer and employee complain right from poor daily operations or processing to delivery services.
3. Decrease profits and market share.
4. Inconsistency of buying because there were no sales forecasts from sales department to support purchasing process.
5. The company cannot deliver the goods to customer, as it should because checking inventory takes time.
6. Increasing bad-debt expense and unexpected operating expenses due to poorly organized information on accounts receivable and poor control on the daily operations.
7. Poor Decision making processes which lead to the loss of opportunity in competitive advantages in terms of pricing, promotion and other marketing activities.
8. Insufficient information for management to forecast sales and planning because management will receive Sales Summary Report at the month-end.
9. Each department users different software, so the data of each software package cannot be exchanged.
10. No available information for new sales.

Areas of Improvement

The areas of improvement are as follows:

1. Reduce time for the order processing between sales and customer. This system uses EDI Technology to help with this process.
2. Reduce time for generating invoice in order to collect the payment as soon as possible.

3. Provide the inventory system in order to improve delivery performance.
4. Provide the Report system in order to generate report for reducing sales task, help sales to follow up the invoice and management can do a forecast.
5. Provide a Central Database for sharing information between department within the company.
6. Provide Customer profile and Product profile for new salesperson.
7. Provide the requisition order when inventory is the minimum of a quality.
8. Provide the shipment document when the Warehouse department delivers products.

2.4 The Existing Computer System

All Personal Computers are stand-alone, and there are many stand alone software packages.

1. Computer Hardware

1.1 Mitac DX4066 2 Sets

Intel 80486DX2-66MHX

Architecture ISA with VESA, Main Memory 4 MB.

8KB Integrated Cache, 256KB External Cache Memory

1.44MB Floppy disk drive, 540 MB Harddisk IDE interface

Super VGA Vesa Local bus 1024x768 with 1MB memory

VGA 14 inches monitor, 1024x768 Pixels

I/O port 1 Parallels, 2 Serial port

Expansion slots : 6 ISA and 2 VL bus

101 keys-Enhanced keyboard

200 watt power supply

MS (CIS)
St. Gabriel's Library
1398 c.1

Genuis mouse

1.2 EPSON LQ1170 1 Sets

2. Computer Software

2.1 MS. Windows 3.1 Thai Edition

2.2 MS. Office Professional 4.2

2.3 Easy Account

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

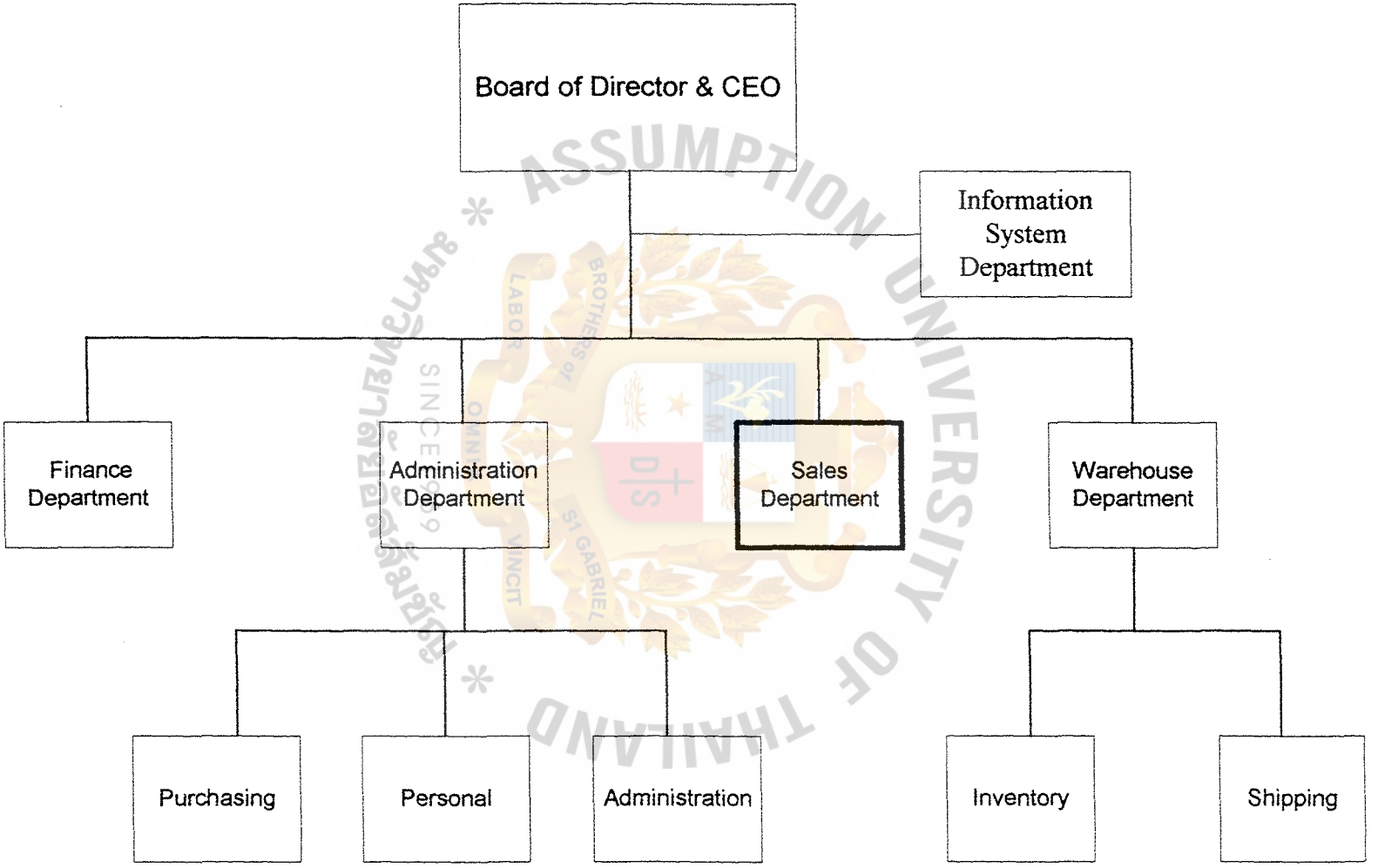


Figure 2.1. Organization Chart of K&S (Thailand) Co., Ltd.

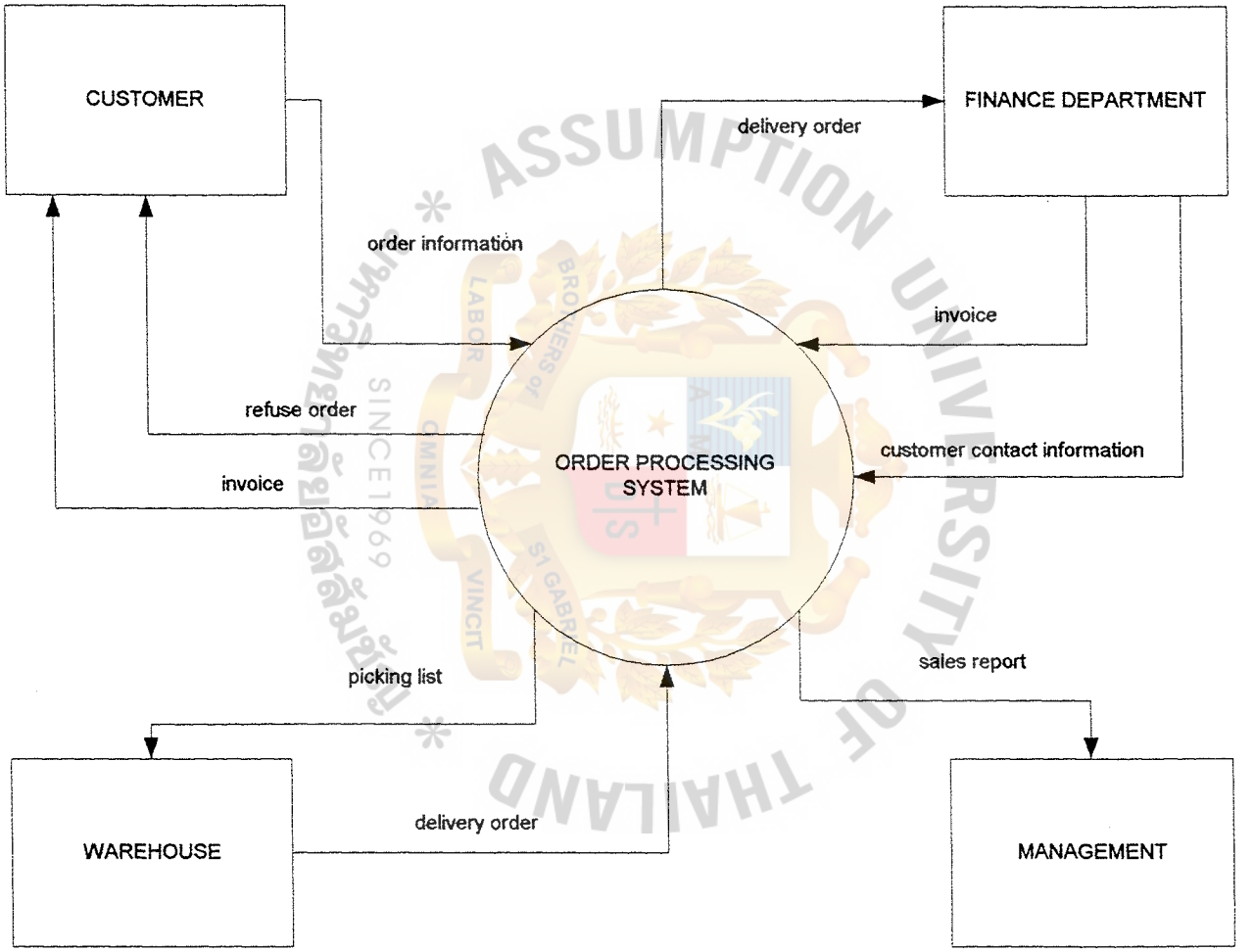


Figure 2.2. Context Diagram of the Existing System.

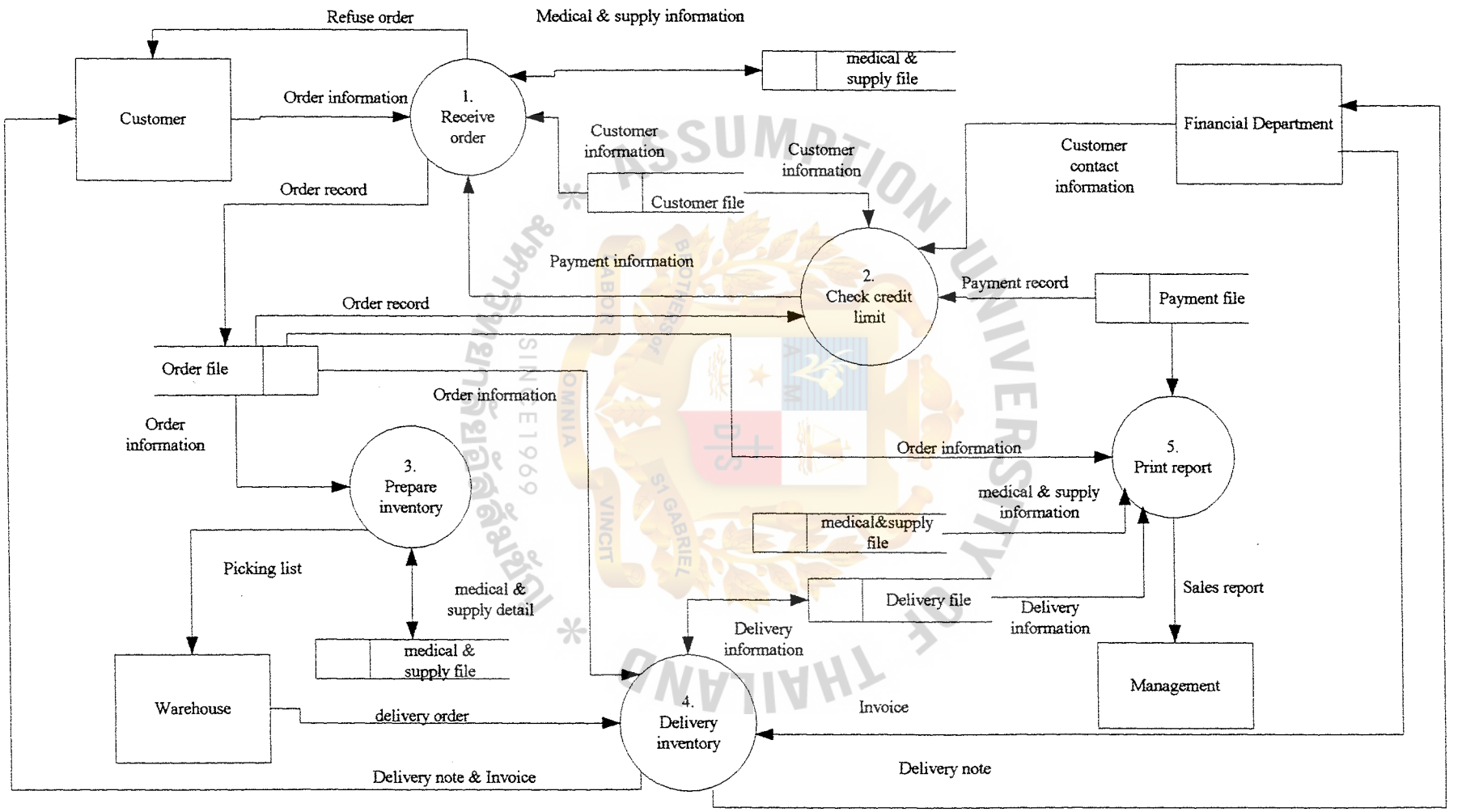


Figure 2.3. Data Flow Diagram (Level 0) of the Existing System.

III. THE PROPOSED SYSTEM

This proposed system would mainly serve the day-to-day operation with an easy and fast access to information for particularly strategic and managerial decision makers instead of the manual system. In addition, it remarkably yields the effective utilization of the existing resources including human resources keeping clerical staffs at minimum level, provides better employee morale and services including systematic flow of works, etc. In order to yield the best possible outcomes as previously mentioned, the system requirement model of the new system is taken into account.

3.1 User Requirements

K&S (Thailand) Co., Ltd. needs accurate and timely information system for an information system which provides data as follows:

1. To control quotes and orders transaction.
2. To control credits limit of customer on all order transactions of customer.
3. To manage and control cost and expenditure of company.
4. To check every access on data entry by checking the required conditions specified by programs as an example of credit-limit and reorder level warning.
5. To avoid the loss of material which has record requisition and to retrieve the information to use for correct and fast inspection.
6. To provide a customer database by updating the database system.
7. To provide the detail of issuing the medical & supply.
8. To provide standard form to record the quotation.

3.2 The Proposed System

The user requirements on output for accommodating company's order process and stock control basis, are those requirements needed to become major considerations in the design of the outcome which can be easily read and understood in tabular formats.

There are 8 output-reports, which can be presented in terms of information and their relational terminology as follows:

1. Quotation Reports
2. Customer Orders Report
3. Allocation Report
4. Customer Details Reports
5. Monthly Sales Reports
6. Invoices Entry Reports
7. Requisition Order Report
8. Commission Report

3.3 Process of the New System

Context Diagram of the proposed system

The Sales department creates quotation and sends to customesr. If the customer has a new account, it will be created first. The Sales department, application link will retrieve data for transforming to order entry. The Order entry process checks the credit limit of the each customer. If the customer has an amount over the credit, the orders are held on. Moreover, The Sales department informs the customer about the order status and wait for approval. The Sales department allocates material to the warehouse. The Purposes of this step are to help the warehouse to check the re-order point of each product. In addition, they can forecast when to purchase the product. When The Sales department has allocated, it will have picking slip and send it to the warehouse. The

Warehouse prepares the product on schedule for the customer, and create delivery order. The Warehouse send delivery order to the Finance Department for creating invoice. The Customer will receive the invoice and product when the warehouse has shipment.

Data Flow Diagram (Level 0) of the new system

After we have studied the existing system and know the user requirements, we can summarize and divide the proposed system into 7 processes.

Process 1.0: Create quote slip

The Sales department creates quotation and sends the quotation in EDI standard file to the customer. This step uses the detail of files salesperson, customer, quote, and medical & supply to create quotation record. The company employs the provider to serve the transformation this step, VAN (Value Added Network). If the customer has a new account, customer file will be created first.

Process 2.0: Receive order

The Sales department will retrieve data for the transformation to order entry, and write order record into the order file.

Process 3.0: Check credit limit

This process checks the credit limit of the customer. The way to calculate the amount owe of the customer is to get the amount due plus the amount of order, over the credit limit or not. If the customer customer's amount due is over the credit limit, update orders status into file, and put the order on hold. In addition, the Sales department informs the customer about the order hold and wait for approval. This step uses the detail of the files payment, order, and customer information

Process 4.0: Allocation & Issues

The Sales department has materials allocation to the warehouse. The purpose of this step, is to help the warehouse to check the re-order point of each product. In addition, they can forecast when to purchase the product. When the Sales department has done to allocating, it has picking slip and sends it to the warehouse. The Warehouse prepares the product for shipment. It confirms the picking slip. In this step, the products are up-dated automatically into files: medical & supply and the warehouse, and writes the issues file.

Process 5.0: Create requisition order

If products are not enough, lower than the minimum stock, the Warehouse will create requisition record for the purchasing the products into the requisition file. This step will read medical & supply information, from the item file, and calculate the stock on hand of each product. The Warehouse will ship the requisition slips to Financial Department for creating purchase order.

Process 6.0: Create invoice

The Warehouse creates delivery order and sends to The Finance department. The Financial department will creation invoice to be followed by delivery order. So the customer will receive the invoice and the product.

Process 7.0: Print report

At the end of the month, Management will receive reports.

3.4 Hardware and Software Requirements

The physical operations in terms of hardware and software requirements have been presented in details in order to yield the best possible outcomes.

1. Hardware Requirement

1.1 Server: ATEC PC Premier Pro Extreme 1 Set

600 MHz Intel Pentium-III Processor

128 MB SDRAM PC 100

QUANTUM 18.2 GB ultra DMA KA 7200 RPM/66 MB/Sec.

MAXTROX G-400 AGP 46 MB SGRAM SINGLE BULK

17" Flat Screen ATEC Monitor

1.2 ATEC PC: Premier 8 Sets

450 MHz Intel Pentium-II Processor

Architecture ISA with PCI, Main Memory 64 MB.

8KB Integrated Cache, 512KB External Cache Memory

1.44MB Floppy disk drive, 4.3 GB Harddisk IDE interface

Daytona SiS6326 8 MB AGP/TV OUT

I/O port 1 Parallels, 2 Serial port

Expansion slots: 6 ISA and 1 PCI

101 keys-Enhanced keyboard

250 watt power supply

Compaq mouse

3Com LAN Card

1.3 HP LaserJet 5 2 Sets

1.4 SMC 3608T HUB (8 Ports) 2 Sets

1.5 3 COM US ROBOTICS 56 K Fax/Fodem/Mess V.90 2 Sets

1.6 Bright UPS 750 VA. Stabilizer Built in

2. Software Requirement

2.1 Window NT V. 5

2.2 MS. Windows95 Thai Edition (License with PC)

2.3 Order Processing System Software

3.5 Network Configuration

The objective of the network connection is to share database or source of data. The system is designed by using star topology that hub for center of connecting workstations. The advantage of this network system is ease the to maintain and use less wire than other topology.

Network Details:

1. Network Topology:	Star Topology
2. Interconnection:	Hub 8 ports (2 sets)
3. Wiring & Cable:	UTP 4 pair CAT-5
4. Server:	PCs Files Server
5. Workstation:	PCs
6. Protocol:	TCP/TP

3.6 Security and Control

1. User Identification

User authentication is verified when the user starts the request; the password identification is performed. If it is the wrong password, the screen alerts the user to reenter the password. If there are more than three incorrect password inputs then the system is terminated. (The wrong password can be repeated more than three times, depending on the EDP setting time.) Every user has his own password and enters his user ID and password before accessing the system. However, the user can change the password himself.

The password keyed into the system uses encryption technique so that it is difficult to see the real password or when someone looks at the screen while the user enters the password, the password field will not show.

2. Time Restriction

The file server can be set to authorize the user to access within the specify period of time, otherwise the user cannot access the serves.

3. Authentication Level

The privilege principle of the system is that uses will be given as low an access level as possible to perform his task. There is one access control list for each object and the list shows all subjects who should be accessing to the object and what their accesses are?.

4. Software Security

This control exists in the form of a virus-checking program. It will be installed to scan for viruses before the computer system will be infected. Service Information System will update a virus-checking program every seven months.

5. Data Security

This method involves minimizing data destruction risks. Backup data will be done in the storage media every month.

3.7 Database Design

Entity Relationship (E-R) diagrams are used to design the database of this project. The individual (object sets) entities are designed. There are relationship between entities by using the rule of entity relationship. Each entity set is shown as a rectangle, each relationship is a diamond-shaped box. An entity set represents objects, such as customer table, medical & supply table. There are 3 types of entities relationship, a one-to many (1 to N) E-R diagram, a one-to-one (1 to 1) E-

R diagram, a many-to many (N to M) E-R diagram. Finally, Entity Relationship (E-R) Diagram concept is shown in APPENDIX C.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

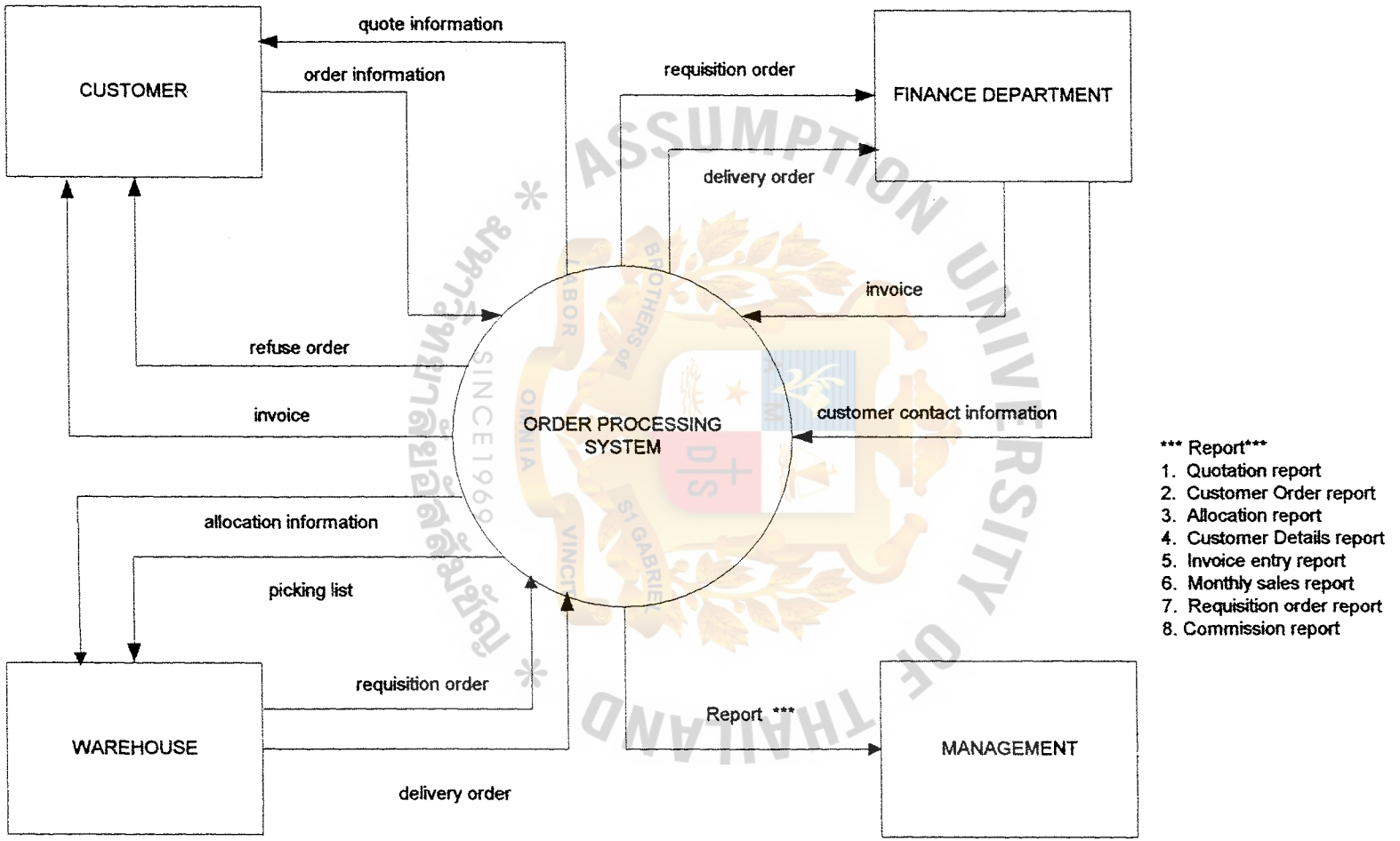


Figure 3.1. Context Diagram of the New System.

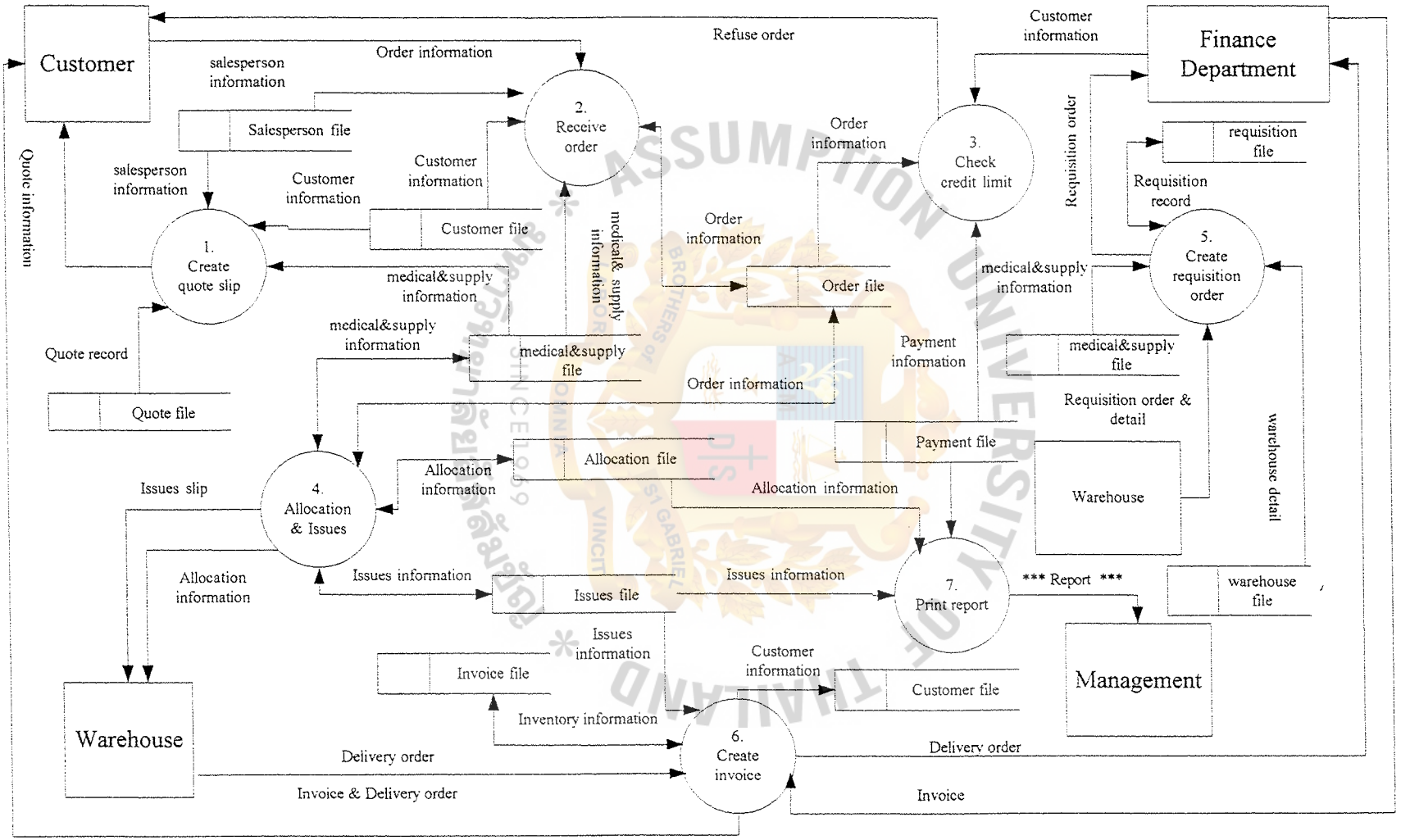


Figure 3.2. Data Flow Diagram (Level) of the New System.

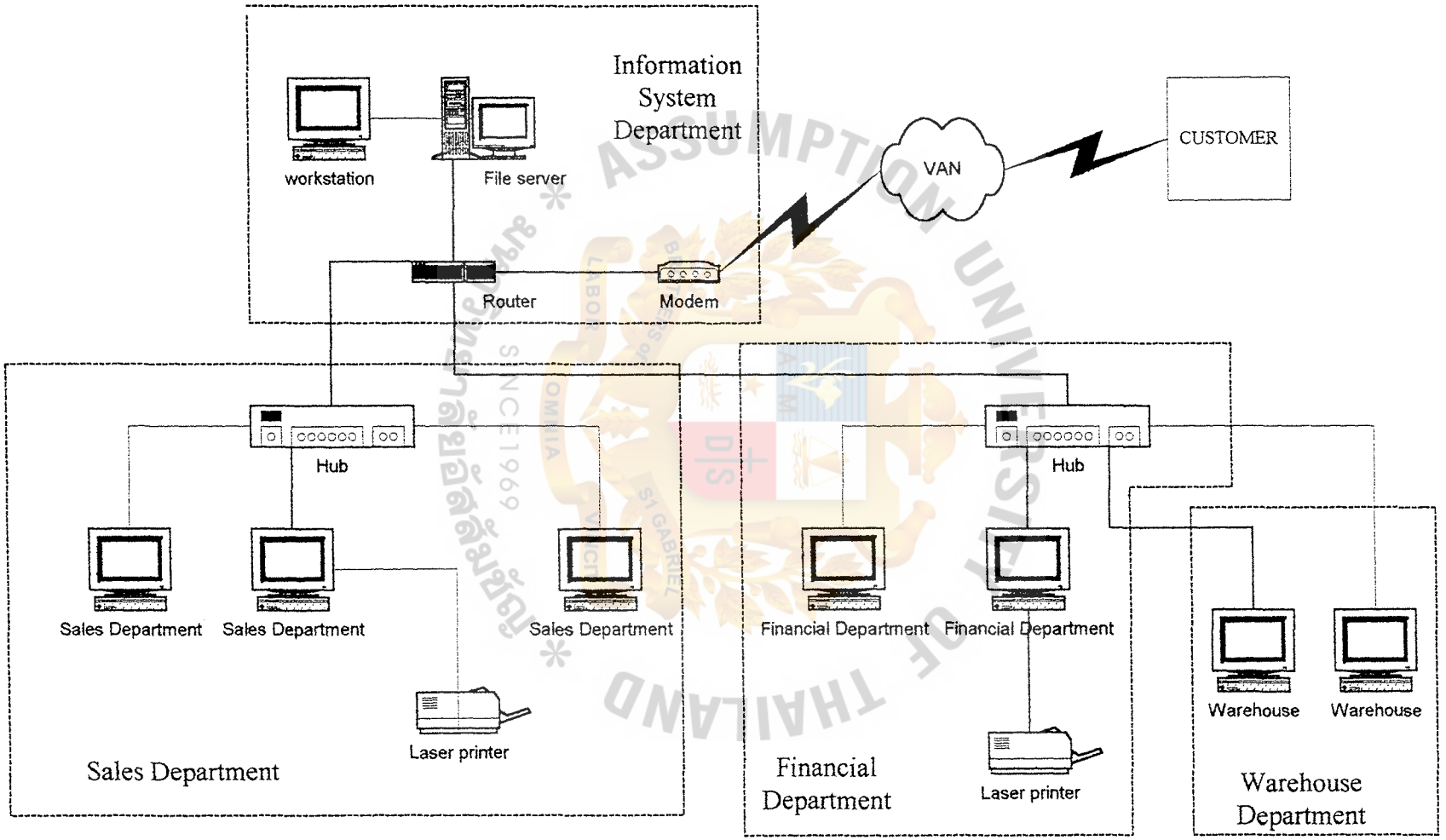


Figure 3.3. Computer Network Configuration of the New System.

3.8 Cost and Benefit Analysis

The benefit of such a project can be settled into 2 categories. There are the tangible benefits and intangible benefits.

Tangible Benefits

- Reduce the cost of electrical power 20,000
- Increasing of customer ordering 360,000

  Since the existing customer ordering per month is around 30,000 Baht and after the testing process for the proposed system, the result is the increasing customer ordering in double amount.Then, the yearly increasing amount is 30,000 X 12 = 360,000.- Baht.
- Reduce the cost of paper work 120,000

  With the proposed system, we can estimate the cost of paper work and leasing of copy machine that it can be reduced around 10,000 Baht per month, therefore, the yearly reduced cost of paper work is 10,000 X 12 = 120,000.- Baht.

Total Tangible Benefits : **500,000**

Intangible Benefits

- Better accuracy of stock control.

  When we use the proposed system, the data of stock control will be up-dated in the same time with the order entry process.
- Better planning information.

  Regarding the proposed system, the data or information will be up-dated all the time and the management level can use such a data to make the company forecast for a better planning information.

- Better system to complete with the competitor.
- Reduce the overlapped process such as the order entry process etc.

  The proposed system can reduce the overlapped process, for an example, when we send the quotation data pass the network to the customer, our customer can fill in such a data and send back to us as the ordering, the, such a data will be as the order entry for us automatically.
- Give the more satisfactory to the customer for the faster process

  Because of the faster process, the customer has no need to stick at the waiting list so long time as the existing system.

Break-Even analysis:

The technique for comparing the costs and benefits of the proposed system is as follows. The break-even chart is a graph that portrays 2 curves of a cost curve and a benefit curve. When ever these two curves intersect, it means that 'The break-even point' has happened.

The break-even points are represented in a chart to show payback period and the break-even point. The information in these charts is the decision making tool. The business should not invest in the proposed system based on how long it will take for the benefits of the system to payback the costs of developing it.

The break-even point is approximately 3 years and 7 months when the cost of the new system development will been fully recovered.

Payback Period

The payback period is defined as the number of years required to accumulate earning sufficient to cover its cost using for the proposed system covered as follows:

$$\text{Payback period} = \text{Last Year of Negative} + \frac{\text{Cumulative difference last negative year}}{\text{Cash flow difference}} \quad \text{Absolute value of cumulative difference}$$

$$= 3 + \frac{81380}{117910}$$

$$= 3.69 \text{ Years}$$

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Table 3.1. Cost of the New System

I. Hardware	Baht
1. Server 1 set @ 79000 baht	79,000.00
2. ATEC PC (Workstation) 8 sets @ 25,000 baht	200,000.00
3. HP Laserjet 5P 2 sets @ 18,000 baht	36,000.00
4. SMC 3608T HupB: 8 ports 2 set @ 2,500 baht	5,000.00
5. 3COM US ROBOTICS 56K FAX/MODEM/MESS V.90	5,600.00
6. Cable CAT 5 700M @ 16 baht	11,200.00
7. Installation Cost	2,500.00
8. BRIGHT UPS 750 VA. 4 set @ 2,700 baht	10,800.00
Total Cost of Hardware (Baht)	350,100.00
II. Software	
1. WINDOWS NT V.5 1 Set	13,000.00
2. MS. Windows 98 Thai Edition @ 8,000 baht 8 sets	64,000.00
3. MS. Access 97 Thai Edition @ 1 SET	6,500.00
Total Cost of Software (Baht)	83,500.00
III. People	
1. Training	7,000.00
2. Analysis and Design	10,000.00
3. Development Cost	21,000.00
4. Implementation Cost	14,000.00
5. Support	42,000.00
Total Cost of People (Baht)	94,000.00
Total Cost of Fixed Cost (Baht)	527,600.00
IV. Variable Cost	Baht
1. Stationary Cost	25,000.00
2. Cargride (Refill Ink)	40,000.00
3. Electric Cost	30,000.00
4. Telephone	32,000.00
5. Depreciate (Hardware 20%)	70,020.00
Total Cost of Variable Cost (Baht)	197,020.00

UNIVERSITY OF THAILAND
SINCE1969

Table 3.2. Cost and Benefit Analysis.

Years / Cost Items	0	1	2	3	4	5
Benefit	-	500,000.00	650,000.00	845,000.00	1,098,500.00	1,428,050.00
Cost	724,620.00	921,640.00	955,133.00	982,933.00	1,006,007.00	1,025,158.00
Total (Baht)	- 724,620.00	- 421,640.00	- 305,133.00	- 137,933.00	92,493.00	402,892.00

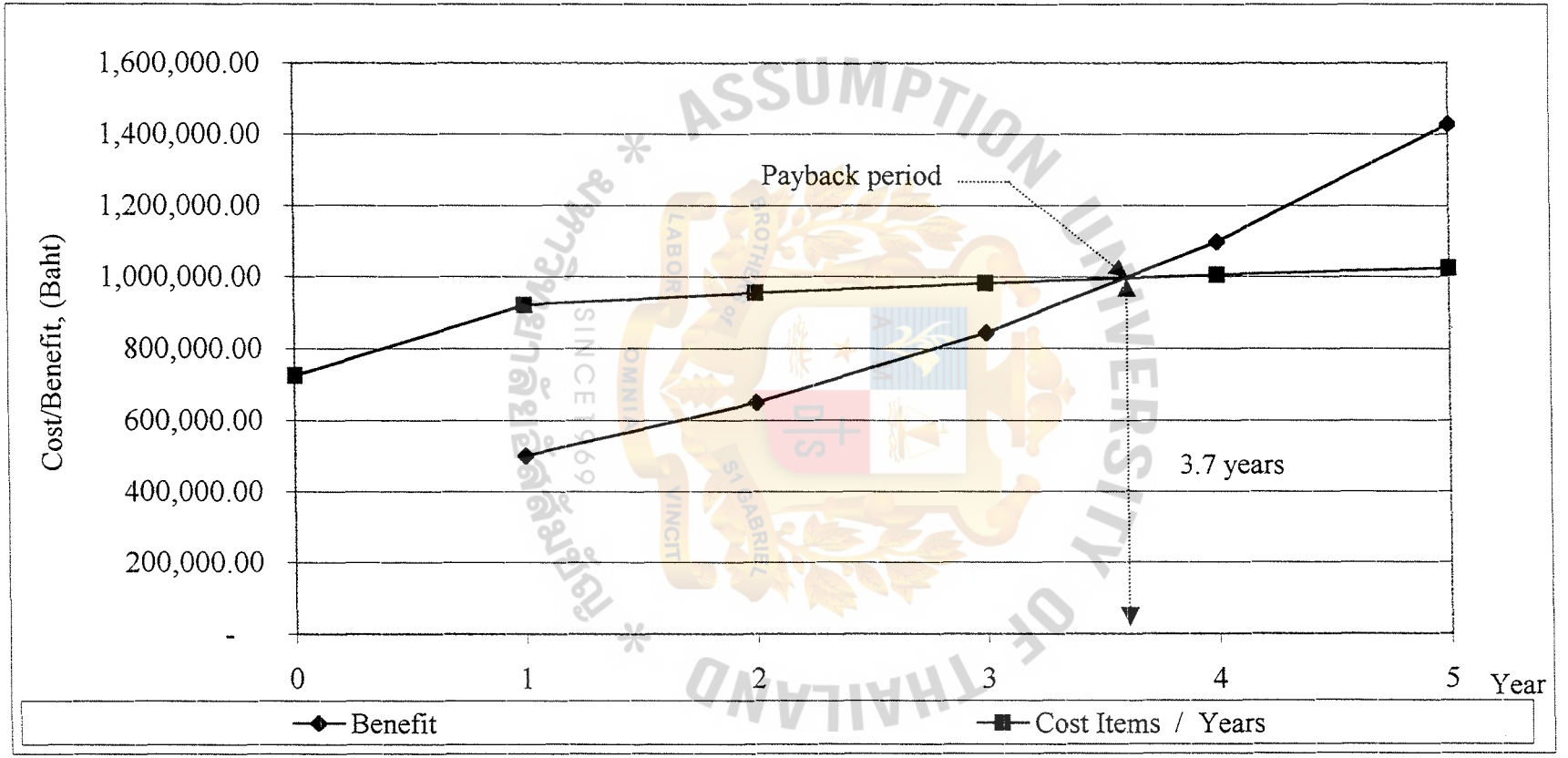


Figure 3.4. Cost Benefit Analysis Graph.

Table 3.3. Annual Cost Comparison.

Cost Items \ Years	1	2	3	4	5	Total
Existing System						
6 Staff (12,000*6)+10% yearly	864,000	950,400	1,045,440.00	1,149,984	1,264,983	5,274,807
Stationery (70,000 + 10% yearly)	70,000	77,000	84,700	93,170	102,487	427,357
Other expenses (75,000+10% yearly)	75,000	82,500	90,750	99,825	109,808	457,883
Total Cost of Existing System (Baht)	1,009,000	1,109,900	1,220,890	1,342,979	1,477,278	6,160,047
Proposed System						
3 staff (15,000*3) + 10% yearly	540,000	594,000	653,400	718,740	790,614	3,296,754
Hardware (350,000 / 5 yearly)	70,020	70,020	70,020	70,020	70,020	350,100
Software (83,500 / 5 yearly)	16,700	16,700	16,700	16,700	16,700	83,500
Stationery (65,000 + 7% yearly)	65,000	69,550	74,420	79,630	85,204	373,804
Other expenses (62,000+7% yearly)	62,000	66,340	70,984	75,953	81,270	356,547
Total Cost of Proposed System (Baht)	753,720	816,610	885,524	961,043	1,043,808	4,460,705

Table 3.4. Break - Even Analysis.

Cost Items / Years	1	2	3	4	5
Existing System					
6 Staff (12,000*6)+10% yearly	864,000	950,400	1,045,440	1,149,984	1,264,983
Stationery (70,000 + 10% yearly)	70,000	77,000	84,700	93,170	102,487
Other expenses (75,000+10% yearly)	75,000	82,500	90,750	99,825	109,808
Total Cost of Existing System (Baht)	1,009,000	1,109,900	1,220,890	1,342,979	1,477,278
Proposed System					
3 staff (15,000*3) + 10% yearly	540,000	594,000	653,400	718,740	790,614
Hardware (350,100 / 5 yearly)	350,100	-	-	-	-
Software (83,500/5 yearly)	83,500	-	-	-	-
Stationery (65,000 + 7% yearly)	65,000	69,550	74,420	79,630	85,204
Other expenses (62,000+7% yearly)	62,000	66,340	70,984	75,953	81,270
Total Cost of Purposed System (Baht)	1,100,600	729,890	798,804	874,323	957,088

Table 3.5. The Cummulative Cost of Existing and Proposed System Analysis.

Cost Items / Years	1	2	3	4	5
Cost of the Existing System (Baht)	1,009,000.00	2,118,990.00	3,339,790.00	4,682,769.00	6,160,047.00
Cost of the Proposed System (Baht)	1,264,620.00	1,830,490.00	2,629,284.00	3,503,607.00	4,460,695.00

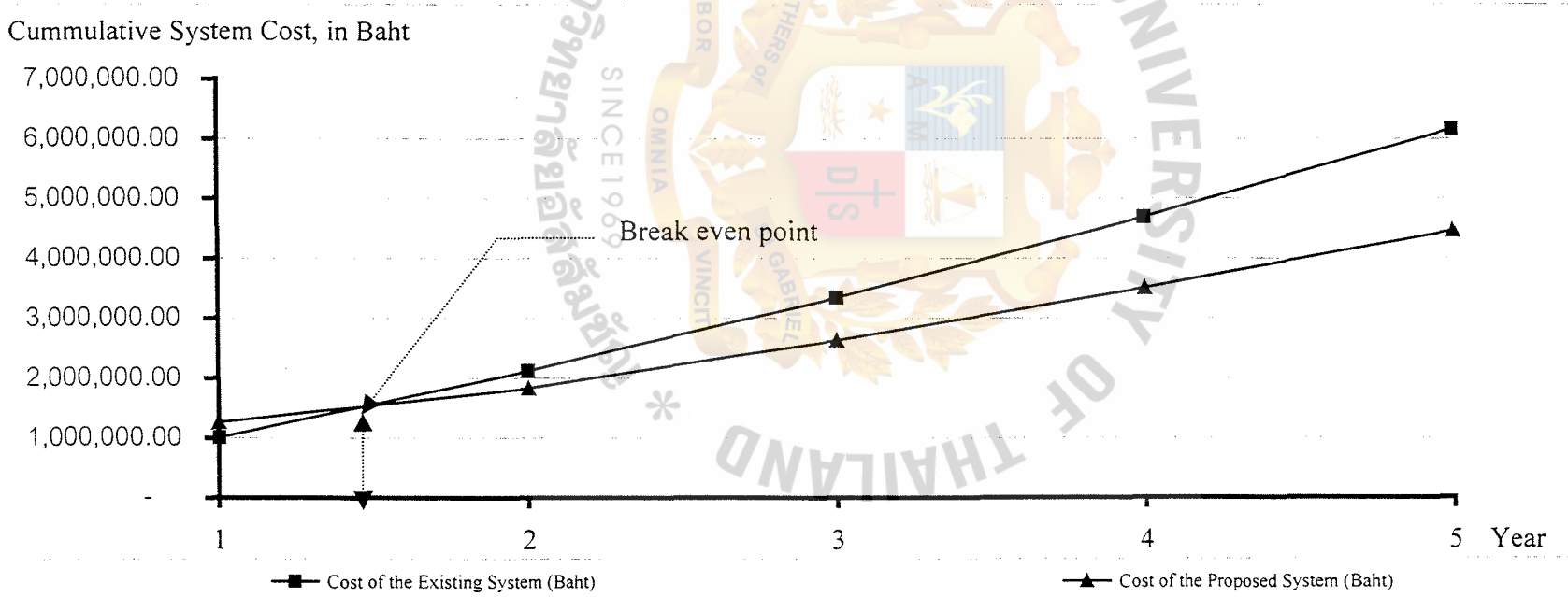


Figure 3.2. Break Even Point Analysis of the New System.

IV. PROJECT IMPLEMENT

4.1 Project Management

Project management consists of installation, conversion, and training. These three activities involve staff, process, and organization. The project schedule is planned well in order to control the project performance to meet the project plans. System analyst will be responsible for the following:

1. The quality of the execution of the project.
2. The management of staff who are involved in the project.
3. The interface with some internal departments such as the Finance department, the Warehouse and the Sales department.

To make sure that the proposed system can work well, a system analyst must test it before the changeover process begins. The system analyst will install the proposed system in to the computer of the sales staff to test. If the problems occur while testing, we will improve or change it from the start.

4.2 Project Planning

Project planning is the important stage for project management because system analyst can know the total time consumption of the whole project. It will force the system analyst to follow up the activities defined in the schedule and to define the time needed for each task.

For this project, we divided the schedule into 4 phases as follows:

1. Requirement Specification.
2. System Analysis
3. Conceptual Design.
4. Implementation.

4.3 Project Schedule

The project schedule will show all of the procedures that will be performed in the project and the period to start each task.

The project schedule will be divided into 4 phases as follows:

1. Requirement Specification.

Gather information and requirement approved of the Existing System, such as report, input data which user used and make in every day. Study by system analyst.

2. System Analysis.

Survey by interview the user about the process of the existing system, report and data entry. In addition to interview the user about new requirement. After finished, system analyst would be create existing flow and evaluate the existing system. Analysis the problems of the existing system and study the new requirement.

3. Conceptual design.

- The proposed system

Design the proposed system processes by creates context diagram and data flow diagram from the information, which receives from interview step. Analysis the processes to create process specification and gather data dictionary prepare to create database.

- Database design.

Create ER diagram and design database system which data elements get from the data dictionary.

4. Implementation

- Programming.

In this project, Microsoft Access was used to build up the system because it completely provides the functions necessary to develop the system. It is used to design Input – Output screen, menu design and database design in a simple way.

After finished, programmers are responsible for testing each individual unit and program that have been developed. After the programmers have tested each program, the programs within the system related to one another must be tested together. The system analyst is responsible for link testing which is a testing of two or more programs together that depend on one another. Sometimes, it is called string testing or series testing or integration testing. Finally, users perform the system testing.

Conversion include the creation of al required master and transaction files, establishing backup copies of the master file and databases and converting tested program to operating status. Data conversion must be carefully planned and cross-checked to see that it is done right. It would be a step by step conversion of the system.

- Installation.

Initials setup the application program for training and use in real life. Training sessions will introduce to staff and concerned people the new software and application program. At the same time, the training sessions will provide the necessary guideline to users for avoiding problems with the system. System testing is a test of the entire using live data supplied by the

end users in are attempt to exercise all processing situations under typical conditions.

- Documentation

Make the document consist of requirement specification, system analysis design, conceptual design, and implement documentation for submit project. All document use to refer and solve some problem of the system.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This project is concerned with Order Processing System. The existing system is a manual system. The manual system does not work well anymore when the volume of customer gradually increases. The errors occurred in the manual system are shown and our customers complained. Therefore, the full-computerized system of information is designed and developed in order to solve these problems such as checking credit limit of each order, reduce the order entry because the proposed system uses EDI technology. The proposed system is designed to lessen the errors of the old system.

The main points of the proposed system are:

1. The system provides accurate information to customers and helps them save money and time to follow up their meters.
2. If provide information for management. Management will get reports which help with decision-making.

In the existing system, the main tasks are performed manually by the staff. The proposed system does require new and the software application is installation. The proposed system can provide a more efficient process for the staff to perform their works by using the computer to computerize the information in the same database and to share this database too. It reduces the time wasted from the manual system. At the same time, the project manager can access the present data to help with decision making and make the project progression report up to date. Staff can develop their works for better performance also.

After analyzing costs and benefit of the new system, the break-even point is 3 years and 7 months.

Table 5.1. The Degree of Achievement between the Proposed and Existing System.

Process	Existing System (Time Spent)	Proposed System (Time Spent)
Application Process	1 hr.	0.5 hr.
Inquiry Process	15 mims.	5 mins.
Payment Process	10 mins.	3 mins.
Modification Process	20 mins.	15 mins.
Printing Process	5 mins.	5 mins.
Cheque Prepare	20 mins.	5 mins.
Total Time Spent	2 hrs. 10 mins.	1 hrs. 3 mins.

5.2 Recommendations

There should be a study on the structure of the existing database of all departments for the feasibility of doing data conversion, if so, the data conversion is needed as much as possible. Documentation is one very important function because the users can use it as a guideline to operate the system and also to develop the system in the future. So we have to give importance to documentation. It should be clear, precise, concise, and complete at every point.

New technology which help to improve performance of the process, such as bar code can help to reduce time and accuracy to entry item code and customer. In addition, the system prepares the complete database, which can help to make the Intranet to serve the requirement of manager in each department. This way can help and do decision making. At present, information technology is growing very fast. The intranet and electronic commerce are not impossible. So the development is still important and will need to develop together.

APPENDIX A

CONTEXT DIAGRAM OF THE NEW SYSTEM

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

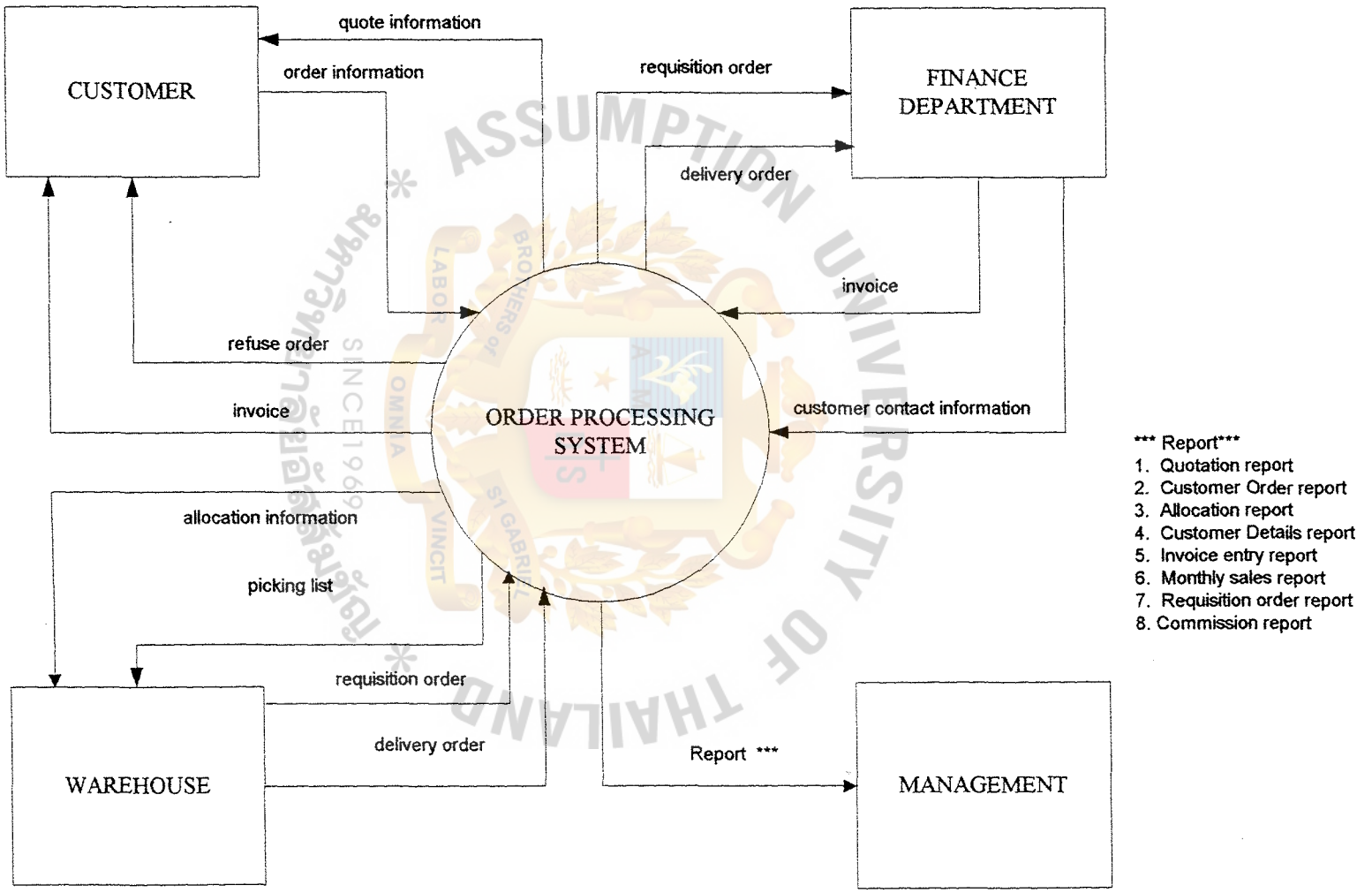


Figure A.1. Context Diagram of the New System.

The Context Diagram of the New System

The context diagram of order processing system, is a graphical model that shows a flow of data and information between the system and external entities which interact with in the system.

The tasks and functions of the new system are:

1. Sales department creates quotation and sends to customer. If the customer is new it will create the account first.

2. Customers receive record of quotation. They agree with the quotation. They will send back the purchase order.

3. The application link will retrieve data for transforming to order entry. Order entry process checks the credit limit of each customer. If the customer's credit is over the allowed amount, the orders are hold on. Moreover, the sales department informs the customer about the order status and wait for approval.

4. The Sales department allocates material to the warehouse. The purposes of this step are to help warehouse to check the re-order point of each product. In addition, they can forecast the purchase of the product. When the sales department has done the allocation, it will make the picking slip and send it to the warehouse.

5. The warehouse keeps the picking slips. It prepares the product on schedule for the customers.

6. The Sales department confirms the picking slip and informs the warehouse to prepare the products. In this step, the products are automatically updated and the inventory transaction kept by the picking confirm process.

7. The warehouse is kept does the delivery order for shipping the product. A set of document consists of delivery order and invoice from the Accounting & Finance department.

8. The Accounting & Finance department creates the invoice and gives to the warehouse.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

APPENDIX B

DATAFLOW DIAGRAM OF THE NEW SYSTEM

ASSUMPTION UNIVERSITY OF THAILAND
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

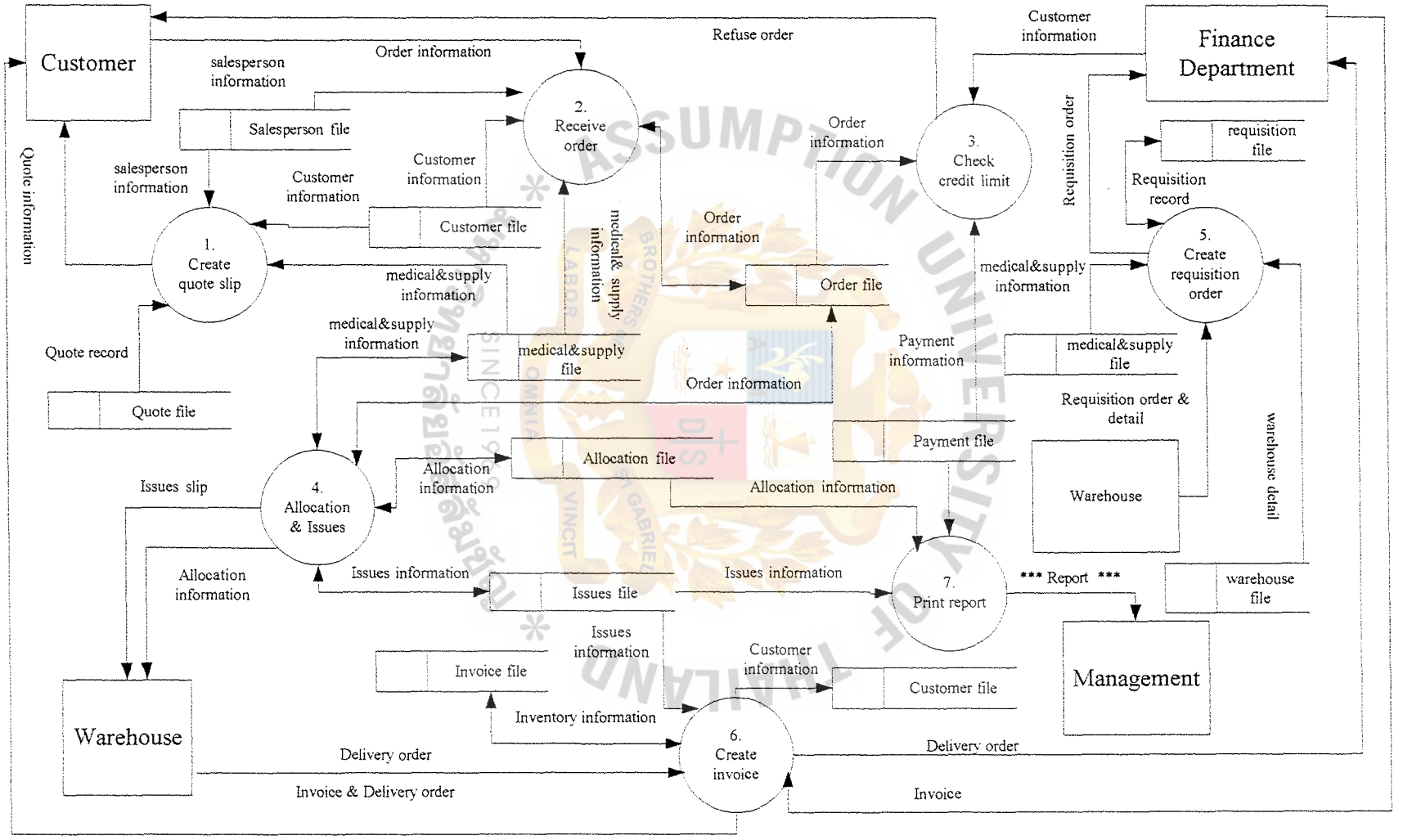


Figure B.1. Data Flow Diagram (Level) of the New System.

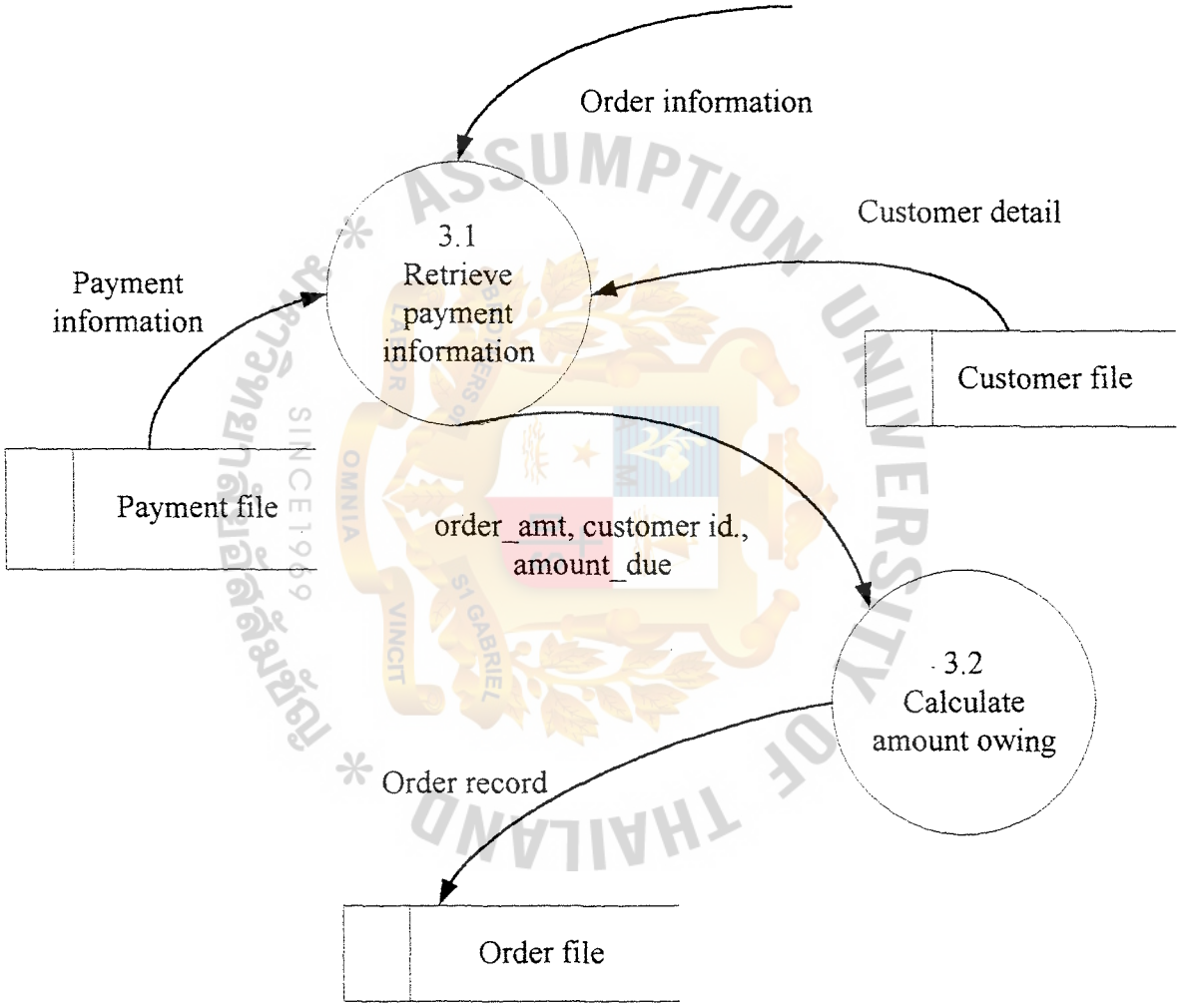


Figure B.2. Level 1 of Process 3.0; Check Credit Limit.

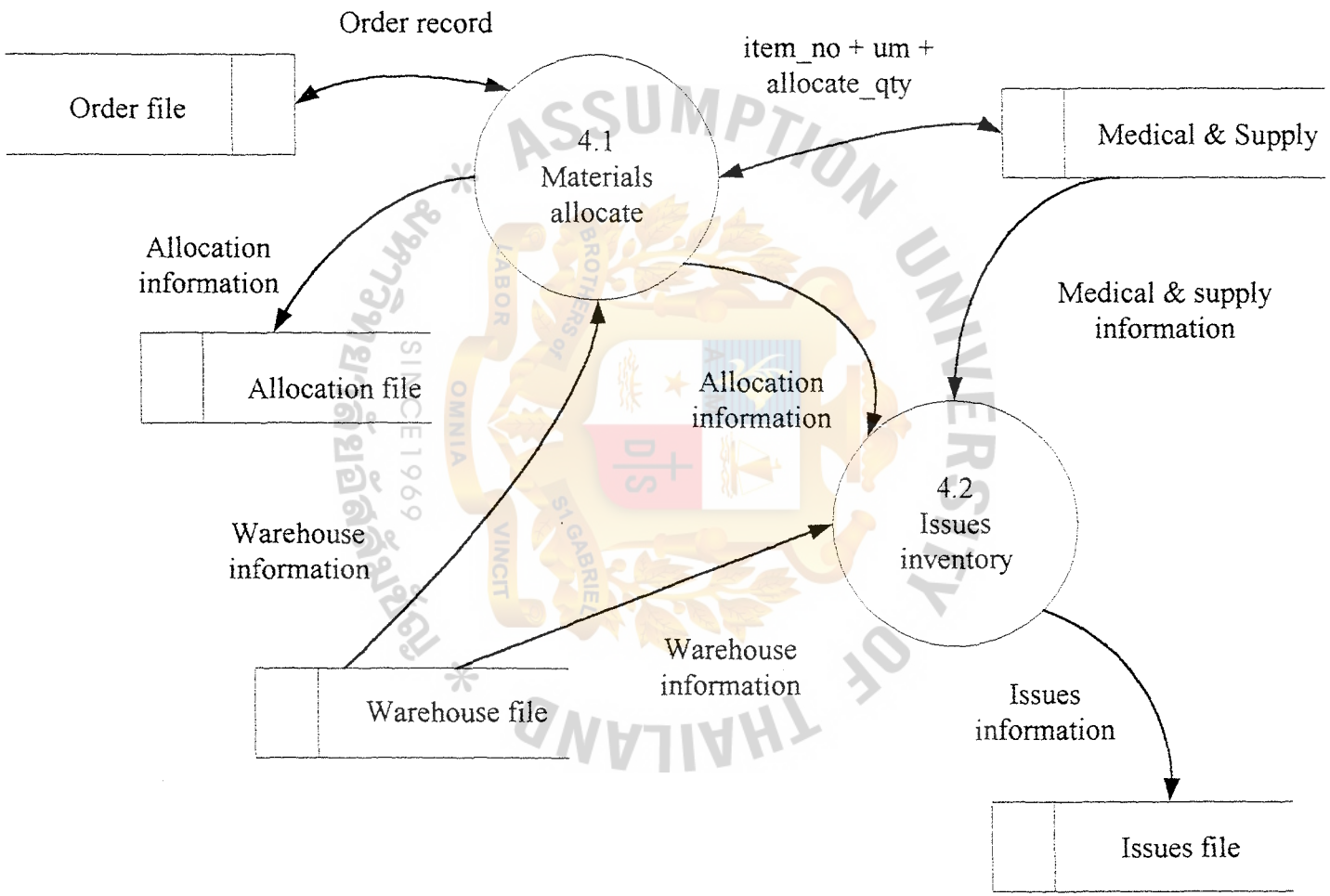


Figure B.3. Level 1 of Process 4.0; Allocation & Issues.

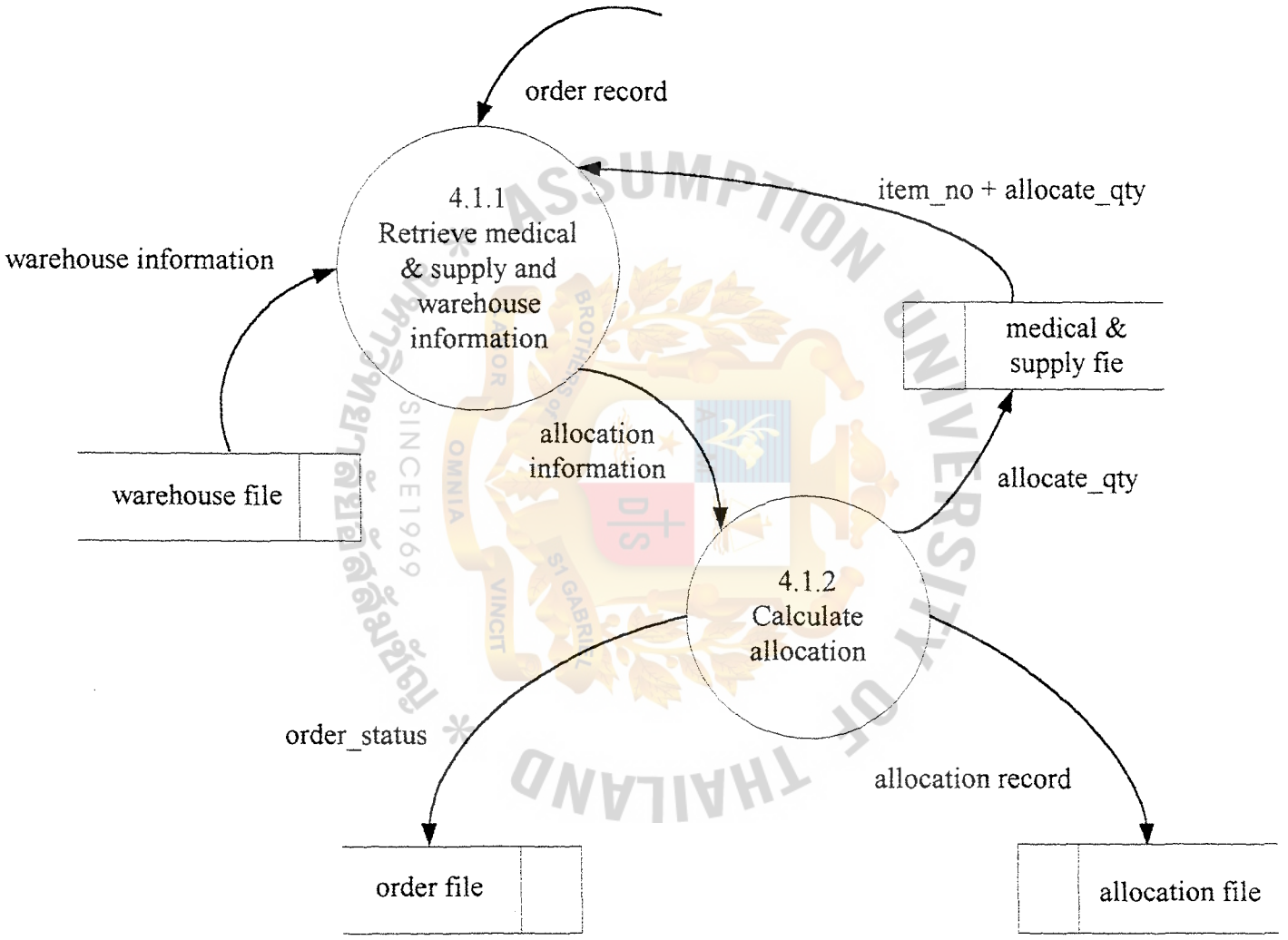


Figure B.4. Level 2 of Process 4.1; Materials Allocation.

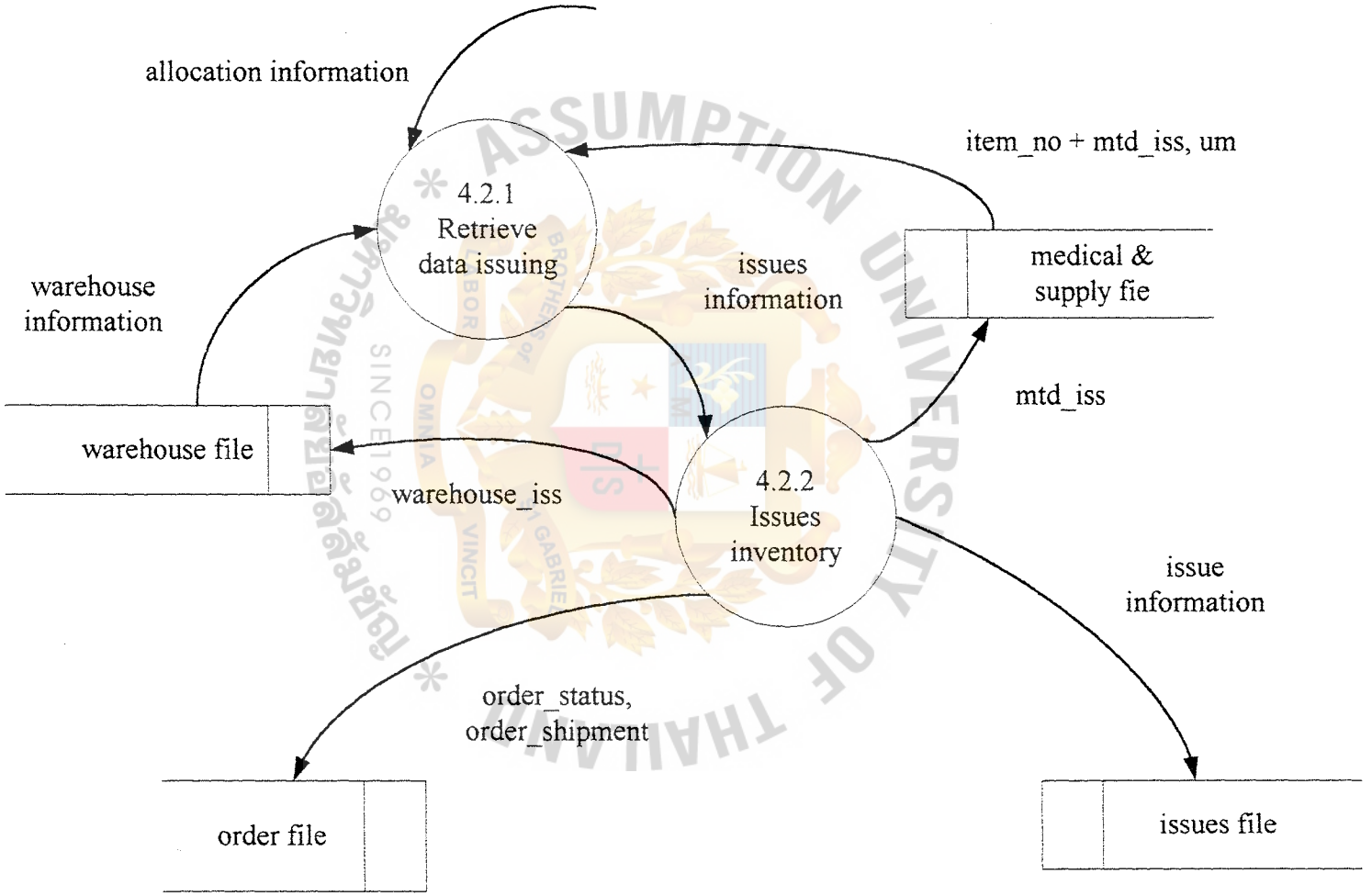


Figure B.5. Level 2 of Process 4.2; Issues Inventory.

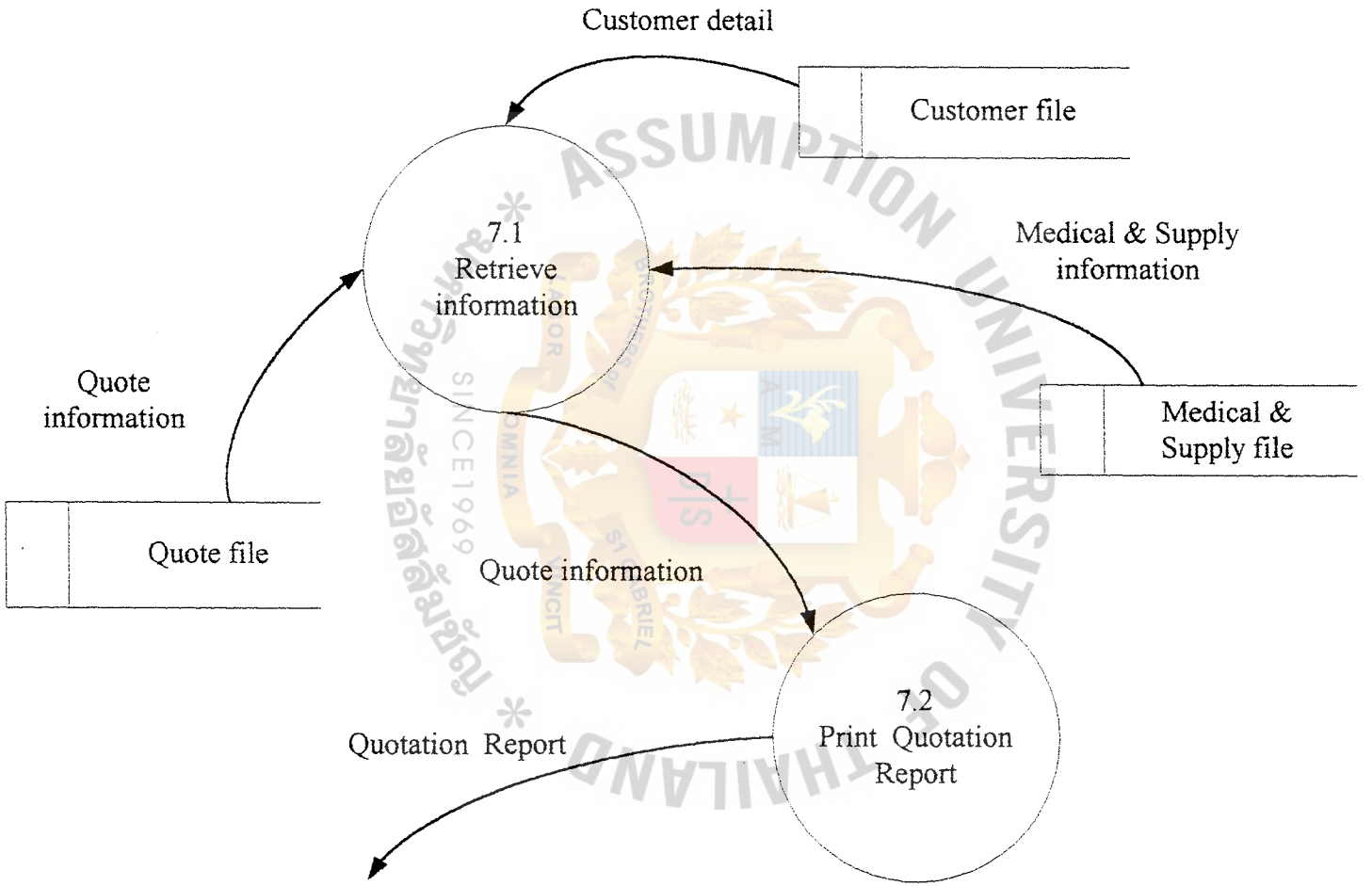


Figure B.7. Level 1 of Process 7.0; Print Quotation Report.

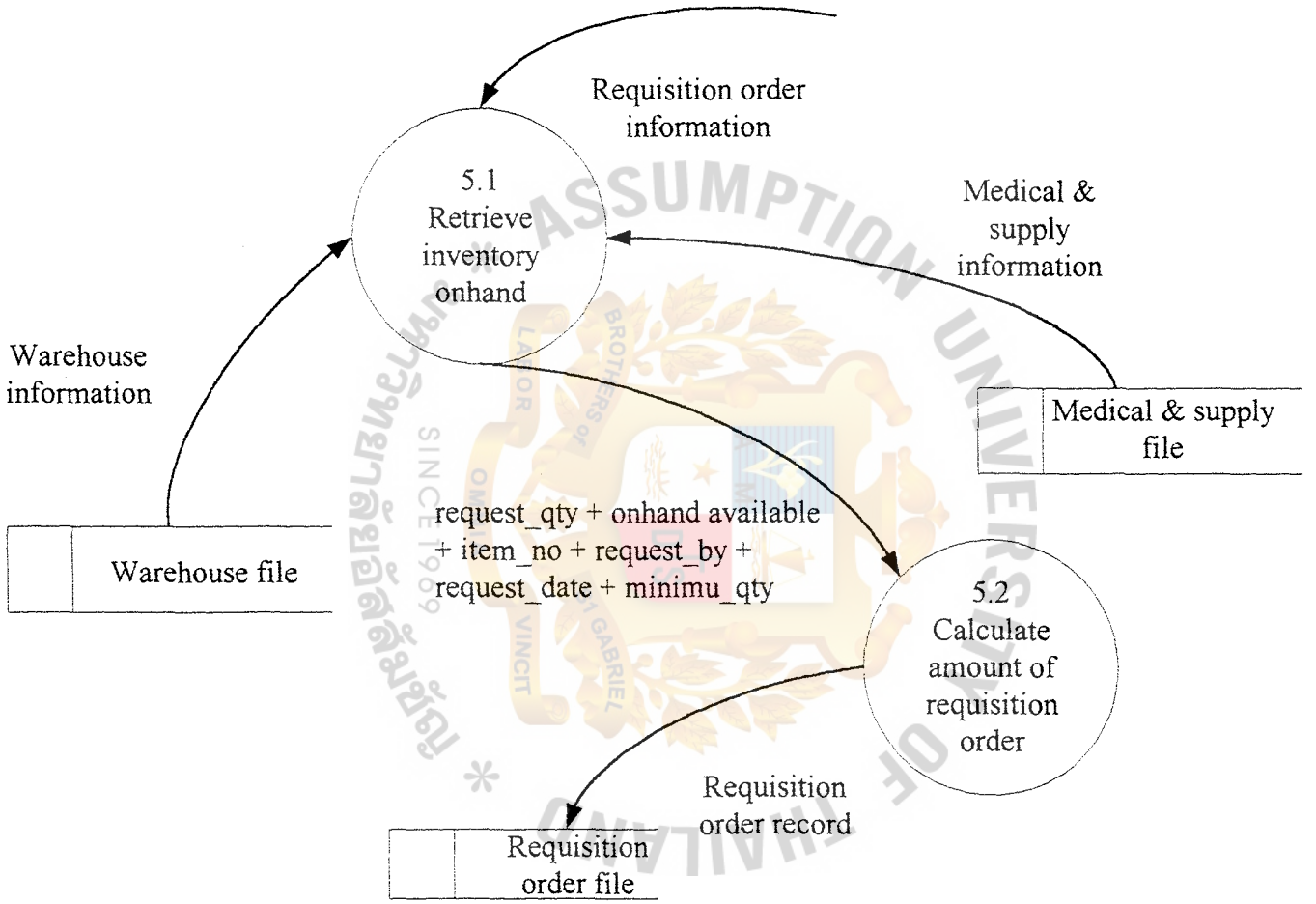


Figure B.6. Level 1 of Process 5.0; Create Requisition Order.

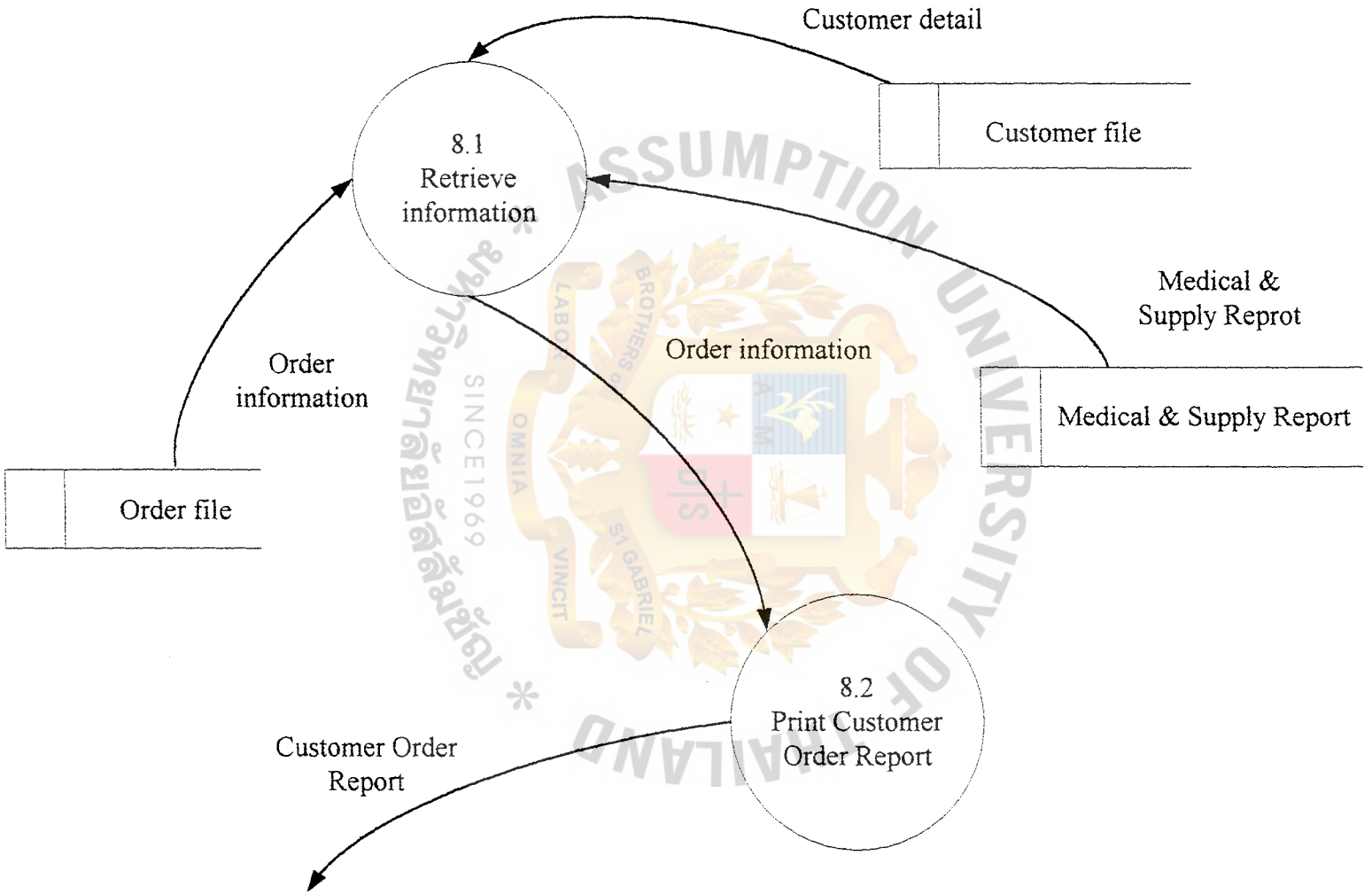


Figure B.8. Level 1 of Process 8.0; Print Customer Order Report.

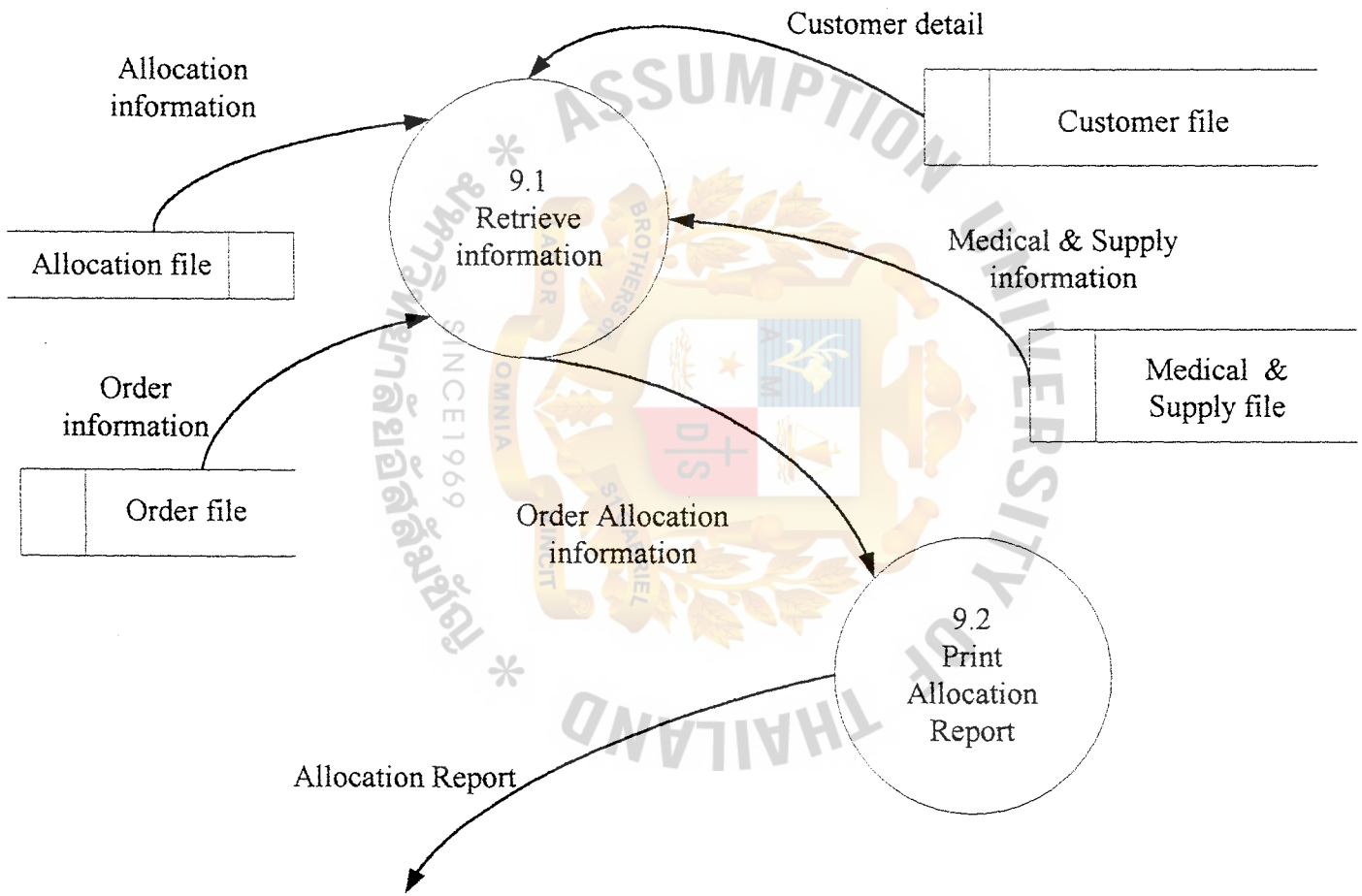


Figure B.9. Level 1 of Process 9.0; Print Allocation Report.

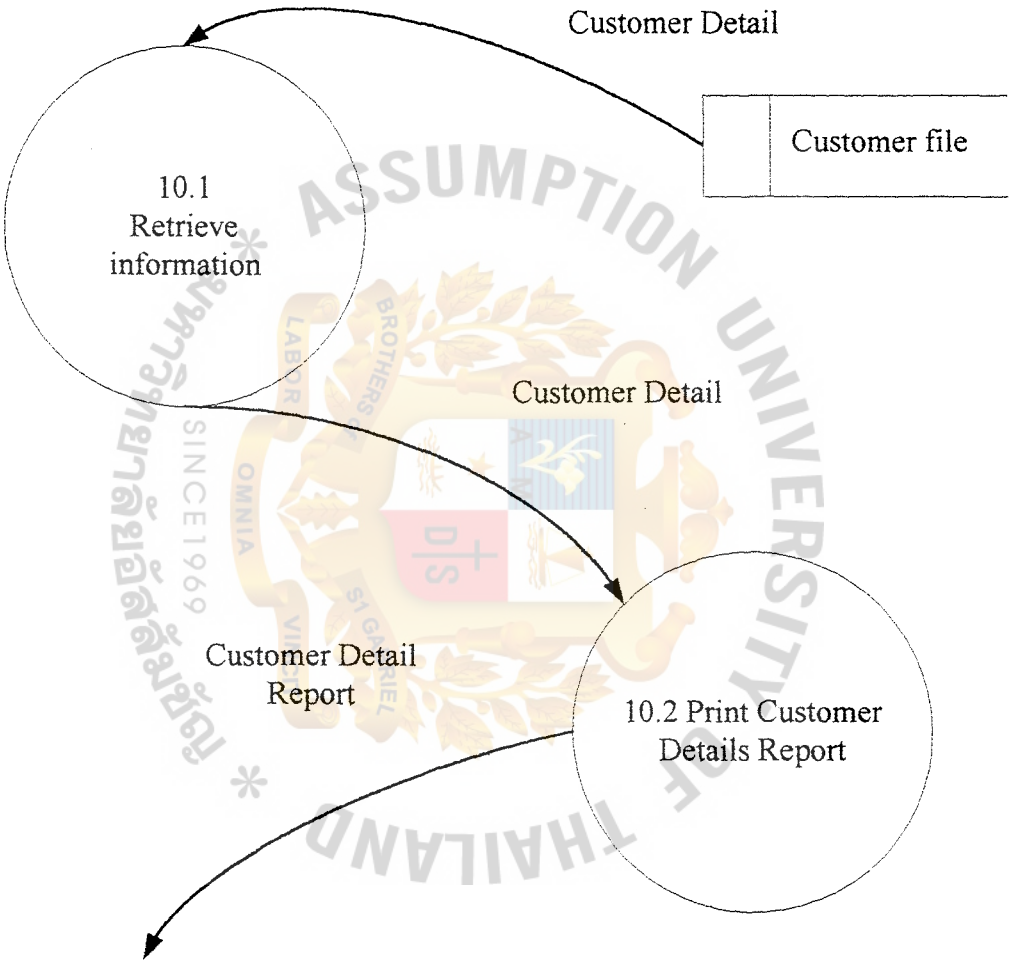


Figure B.10. Level 1 of Process 10.0; Print Customer Details Report.

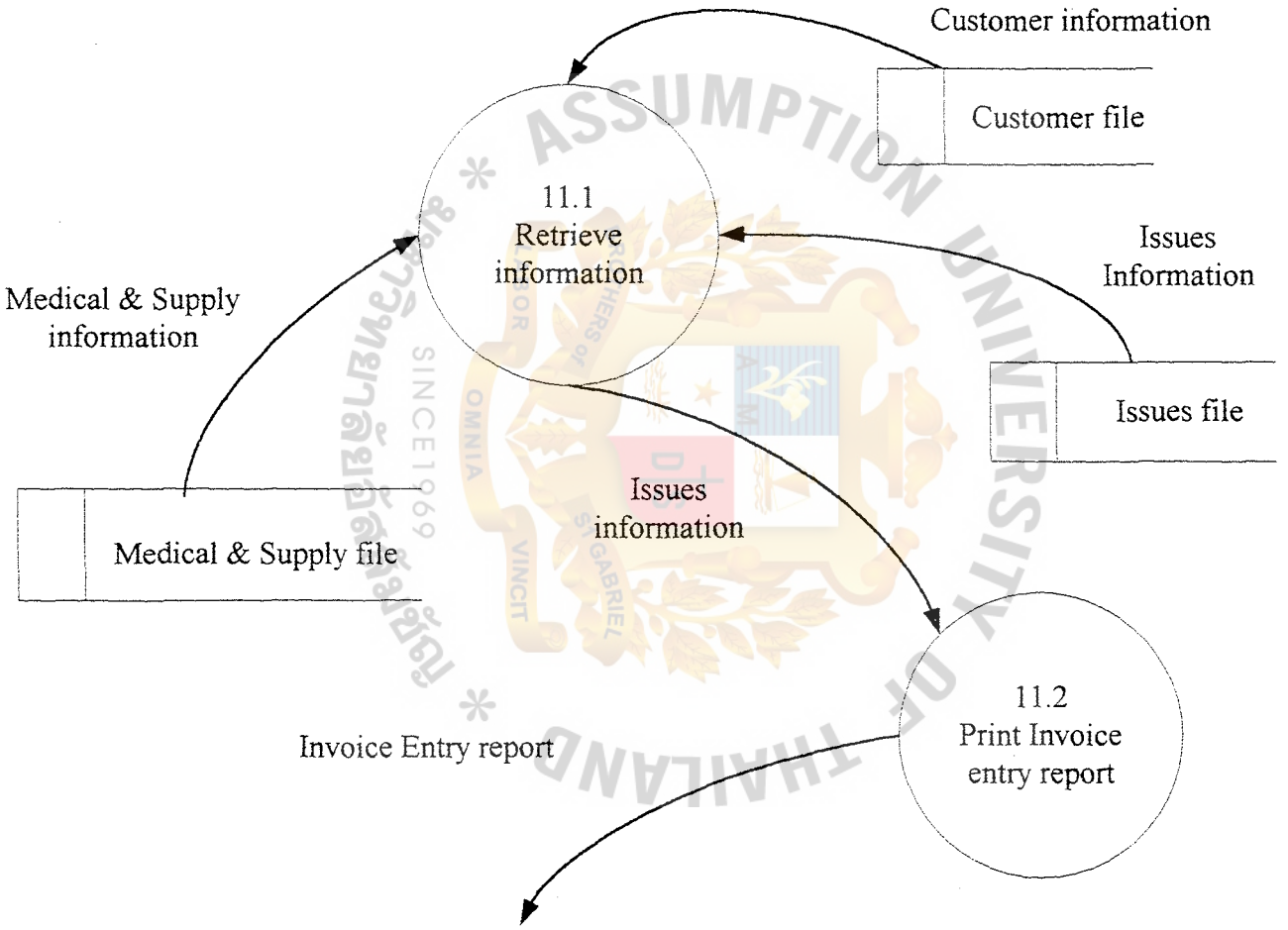


Figure B.11. Level 1 of Process 11.0; Print Invoice Entry Report.

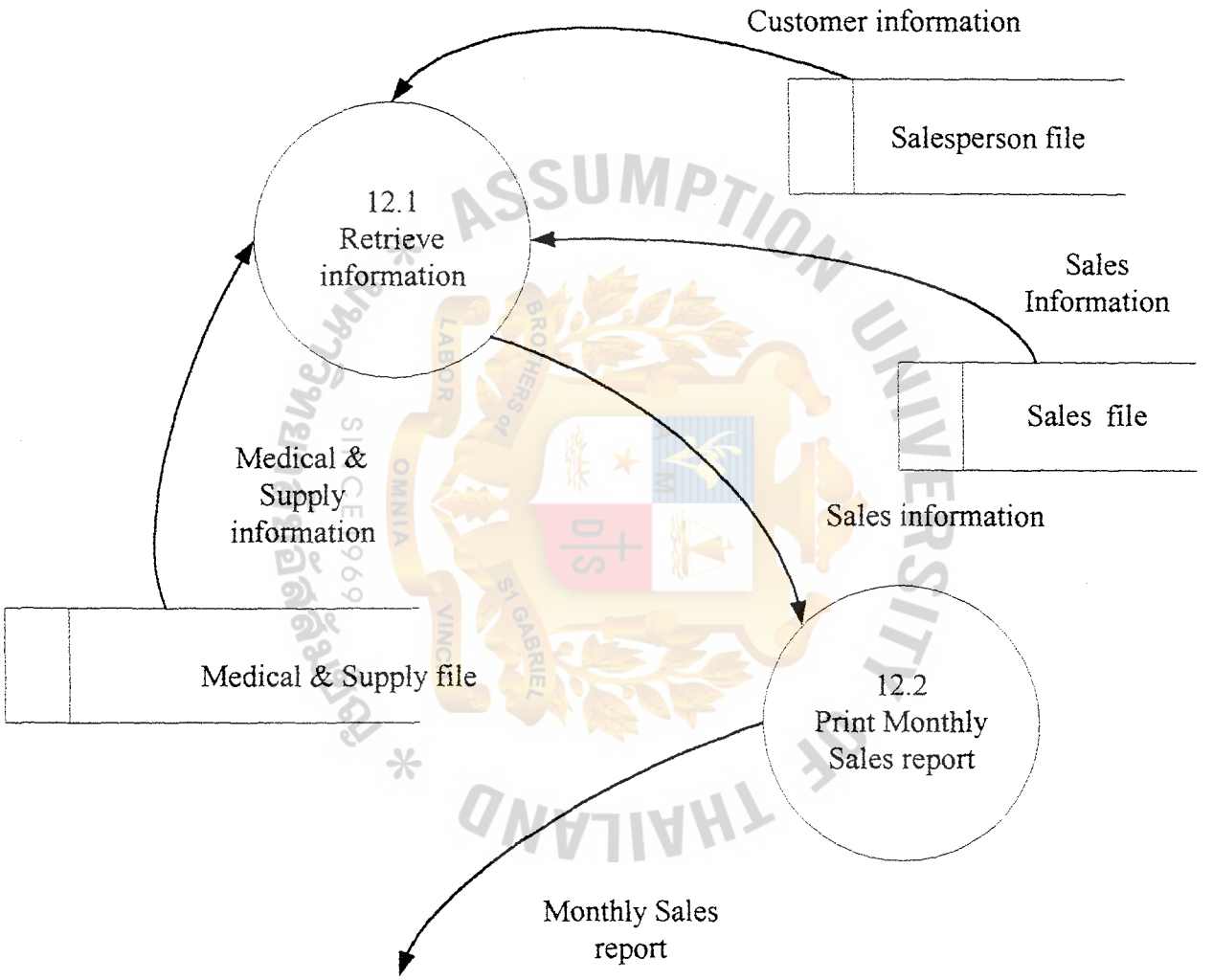


Figure B.12. Level 1 of Process 12.0; Print Monthly Sales Report.

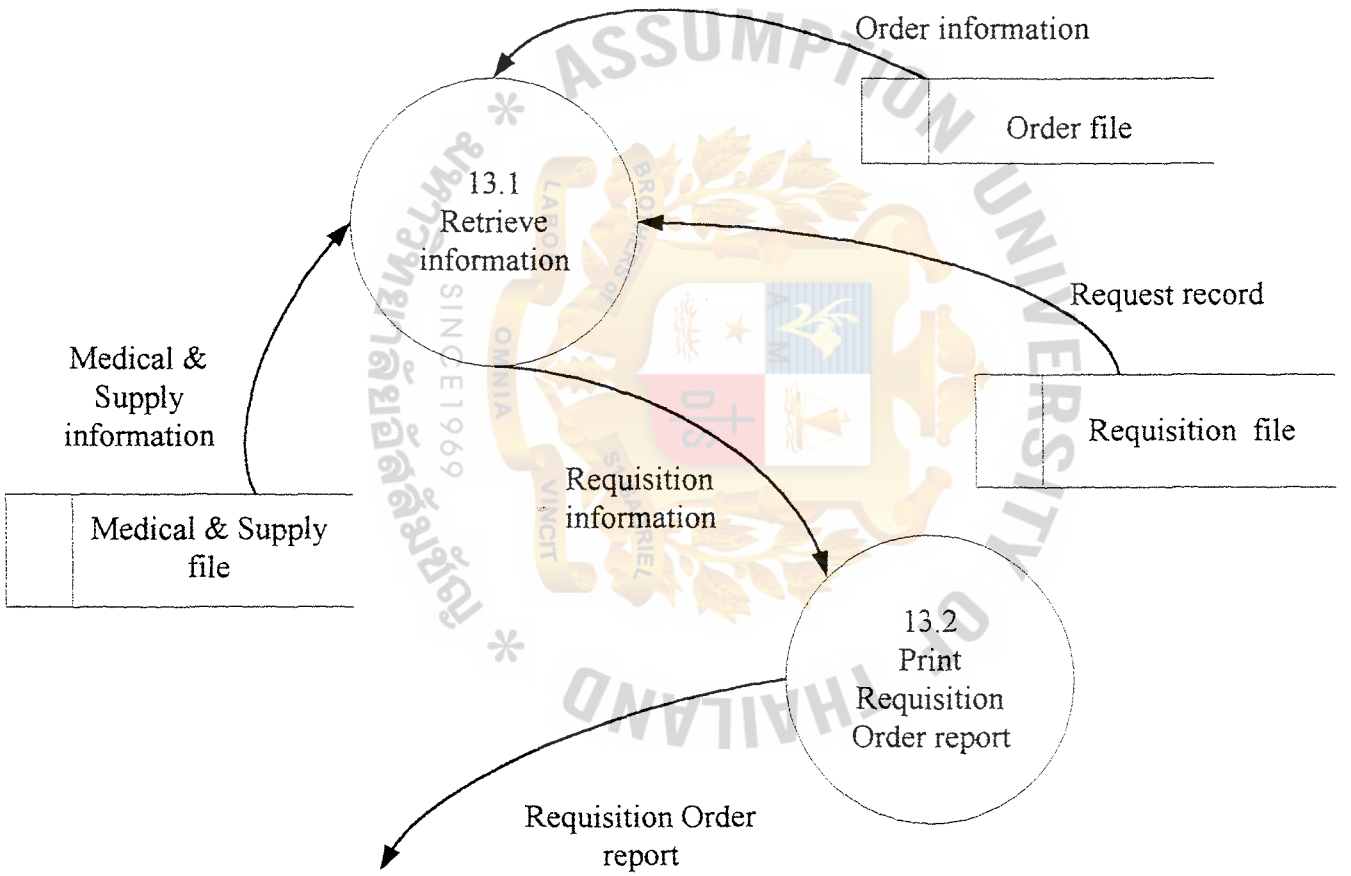


Figure B.13. Level 1 of Process 13.0; Print Requisition Order Report.

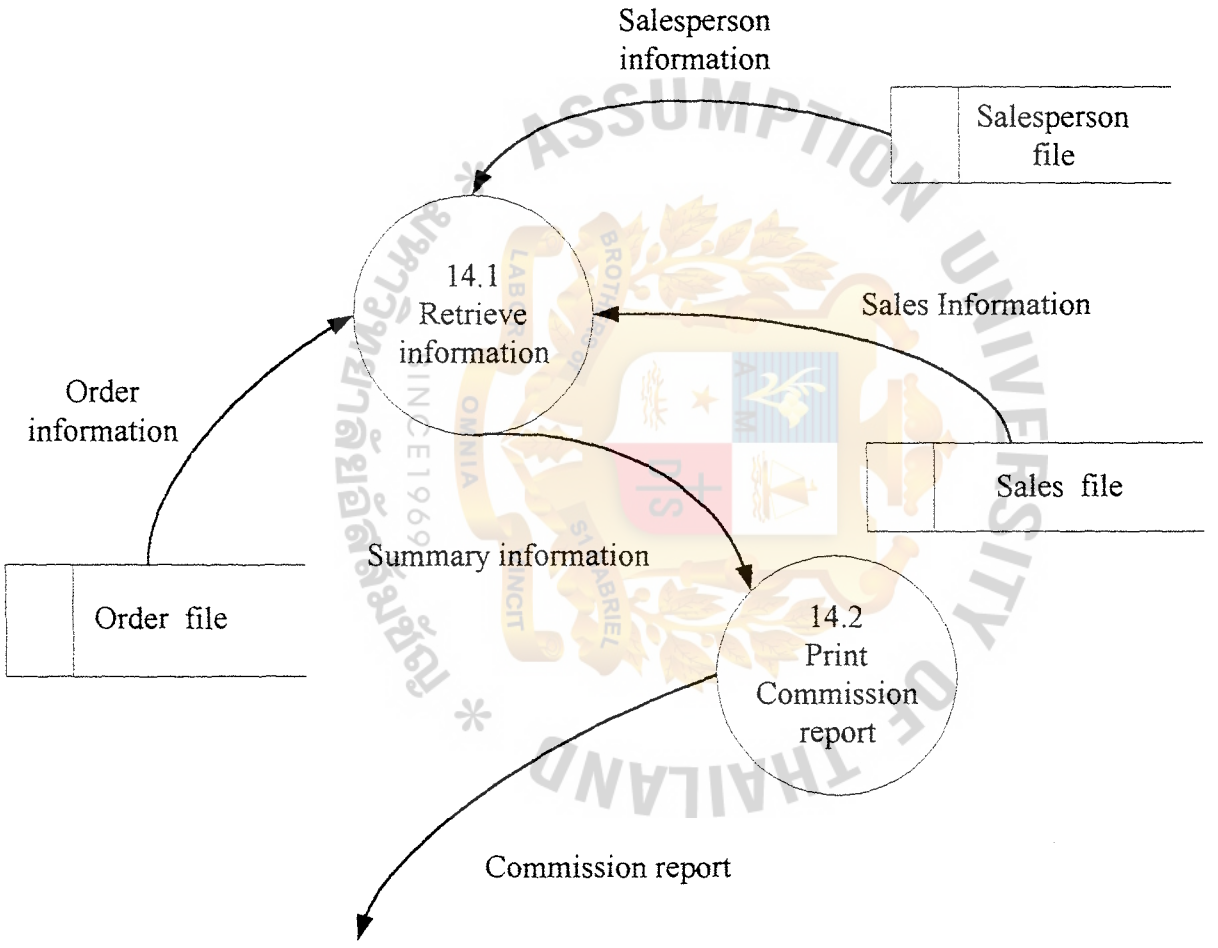


Figure B.14. Level 1 of Process 14.0; Print Commission Report.

APPENDIX C

DATABASE DESIGN

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

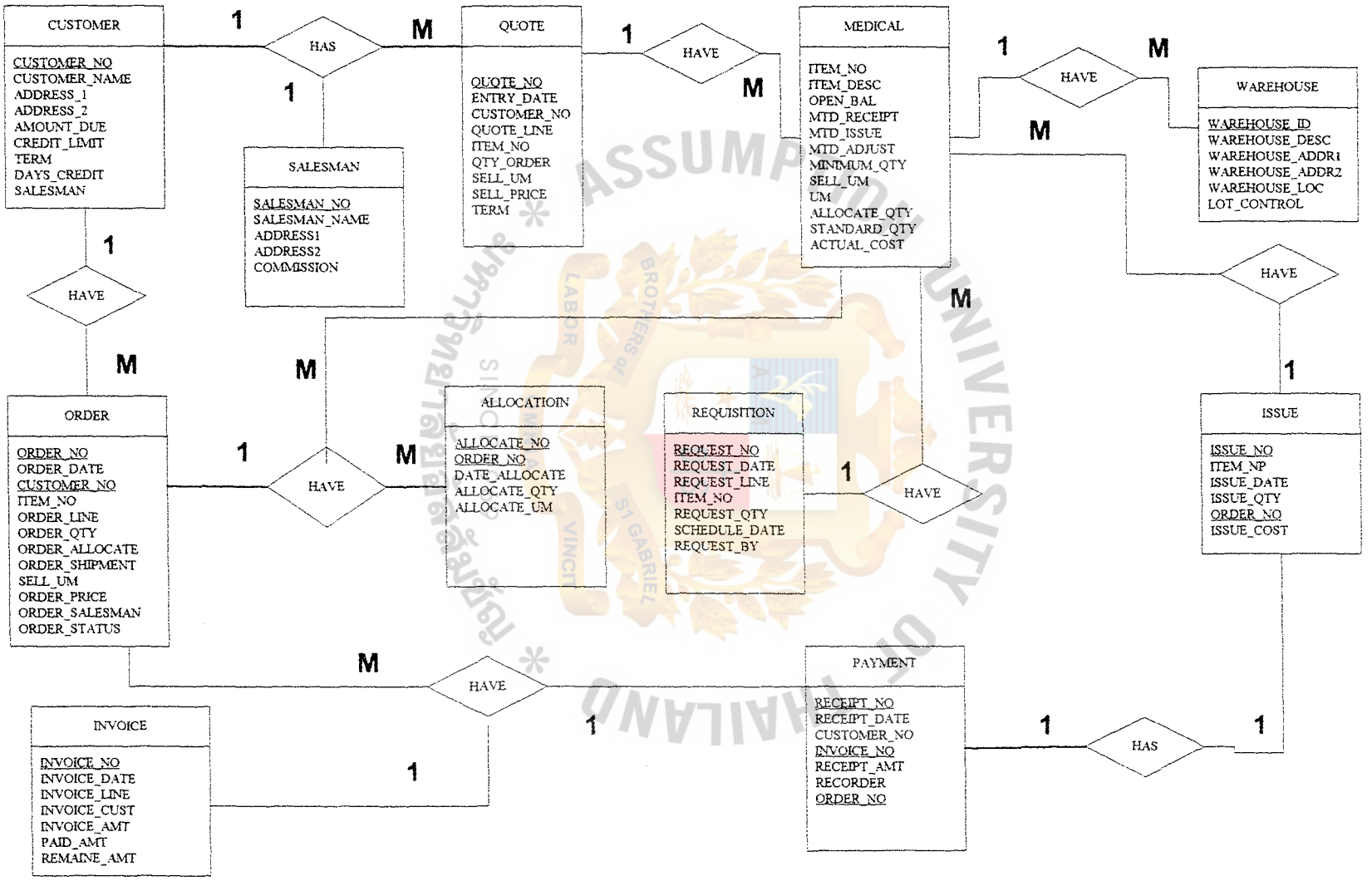


Figure C.1. E-R D.

APPENDIX D

OUTPUT DESIGN

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

99/99/99 INVOICE ENTRY REPORT Page 999

As of Date 99/99/99

Cust No.	Cust Name	Invoice No.	Invoice date	Due date	Original Amount	Remaining Amt.
	Total					

Figure D.1. Output Design of the Invoice Entry Report.

99/99/99 CUSTOMER DETAIL REPORT Page 999

From customer no. To 999999

Customer No. Customer name	Credit * Limit	Amount Due	Term Code	Credit Days	Salesman No.

Figure D.2. Output Design of the Customer Detail Report.

99/99/99 MONTHLY SALES REPORT Page 999

As of Month 99/99

Item No.	This Month Sales		YTD Sales		This Month Target		Yearly Target	
Description	Case	Value	Case	Value	Value	%	Value	%

Figure D.3. Output Design of the Monthly Sales Report.

99/99/99 REQUSITION ORDER REPORT Page 999

As of Month 99/99

Item No.	Description	Req. No	Req. Date	Req. Qty.	Unit of Measurement

Figure D.4. Output Design of the Requisition Order Report.

99/99/99 COMMISSION REPORT Page 999

As of Month 99/99

Salesman No.	Name	Rate(%)	Order No.	Order Amount	Comm. Amount

Figure D.5. Output Design of the Commission Report.

99/99/99 CUSTOMER ORDER REPORT Page 999

As of Month 99/99

Customer No. Name	Order No.	Enter Date	Scheduled Date	Term Code	Total Pieces	Total Amount	Salesman No.

Figure D.6. Output Design of the Customer Order Report.

99/99/99 ALLOCATION REPORT Page 999

As of Month 99/99

Item No. Description	Warehouse	Location Lot number	Order No.	Order Quantity	Allocate Quantity	Unit of Measure

Figure D.7. Output Design of the Allocation Report.

99/99/99 QUOTATION REPORT Page 999

As of Month 99/99

Customer No. Name	Quotation No.	Enter Date	Scheduled Date	Term Code	Total Pieces	Total Amount	Salesman No.

Figure D.8. Output Design of the Quotation Report.

APPENDIX E

DATA DICTIONARY

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST. GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : CUSTOMER FILE

Table E.1. File Description of Customer.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
CUSTOMER_NO	Customer number	Numeric	6	Primary key	
CUSTOMER_NAME	Customer name	Character	50	-	
ADDRESS_1	Address of customer line 1	Character	60	-	
ADDRESS_2	Address of customer line 2	Character	60	-	
AMOUNT_DUE	Amount due	Numeric	15,2	-	
CREDIT_LIMIT	Amount of credit limit	Numeric	15,2	-	
TERM	Term code	Character	2	Foreign key	
TERM_DESC	Term description	Character	20	-	
DAYS_CREDIT	Credit days	Numeric	3	-	
SALESMAN	Salesman number	Numeric	6,0	Foreign key	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : QUOTE FILE

Table E.2. File Description of Quote .

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
QUOTE_NO	Quote Number	Numeric	6,0	Primary key	
ENTRY_DATE	Date quote entered	DATE	8,0	-	
CUSTOMER_NO	Customer number	Numeric	6,0	Foreign key	
ITEM_NO	Item number	Character	15	Foreign key	
QTY_ORDER	Quantity ordered	Numeric	11,3	-	
SELL_UM	Unit of Measure for Selling	Character	3	-	
SELL_PRICE	Net selling price	Numeric	13,3	-	
TERM	Term code	Character	2	Foreign key	
SALESMAN_NO	Salesman number	Numeric	6,0	Foreign key	
DISCOUNT	Discount Percentage	Numeric	5,2	-	
REMARK	Remark	Character	50	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : MEDICAL & SUPPLY

Table E.3. File Description of Medical & Supply.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
ITEM_NO	Item number	Character	15	Primary key	
ITEM_DESC	Item description	Character	30	-	
OPEN_BAL	Openning balance quantity	Numeric	13,2	-	
MTD_RECEIPT	Month to Date receipt quantity	Numeric	13,2	-	
MTD_ISSUE	Month to Date issues quantity	Numeric	13,2	-	
MTD_ADJUST	Month to Date adjust quantity	Numeric	13,2	-	
MINIMUM_QTY	Minimum quantity	Numeric	13,2	-	
SELL_UM	Unit of Measure for Selling	Character	3	-	
UM	Unit of Measure for Stocking	Character	3	-	
ALLOCATE_QTY	Allocate quantity	Numeric	13,3	-	
STANDARD_QTY	Standard cost per unit	Numeric	15,5	-	
ACTUAL_COST	Acutal cost per unit	Numeric	15,5	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : ORDER FILE

Table E.4. File Description of Order.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
ORDER_NO	Order number	Numeric	6,0	Primary key	
ORDER_DATE	Date entered	DATE	8,0	-	
CUSTOMER_NO	Customer number	Numeric	6,0	Foreign key	
ITEM_NO	Item number	Character	15	Foreign key	
ORDER_QTY	Order quantity	Numeric	13,3	-	
ORDER_ALLOCATE	Order allocate quantity	Numeric	13,3	-	
ORDER_SHIPMENT	Order shipment quantity	Numeric	13,3	-	
SELL_UM	Unit of Measure for Selling	Character	3	-	
ORDER_PRICE	Net price selling	Numeric	13,3	-	
ORDER_SALESMAN	Salesman number	Numeric	6,0	-	
ORDER_STATUS	Order status	Character	1	-	B = Backorder, A = Allocate, C = Complete

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : ORDER FILE

Table E.4. File Description of Order (continue).

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
INVOICE_NO	Invoice number	Numeric	6,0	Foreign key	
TERM	Term code	Character	2	Foreign key	
DISCOUNT	Discount Percentage	Numeric	5,2	-	
REMARK	Remark	Character	50	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : ALLOCATION

Table E.5. File Description of Allocation.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
ALLOCATE_NO	Allocate number	Numeric	6,0	Primary key	
ORDER_NO	Order number	Numeric	6,0	Primary key	
CUSTOMER_NO	Customer number	Numeric	6,0	Foreign key	
DATE_ALLOCATE	Allocated date	DATE	8	-	
ALLOCATE_QTY	Allocated quantity	Numeric	13,3	-	
ALLOCATE_UM	Allocated unit of measure	Character	3	-	
WAREHOUSE_ID	Warehouse Id.	Character	3	Foreign key	
WAREHOUSE_LOC	Warehouse location	Character	10	Foreign key	
LOT_CONTROL	Lot control number	Character	13	Foreign key	
ITEM_NO	Item number	Character	15	Foreign key	
REMARK	Remark	Character	50	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : PAYMENT

Table E.6. File Description of Payment.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
RECEIPT_NO	Receipt number	Numeric	6,0	Primary key	
RECEIPT_DATE	Receipted date	DATE	8	-	
CUSTOMER_NO	Customer number	Numeric	6,0	Foreign key	
INVOICE_NO	Invoice number	Numeric	6,0	Foreign key	
RECEIPT_AMT	Receipt amount	Numeric	13,3	-	
ORDER_NO	Order number	Numeric	6,0	Foreign key	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : ISSUE

Table E.7. File Description of Issues.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
DELIVERY_NO	Delivery number	Numeric	6,0	Primary key	
ITEM_NO	Item number	Character	15	Foreign key	
ISSUE_DATE	Issuesed date	DATE	8	-	
ISSUE_QTY	Issues quantity	Numeric	13,3	-	
ALLOCATE_NO	Allocate number	Numeric	6,0	Foreign key	
ISSUE_COST	Cost of issuesed	Numeric	13,3	-	
REMARK	Remark	Character	50	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : INVOICE

Table E.8. File Description of Invoice.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
INVOICE_NO	Invoice number	Numeric	6,0	Primary key	
INVOICE_DATE	Invoice date	DATE	8	-	
CUSTOMER_NO	Customer number	Numeric	6,0	Foreign key	
INVOICE_AMT	Invoice amount	Numeric	13,3	-	
PAID_AMT	Paid amount	Numeric	13,3	-	
REMAINE_AMT	Reamining due	Numeric	13,3	-	
DELIVERY_NO	Delivery number	Numeric	6,0	Foreign key	
TERM	Term code	Character	3	-	
DUE_DATE	Due date of invoice	DATE	8,0	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : REQUISITION

Table E.9. File Description of Requisition.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
REQUEST_NO	Request number	N	6,0	Primary key	
REQUEST_DATE	Request date	DATE	8	-	
ITEM_NO	Item number	Character	15	Foreign key	
REQUEST_QTY	Request quantity	Numeric	13,3	-	
SCHEDULE_DATE	Schedule date	DATE	8,0	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : WAREHOUSE

Table E.10. File Description of Warehouse.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
WAREHOUSE_ID	Warehouse id.	Character	3	Primary key	
WAREHOUSE_LOC	Warehouse location	Character	10	Primary key	
LOT_CONTROL	Lot control number	Character	13	Primary key	
WAREHOUSE_DESC	Warehouse description	Character	60	-	
WAREHOUSE_ADDR1	Warehouse address 1	Character	60	-	
WAREHOUSE_ADDR2	Warehouse address 2	Character	60	-	
ITEM_NO	Item number	Character	15	Foreign key	
WAREHOUSE_OPEN	Openning balance of warehouse	Numeric	11,3	-	
WAREHOUSE_ADJ	Adjusted quantity of warehouse	Numeric	11,3	-	
WAREHOUSE_RCPT	Receipted quantity of warehouse	Numeric	11,3	-	
WAREHOUSE_ISS	Issuesed quantity of warehouse	Numeric	11,3	-	

Data Dictionary : Order Processing of K&S (Thailand) Co., Ltd.

File name : SALESMAN

Table E.11. File Description of Salesman.

FIELD NAME	DESCRIPTION	DATA TYPE	LENGTH	KEY	REMARK
SALESMAN_NO	Salesman number	Numeric	6,0	Primary key	
SALESMAN_NAME	Name of salesman	Character	30	-	
SALESMAN_ADDR1	Salesman address 1	Character	60	-	
SALESMAN_ADD2	Salesman address 2	Character	60	-	
COMMISSION_CODE	Commission code	Character	3	Foreign key	
COMMISSION_DESC	Commission description	Character	50	-	

DATA DICTIONARY

External entities

Customer	=	The person who purchases merchandise from company.
Financial Department	=	The department that balances amount, generate invoices, Sales analysis report, commission report
Management	=	Board of Directors
Sales Department	=	The department that generate quote and order transaction.
Warehouse	=	The department that manage the inventory and product.

Data Flow

Allocation record	=	Allocate_no + Order_no + Date_allocate + Allocate_qty + Allocate_um + Warehouse_id + Warehouse_loc + Lot_control + Item_no + Order_line
Allocation information	=	Warehouse_remain + Order_qty + Order_allocate + Allocate_qty + Order_status
Alloc_QTY	=	Quantity allocation
Customer record	=	Customer_no + Customer_name + Address_1 + Address_2 + State + Country + Zip + Telephone
Customer_no	=	* Identification of customer *
Customer_name	=	* Name of customer *
Customer_sts	=	* Status of record when program read from file *
End of record	=	* Status when read redord *

Invoice detail = Invoice_no + Invoice_date + Customer_no + Invoice_amt + Delivery_no + Term + Due_date

Invoice information =

Issues information = Issue_no + Item_no + Issue_date + Issue_qty + Order_no + Issue_cost

Item_no = * Identification of product *

Lot_control = * Lot number each product, if the product need control lot and have expire date *

Medical & Supply information= Item_no + Item_desc + allocate_qty

Onhand available = Quantity onhand – Alloc_QTY

Order information = Order_no + Customer_no + Order_amt

Order record = Order_no + Order_date + Customer_no + Item_no + Order_line + Order_qty + Sell_um + Order_price + Order_salesman + Order_status

Order_amt = * Amount of each order *

Payment information = Receipt_no + Receipt_date + Customer_no + Receipt_amt

Quantity onhand = Open_Balance + MTD_Rcpt + MTD_Adj - MTD_Iss

Quote record = Quote_no + Entry_date + Customer_no + No_line + In_item + Quote_QTY + Quote_amt + Quote_sts + Sales_no + Term_code + Term_dsc + Ship_via + Company_no + Sales_com

Quote_no = * Quote number *

Requisition Order information = Request_date + Item_no + Request _by

Requisition Order record	=	Requst_no + Request_date + Request_line + Item_no + Request_qty + Schedule_date + Request_by
Salesman_name	=	* Salesperson name *
Salesman_no	=	* Identification salesperson *
Term information	=	Term + Term_desc + Discount + Discount_desc + Expire + Remark
Warehouse information	=	Warehouse_id + Warehouse_desc + Warehouse_loc + Lot_control + Item_no + Warehouse_open + Warehouse_adj + Warehouse_rcpt + Warehouse_iss
Warehouse_id	=	* Warehouse number which keeping the product *
Warehouse_Loc	=	* Location in warehouse such shelf, cabinet *
Warehose_remain	=	Warehouse_open + Warehouse_adj + Warehouse_rcpt – Warehouse_iss

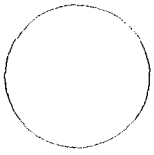
Data store

Allocation	=	Transaction file of allocation inventory.
Commission	=	Transaction file of commission for salesman.
Customer file	=	Detail of all customer, customer master file.
Invoice	=	Transaction file of invoice for customer.
Issue	=	Transaction file of issue inventory.
Medical & Supply	=	Medical & Supply master file, consists of detail of product.
Order file	=	Transaction file of order customer.
Payment	=	Transaction file of payment of customer.
Quote file	=	Transaction file of quotations.

Requisition	=	Transaction file of inventory that re-order point.
Salesperson	=	Detail of salesman which take care the customer.
Warehouse	=	Department which manage the product in the inventory.

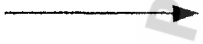
ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Data dictionary of Entity-Relationship Diagram



= A Process, it is used to describe what the process does or what is carrying out the process.

= External entity, it is used to describe a person or a group of people which the system communicates.



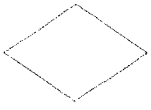
= The Flow, it is used to describe the movement of chunks, or packets of information from one part of the system to another part.

= The Store, it is used to describe a collection of data packets at rest.

ASSUMPTION UNIVERSITY OF THAILAND
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

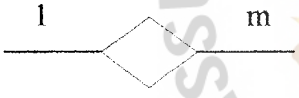
Data dictionary of Entity-Relationship Diagram

= The object type, it used to describe a collection or set of objects.

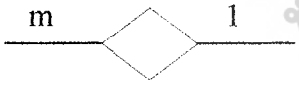


= The relationship, it used to represent a set of connections.

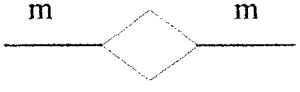
= One to one relationship.



= One to many relationship.



= Many toone relationship.



= Many to many relationship.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST. GABRIEL
LABOR OMNIA VINCIT
SINCE 1969
มหาวิทยาลัยอัสสัมชัญ

APPENDIX F

PROCESS SPECIFICATION

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST. GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

```
Process 3.1     Retrieve payment information
Begin
        Open Payment file
        Open Customer file
        Read Order information
        If      customer.customer_no = payment.customer_no and
                customer.customer_no = order.customer_no then
                Calculate amount owing
        Else
        Read new record
        End
End.
Process 3.2     Calculate amount owing
Begin
        Total = 0
        A = 0
        B = 0
        Total = A + B
        Read A from payment file
        Read B from customer file
        Total = A + B
        Print Total
        Save Order record in Order file
        Close Order file
End.
```

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Process 4.1.1 Retrieve medical & supply and warehouse information

Begin

Open warehouse file

Open medical & supply file

Read order record

If medical&supply.item_no = order.item_no

Calculate allocation

Else

Read new record

End

End.

Process 4.1.2 Calculate allocation

Begin

Transform allocation information from process 4.1.1

If Quantity remaining of warehouse >= Quantity of order then

Post quantity order to allocate which is equal to "quantity order to allocate + quantity to order" in warehouse file

Post quantity allocated which is equal to "quantity allocate + order allocate quatity' in medical & supply file

Post the value order status equal to 'A' that means allocation.

Write record of allocate information into allocation file

Update value of order status into order file

Else

Post the value order status equal to 'B' that means backorder

Update order status into order file

End

Close allocation file

Close medical & supply file

Close warehouse file

Close order file

End.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Process 5.1 Retrieve inventory onhand

Begin

Open warehouse file

Open medical & supply file

Read requisition order information

If warehouse.item_no = medical & supply.item_no and

Medical & supply.item_no = allocation.item_no then

Calculate amount of requisition order

Else

Read new record

End

End.

Process 5.2 Calculate amount of requisition order

Transform request_qty, onhand avilable, item_no, request_by, request_date, minimum_qty from process 5.1

If Quantity onhand available of item <= Quantity minimum quantity of item then

Write requisition order records into requisition order file

Else

Read new record

End

Close Warehouse, Medical & supply file

Close Requisition order file

End.

```
Process 7.1  Retrieve information
Begin
        Open medical & supply file
        Open customer file
        Open quote file
        Read customer detail
        Read quote information
        Read medical & supply information
        If   customer.customer_no = quote.customer_no then
            Print Quotation Report
        Else
            Read new record
        End
End.
Process 7.2  Print Quotation Report
Begin
        Open medical & supply file
        Read medical & supply information
        If  quote.item_no = medical & supply.item_no then
            Print quotation record on report
        Else
            Read new record
        End
        Close all files
End.
```

```
Process 8.1  Retrieve information
Begin
        Open customer file
        Open order file
        Read customer detail
        Read order information
        If  customer.customer_no = order.customer_no then
            Print Customer Order Report
        Else
            Read new record
        End
End.
Process 8.2  Print Customer Order Report
Begin
        Open medical & supply file
        Read medical & supply information
        Get order information
        If  order.item_no = medical & supply.item_no then
            Print order record on report
        Else
            Read new record
        End
        Close all files
End.
```

Process 9.1 Retrieve information

```
Begin
        Open customer file
        Open allocation file
        Open order file
        Read customer detail
        Read allocation information
        Read order information
        If  (customer.custmer_no = allocation.customer_no)
            and (allocation.order_no = order.order_no) then
            Print Allocation Report
        Else
            Read new record
        End
End.
```

Process 9.2 Print Allocation Report

```
Begin
        Open medical & supply file
        Read medical & supply information
        Get order allocation information from file.
        If  allocation.item_no = medical & supply.item_no then
            Print allocation record
        Else
            Read new record
```

End

Close customer file.

Close allocation file.

Close order file.

End.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Process 10.1 Retrieve information

```
Begin
        Open   customer file
        Read customer detail
        If   customer_sts = "record found" then
            Print Customer Details Report
        Else
            Read new record
        End
End.
```

Process 10.2 Print Customer Details Report

```
Begin
        Get customer detail
        If   customer_no <> 0 then
            Print customer detail record on report
        End
        Close customer file
End.
```

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
มหาวิทยาลัยอัสสัมชัญ

Process 12.1 Retrieve information

```
Begin
    Open issues file
    Open medical & supply file
    Read issues information
    Read medical & supply information
    If issues.item_no = medical & supply.item_no then
        Print Monthly Sales Report
    Else
        Read new record
    End
End.
```

Process 12.2 Print Monthly Sales Report

```
Begin
    Open salesperson file
    Read salesperson information
    Get sales information
```

Process 13.1 Retrieve information

Begin

Open requisition file

Open medical & supply file

Read medical & supply information

Read request record

If requisition.item_no = medical & supply.item_no then

Print Requisition Order Report

Else

Read new record

End

End.

Process 13.2 Print Requisition Order Report

Begin

Get requisition information

Print requisition information of report

End.

Close all files.

APPENDIX G

INPUT SCREEN

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST. GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

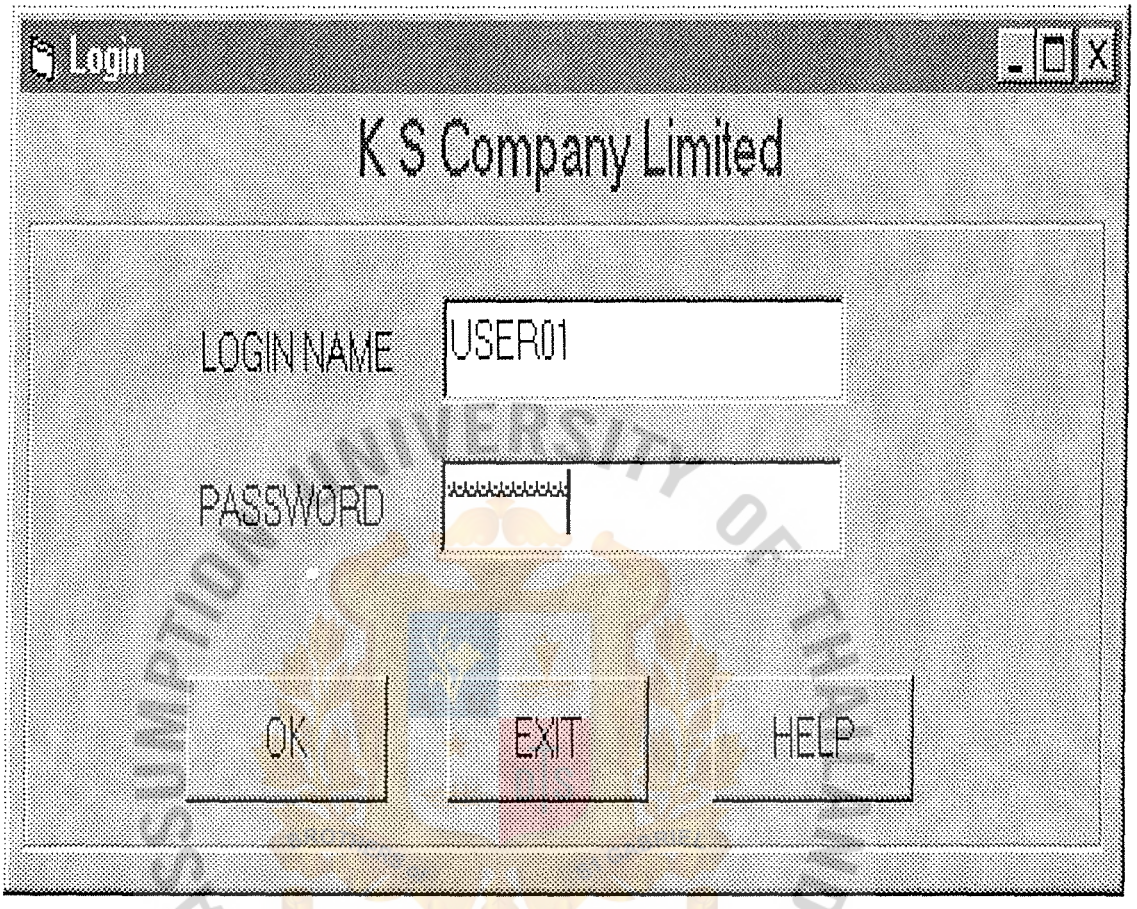


Figure G.1. System Screen for User Login.

LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Figure G.2. Main Menu.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

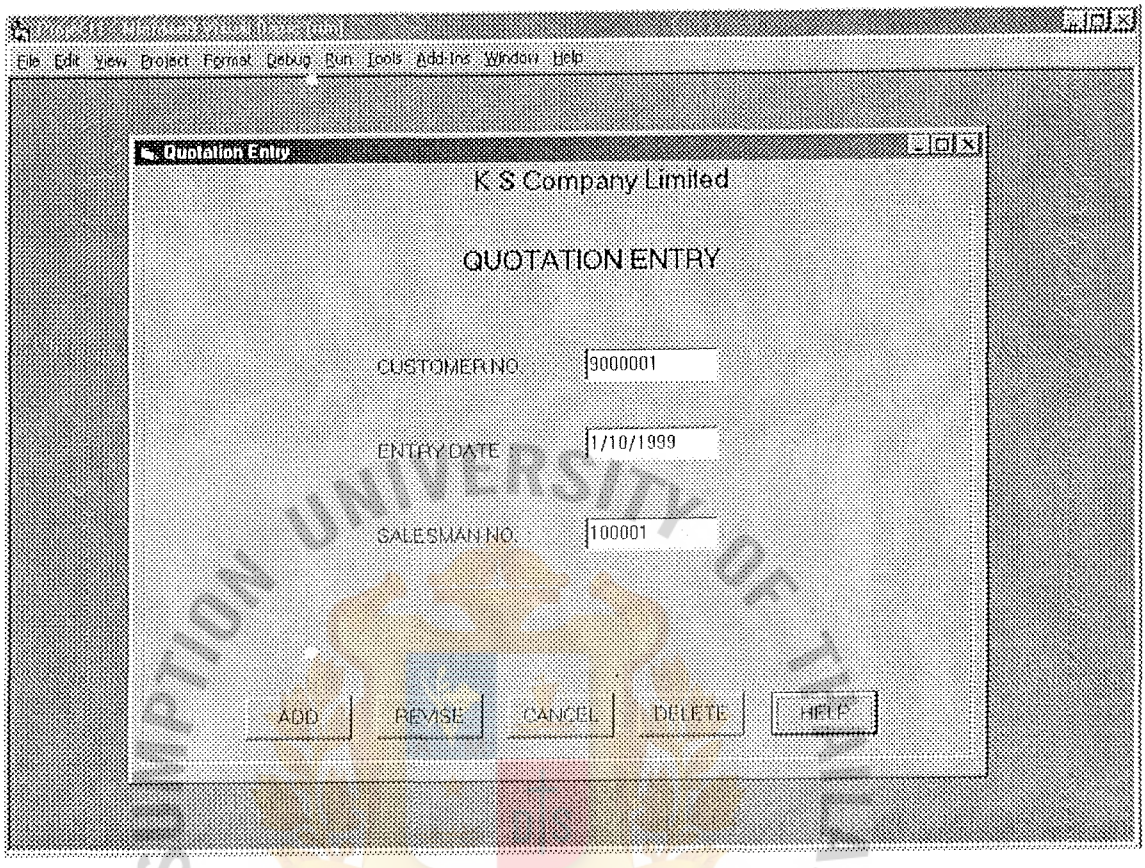


Figure G.3. Quotation Entry Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
OMNIA
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

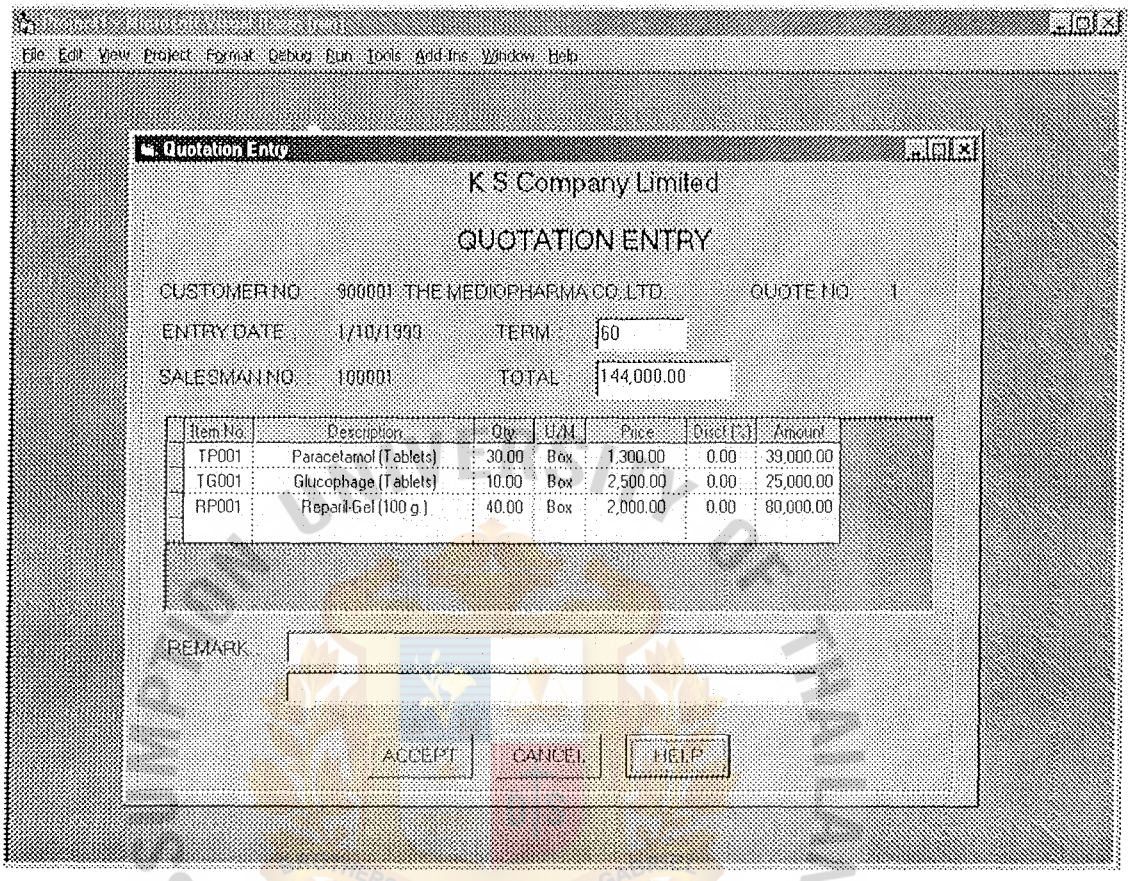


Figure G.4. Quotation Entry (Detail) Input Screen.

SINCE1969
มหาวิทยาลัยอัสสัมชัญ

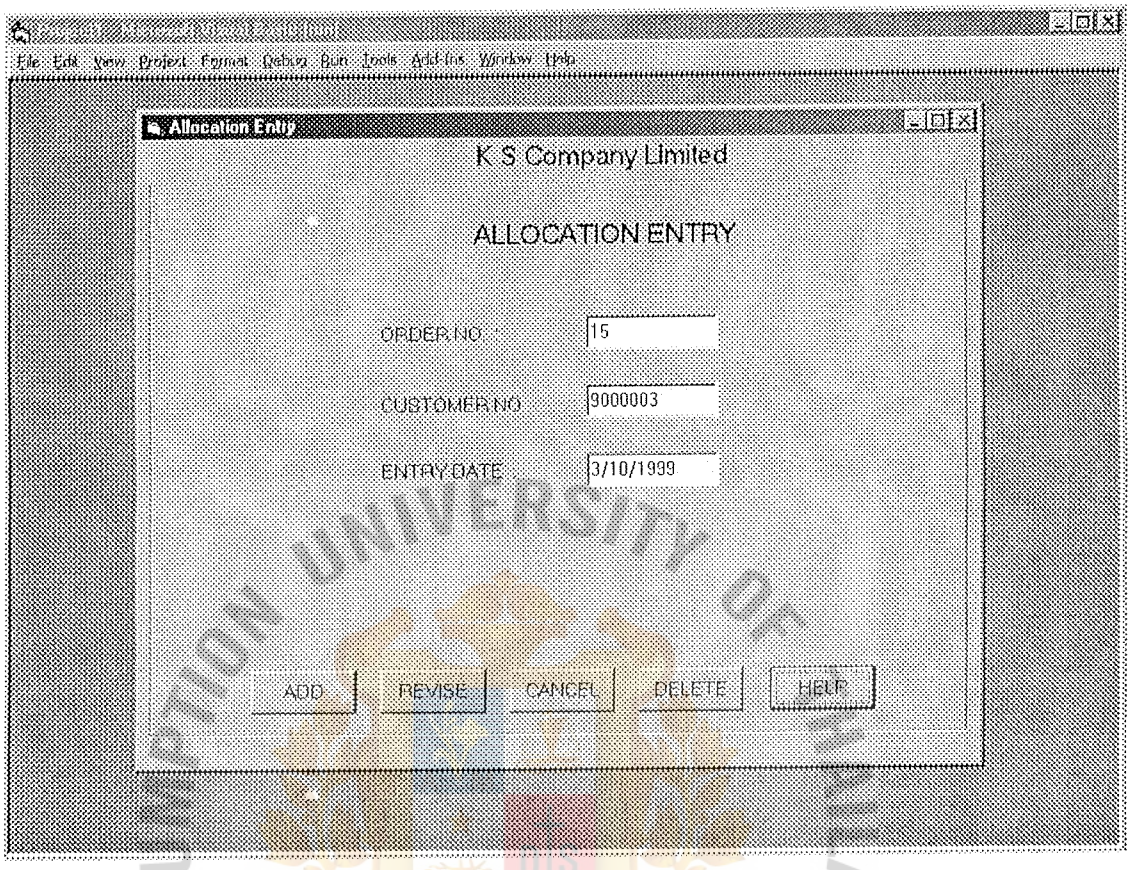


Figure G.5. Allocation Entry Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

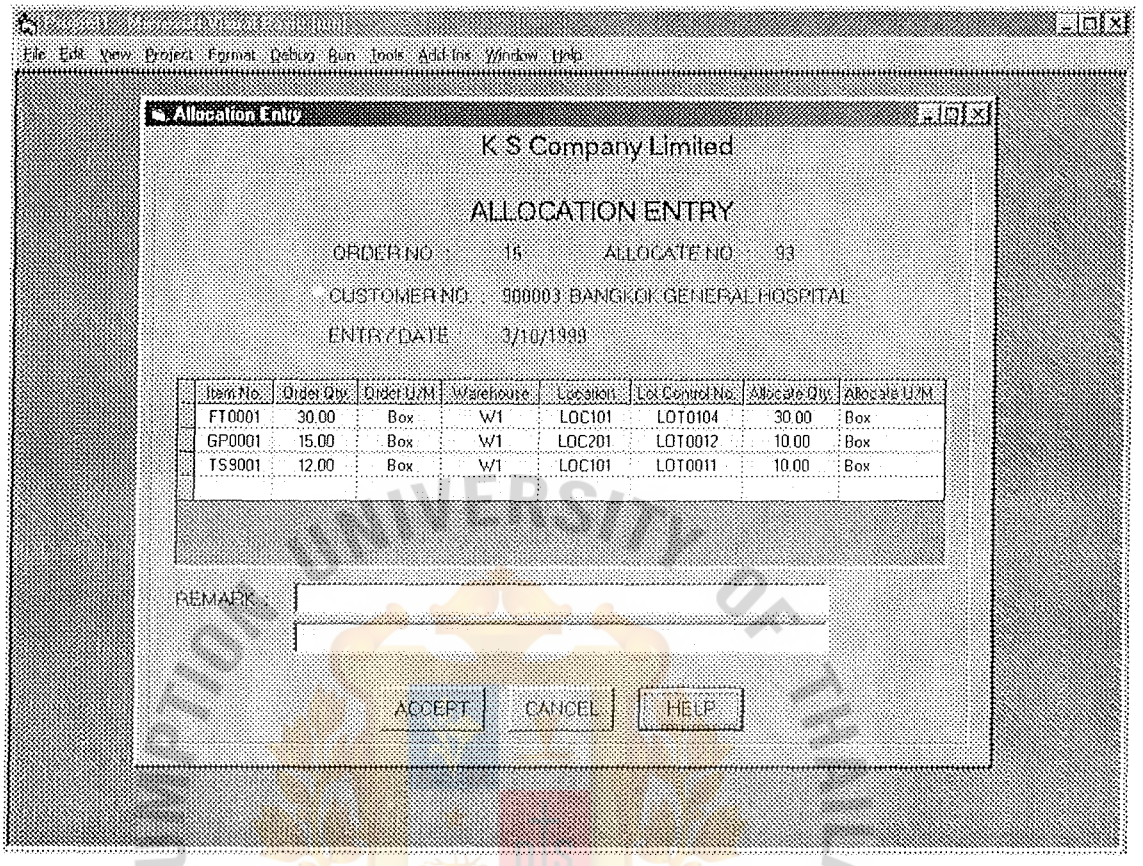


Figure G.6. Allocation Entry (Detail) Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

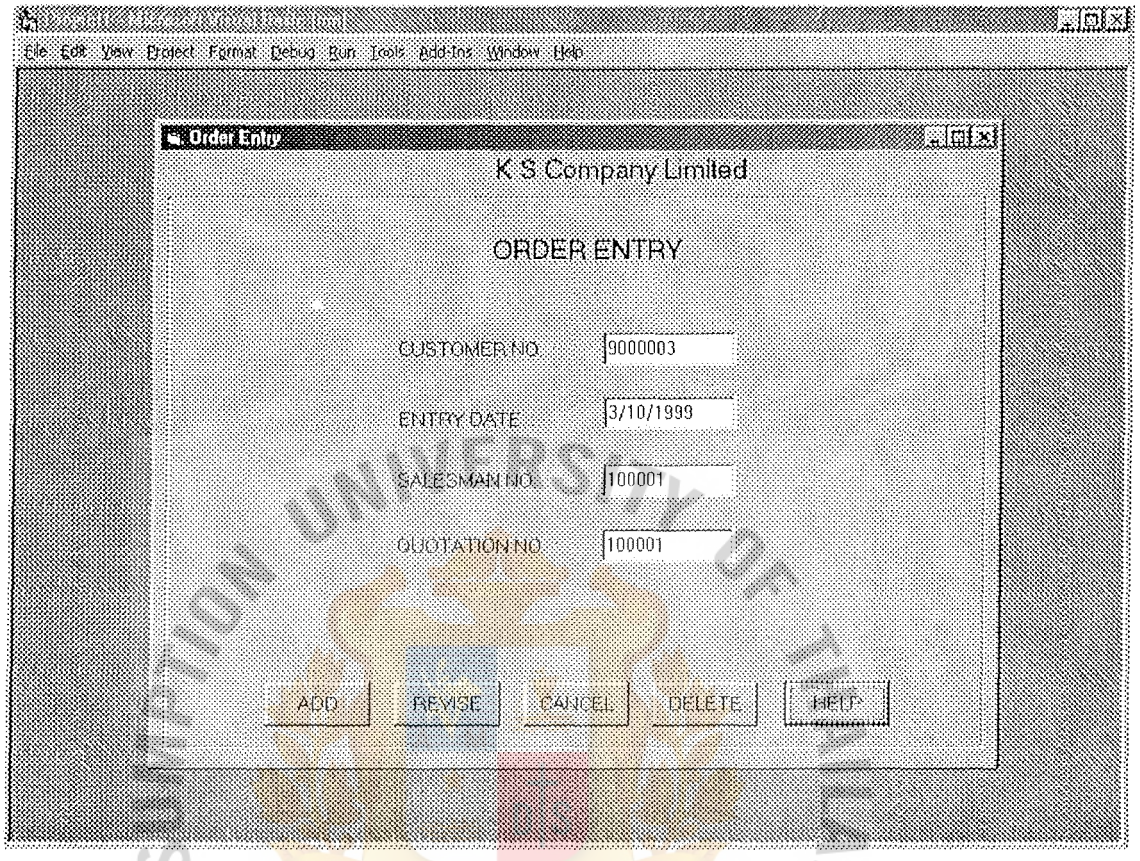


Figure G.7. Order Entry Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
OMNIA
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

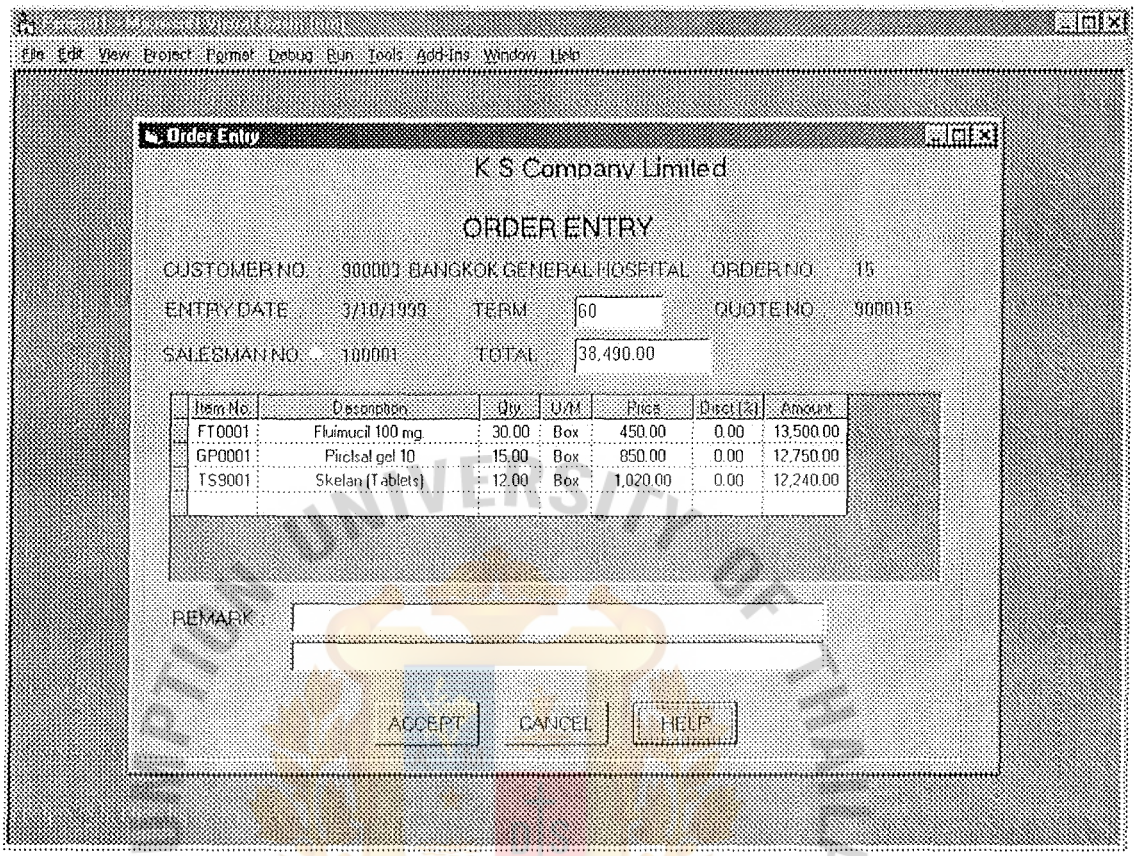


Figure G.8. Order Entry (Detail) Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
OMNIA
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

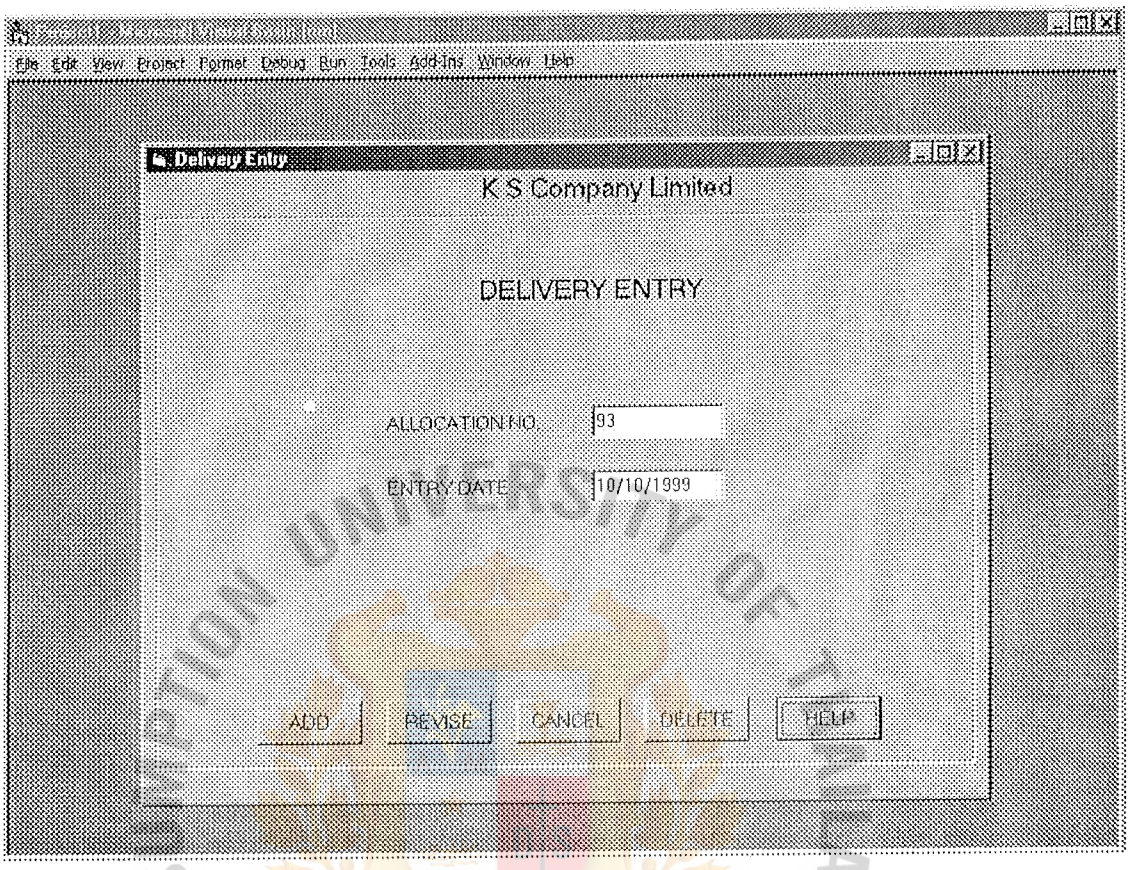


Figure G.9. Delivery Entry Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
OMNIA
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

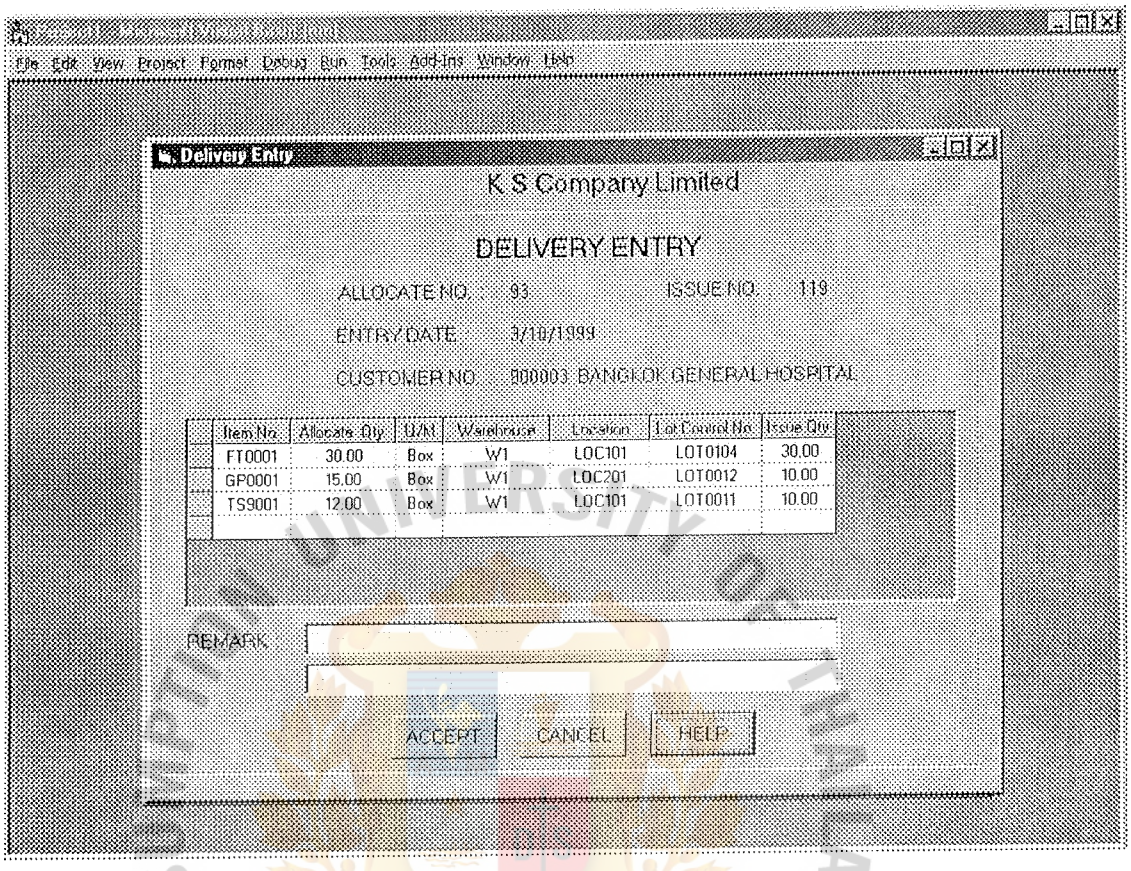


Figure G.10. Delivery Entry (Detail) Input Screen.

BROTHERS OF ST GABRIEL
OMNIA
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

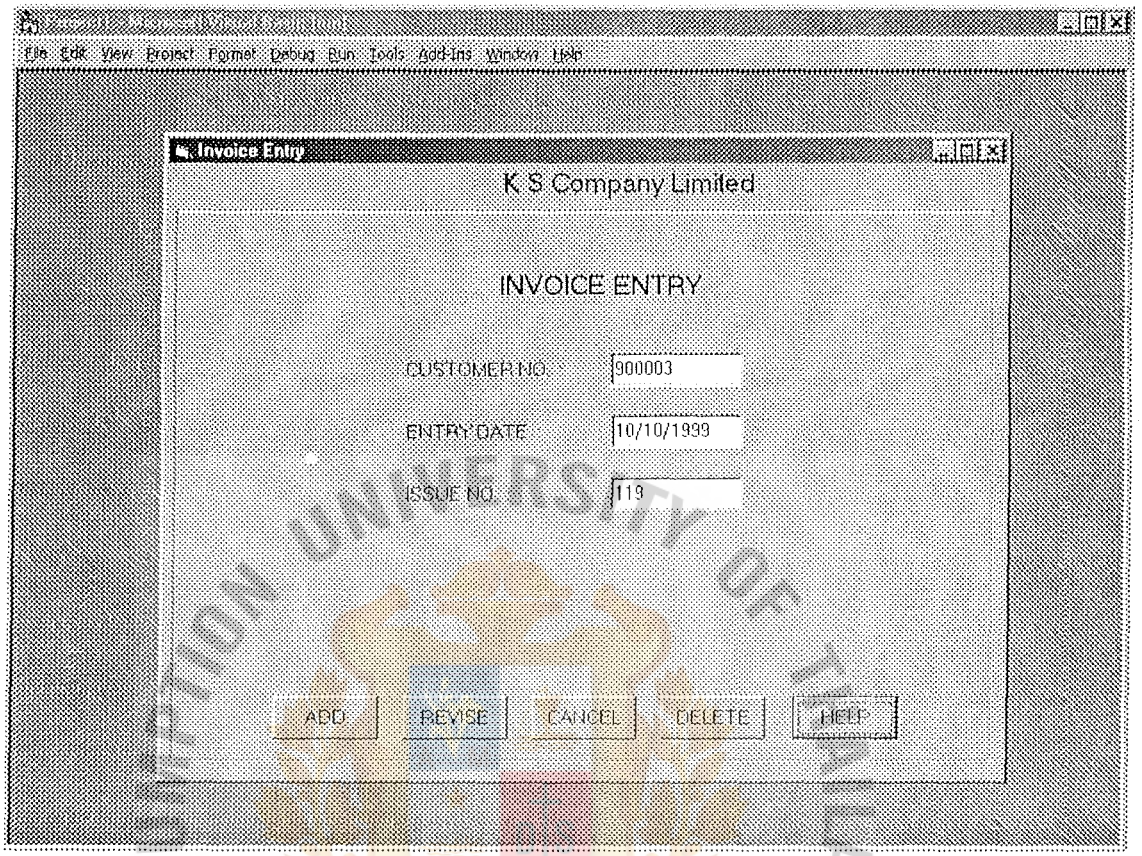


Figure G.11. Invoice Entry Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
OMNIA
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

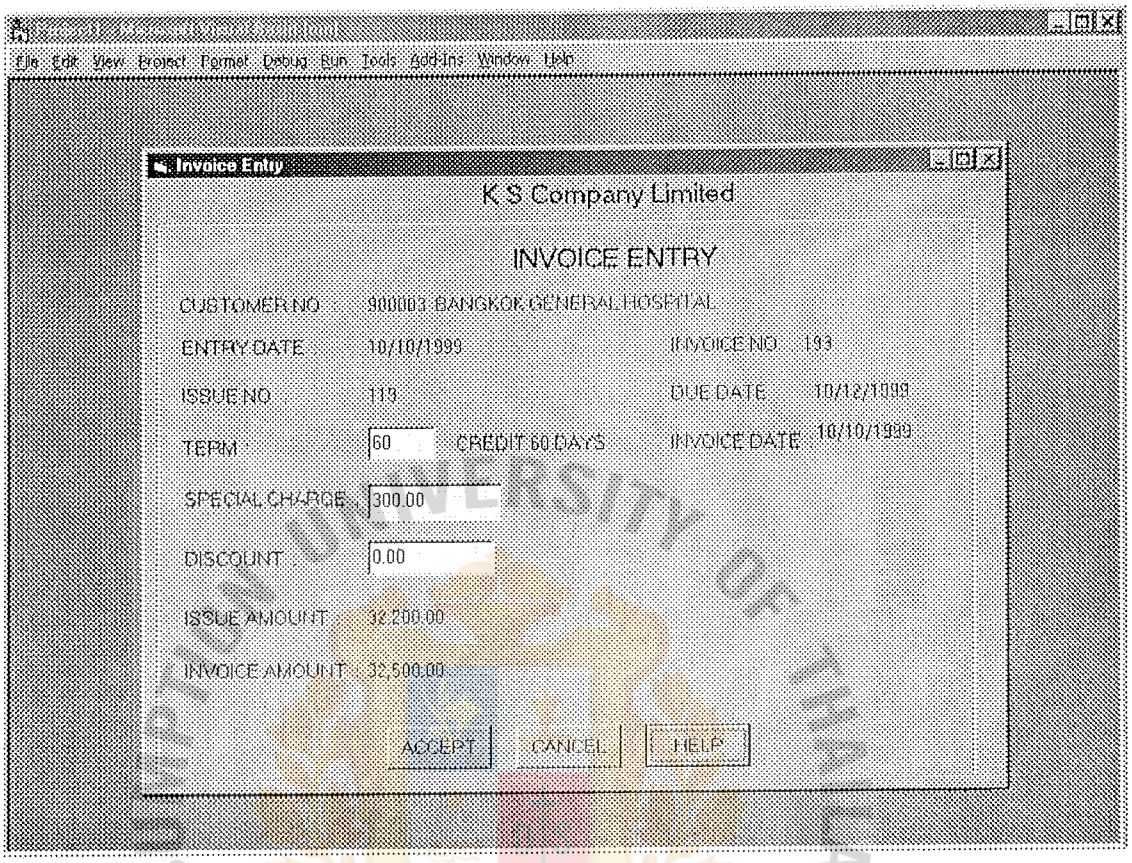


Figure G.12. Invoice Entry (Detail) Input Screen.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABORE ET INGENIO
OMNIA
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

APPENDIX H

USER MANUAL

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

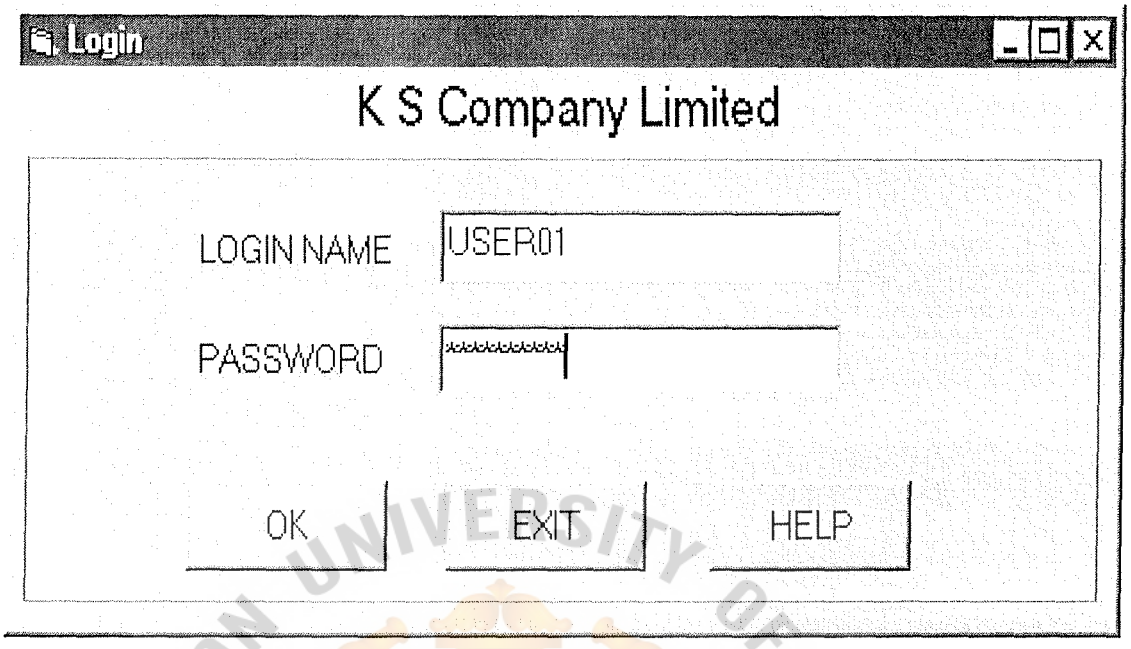


Figure H.1. System Screen for User Login.

Welcome to the Order Processing System of K&S Company. The user has to key in names and passwords before login to the system as shown in this Figure H.1

ASSUMPTION UNIVERSITY OF THAILAND
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

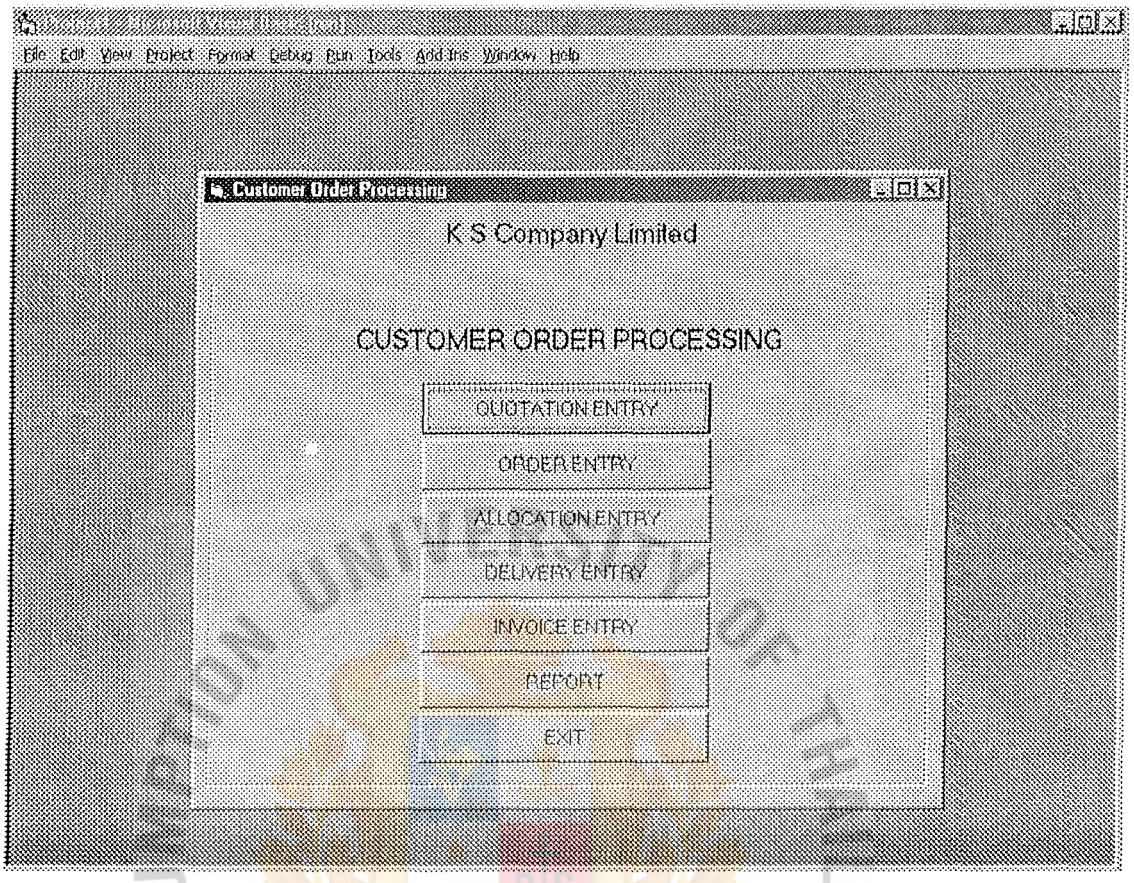


Figure H.2. Main Menu.

This is the main menu, the user can choose any button by clicking it.

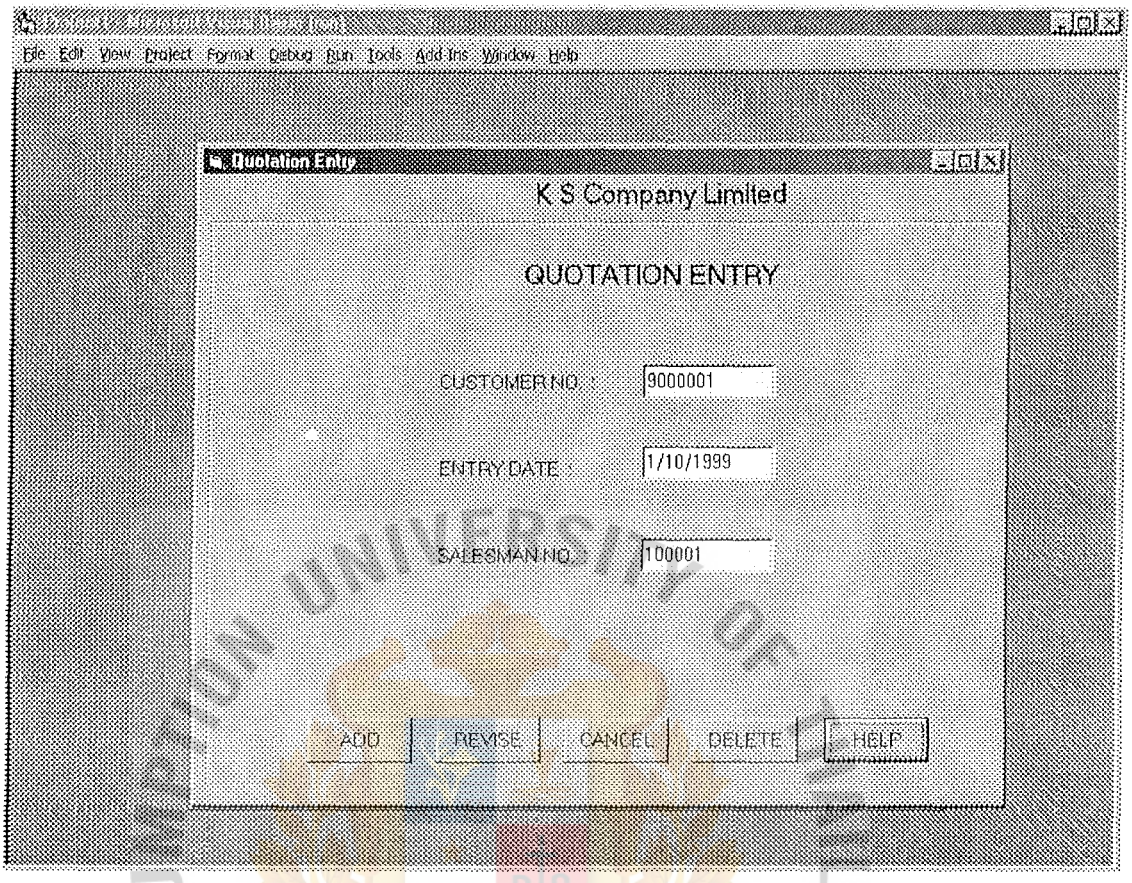


Figure H.3. Quotation Entry Input Screen.

Assume user click on the Quotation Entry Screen button, detail regarding quotation information will appear on the screen, such as customer number, entry date and salesman

Function key:

Add key	If user wants to add record. (New quotation record)
Revise key	If user wants to edit or revise the quotation record.
Cancel key	If user wants to cancel screen and return to main menu screen.
Delete key	If user wants to delete quotation record.
Help key	If user wants some help or suggestion from the system.

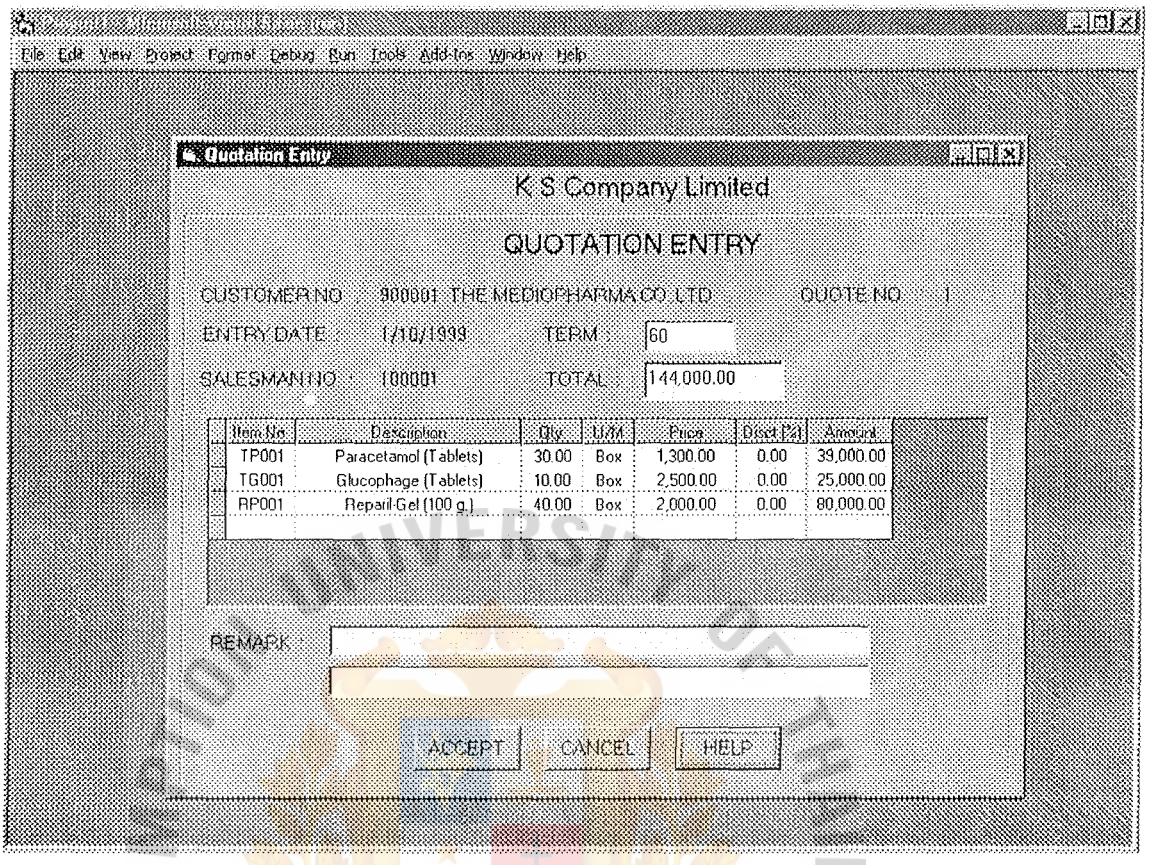


Figure H.4. Quotation Entry (Detail) Input Screen.

The user can record the detail of the quote information the screen will appear on figure H.4: Quotation Entry (Detail) Input Screen.

Detail on the screen

The user must record the information of quote which can be recorded as follows:

- Term — Term payment code of the quotation.
- Item No. — Item code, which wants to quote the customer.
- Qty. — Quantity of Item.
- U/M — Unit of Measurement of item.
- Price — Selling price
- Disct(%) — Percentage for discount by item.

- Remark Remark for Quotation.

Some fields on the screen are only displayed:

- Description Description of item which is obtained from the database.
- Amount Calculated from Qty * Price.

Function key

Accept When user entry is finished, he must click the button to complete.

Cancel If the user wants to cancel the program.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

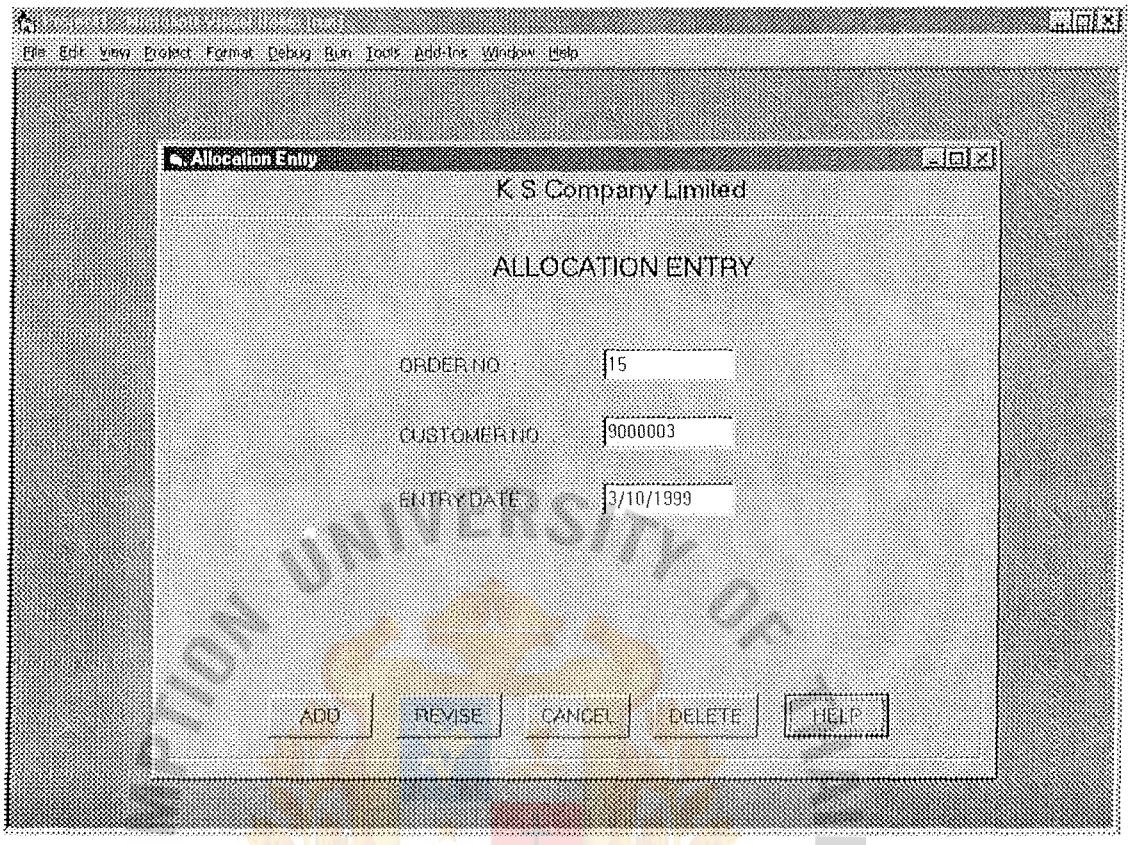


Figure H.5. Allocation Entry Input Screen.

Assume user click on the Allocation Entry Screen button from Main Menu Screen, detail regarding allocation information will appear on the screen, such as order number, customer number, and entry date.

Function key:

Add key	If user wants to add record. (New allocation record)
Revise key	If user wants to edit or revise the allocation record.
Cancel key	If user wants to cancel screen and return to main menu screen.
Delete key	If user wants to delete allocation record.
Help key	If user wants some help or suggestion from the system.

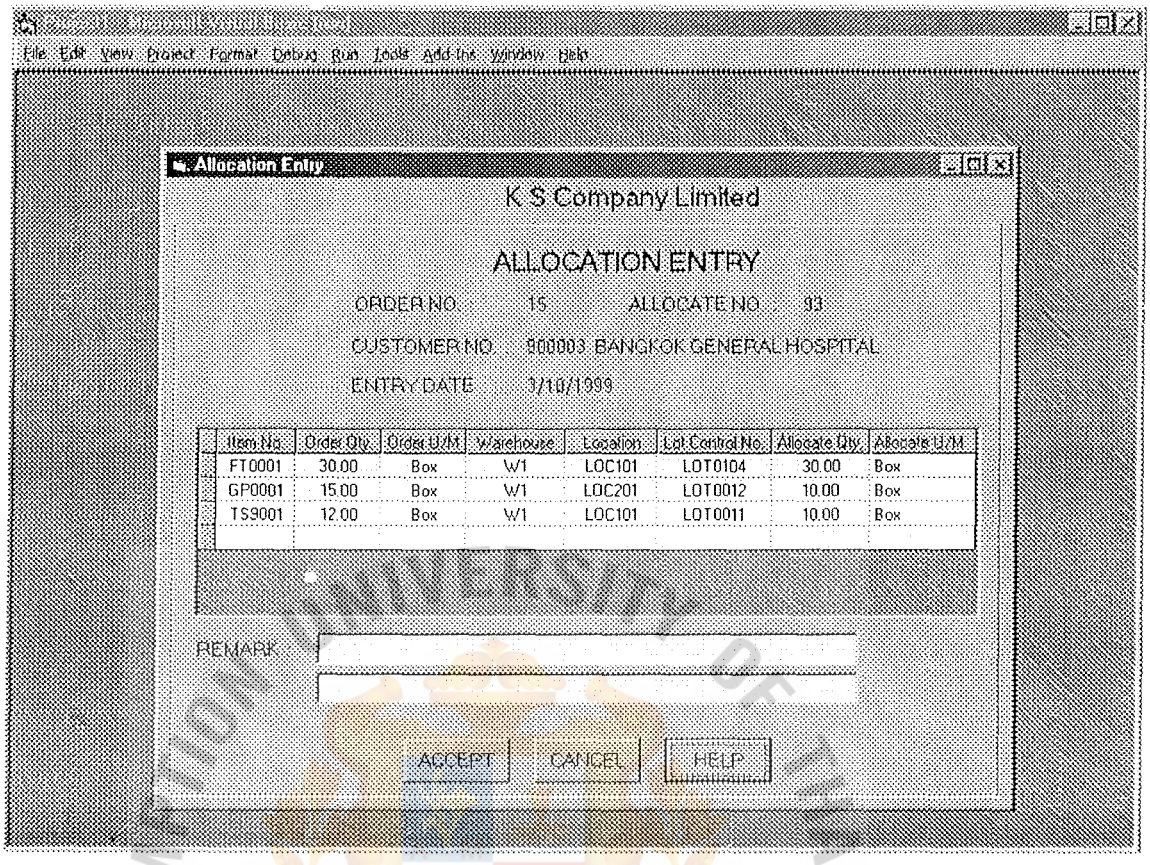


Figure H.6. Allocation Entry (Detail) Input Screen.

The user can record the detail of allocation information. A screen will appear on figure H.6: Allocation Entry (Detail) Input Screen.

Detail on the screen

The user must record the information of allocation which can be recorded as follows:

- Item No. Item code, which wants to quote the customer.
- Qty. Quantity of Item.
- U/M Unit of Measurement of item.
- Price Selling price
- Disct(%) Percentage for discount by item.
- Remark Remark for Quotation.

Some fields on the screen is only a display:

- Description Description of item obtained from the database.
- Amount Calculated from Qty * Price.

Function key

Accept	When user finishes data entry, he must click the button to completed.
Cancel	If the user wants to cancel the program.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

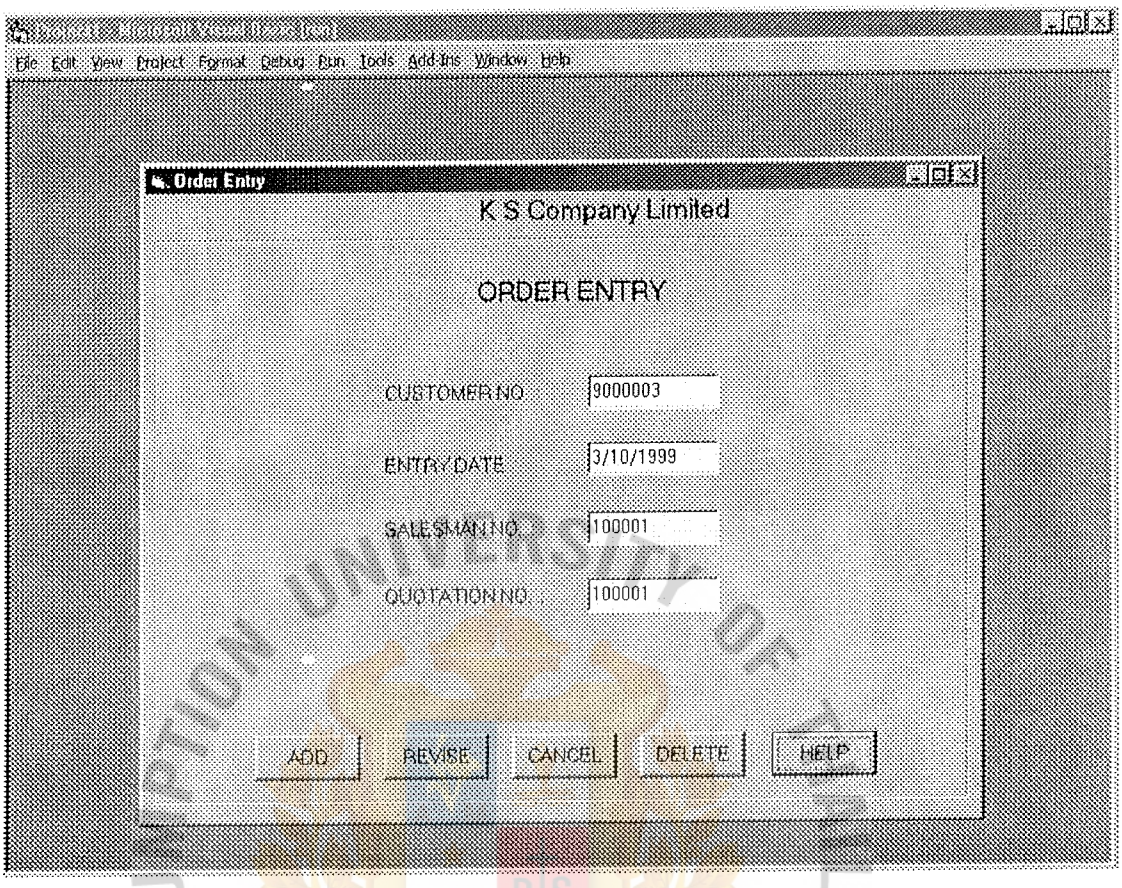


Figure H.7. Order Entry Input Screen.

Assume user clicks on the Order Entry Screen button, the details regarding order information will appear on the screen, such as customer number, entry date, quotation, and salesman.

Function key:

Add key	If user wants to add record. (New order record)
Revise key	If user wants to edit or revise the order record.
Cancel key	If user wants to cancel screen and return to main menu screen.
Delete key	If user wants to delete order record.
Help key	If user wants some help or suggestion from the system.

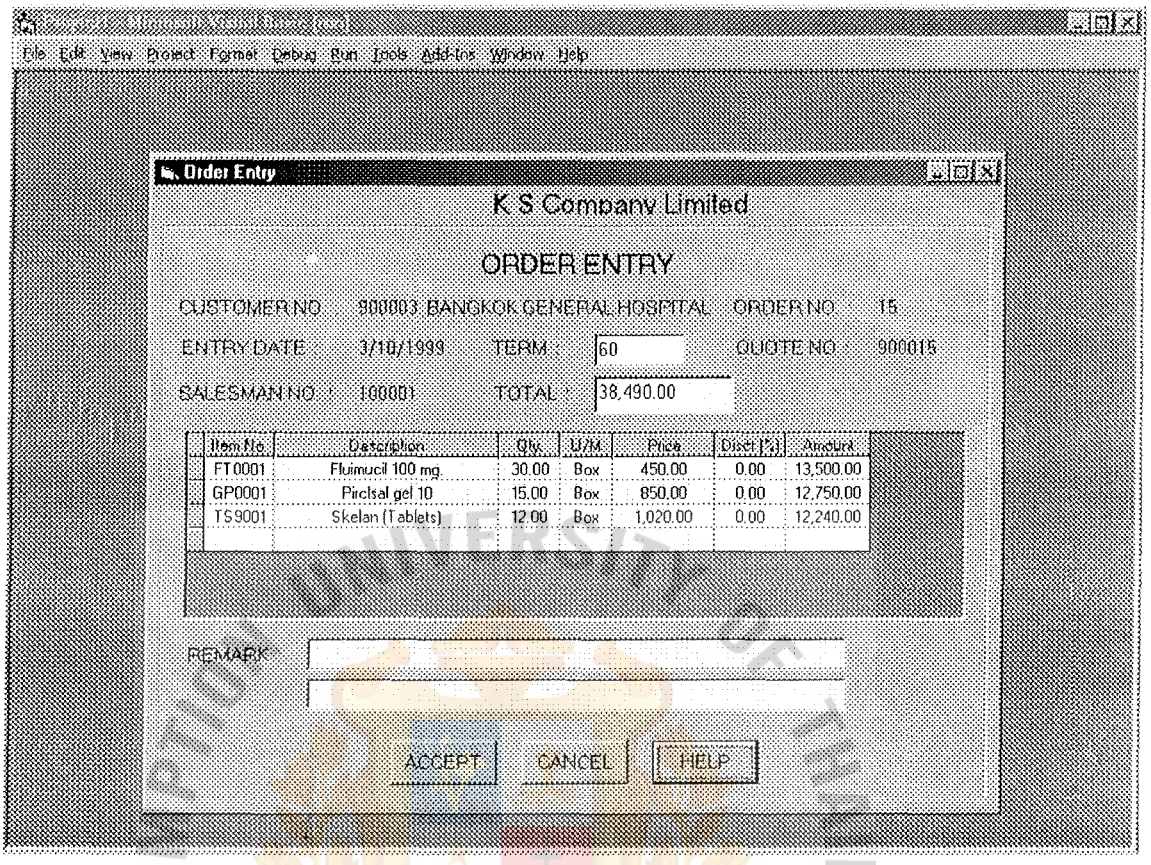


Figure H.8. Order Entry (Detail) Input Screen.

The user can record the detail of order information, a screen will appear on Figure H.8: Order Entry (Detail) Input Screen.

Detail on the screen

The user must record the information of quote which can be recorded as follows:

- Term — Term payment code of the quotation.
- Item No. — Item code.
- Qty. — Quantity of Item.
- U/M — Unit of Measurement of item.
- Price — Selling price
- Disct(%) — Percentage for discount by item.

- Remark Remark for Quotation.

Some field on the screen is only a display:

- Quote no. Refer to Quotation number.
- Description Description of item obtained from the database.
- Amount Calculated from Qty * Price.

Function key

Accept When user finishes data entry, he must click the button to complete.

Cancel If user wants to cancel the program.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

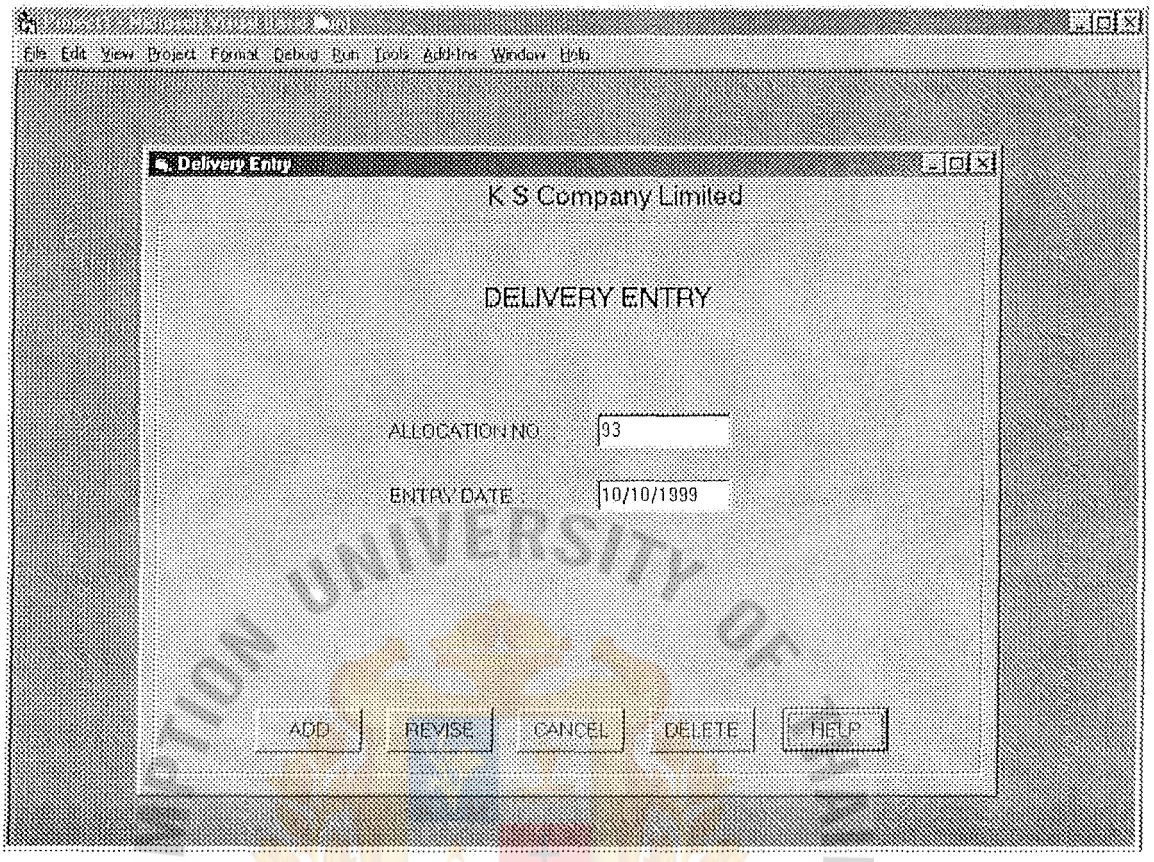


Figure H.9. Delivery Entry Input Screen.

Assume user click on the Delivery Entry Screen button, detail regarding delivery information will appear on the screen, such as allocation number and entry date.

Function key:

Add key	If user wants to add record. (New delivery record)
Revise key	If user wants to edit or revise the delivery record.
Cancel key	If user wants to cancel screen and return to main menu screen.
Delete key	If user wants to delete delivery record.
Help key	If user wants some help or suggestion from the system.

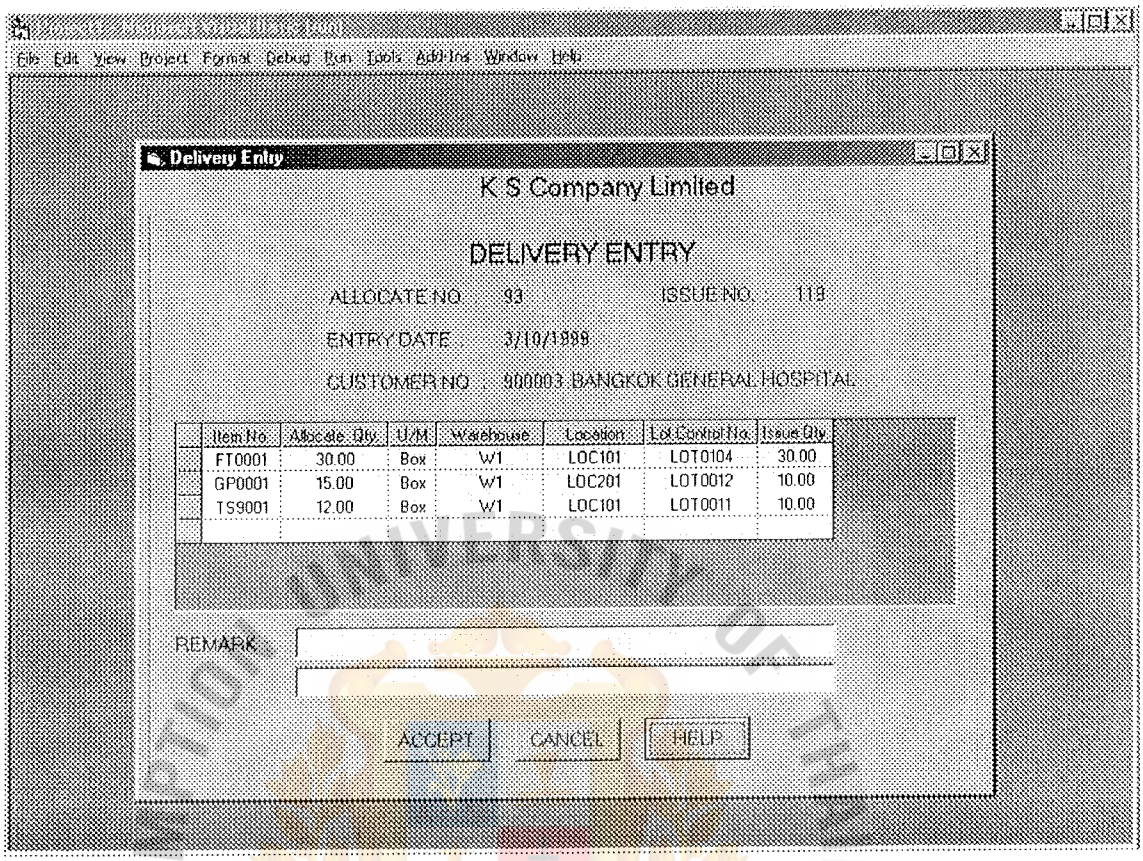


Figure H.10. Delivery Entry (Detail) Input Screen.

The user can record the detail of the delivery information. The screen will appear on Figure H.10: Delivery Entry (Detail) Input Screen.

Detail on the screen

The user must record the information of the delivery which can be recorded as follows:

- Item No. Item code, which want to deliver product to the customer.
- Warehouse Warehouse that issued the product.
- Location Location in warehouse that issued the product.
- Lot control Lot control number that issued the product.
- Issue Qty. Issue quantity of Item.

- Remark Remark for Issue number.

Some fields on the screen are only for display:

- Allocate Qty Quantity allocated in the warehouse.
- U/M Unit of Measurement of item.

Function key

Accept When user's entry finished, he must click the button to complete.

Cancel If the user wants to cancel the program.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Assumption of details on the screen, the user want to generate invoice for customer number 900003 with which the invoice date is 10/10/1999 referring to issue number 119.

Function key

Add key	If user wants to add record. (New quotation record)
Revise key	If user wants to edit or revise the quotation record.
Cancel key	If the user wants to cancel the screen and return to the main menu screen.
Delete key	If user wants to delete quotation record.
Help key	If user wants some help or suggestion from the system.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

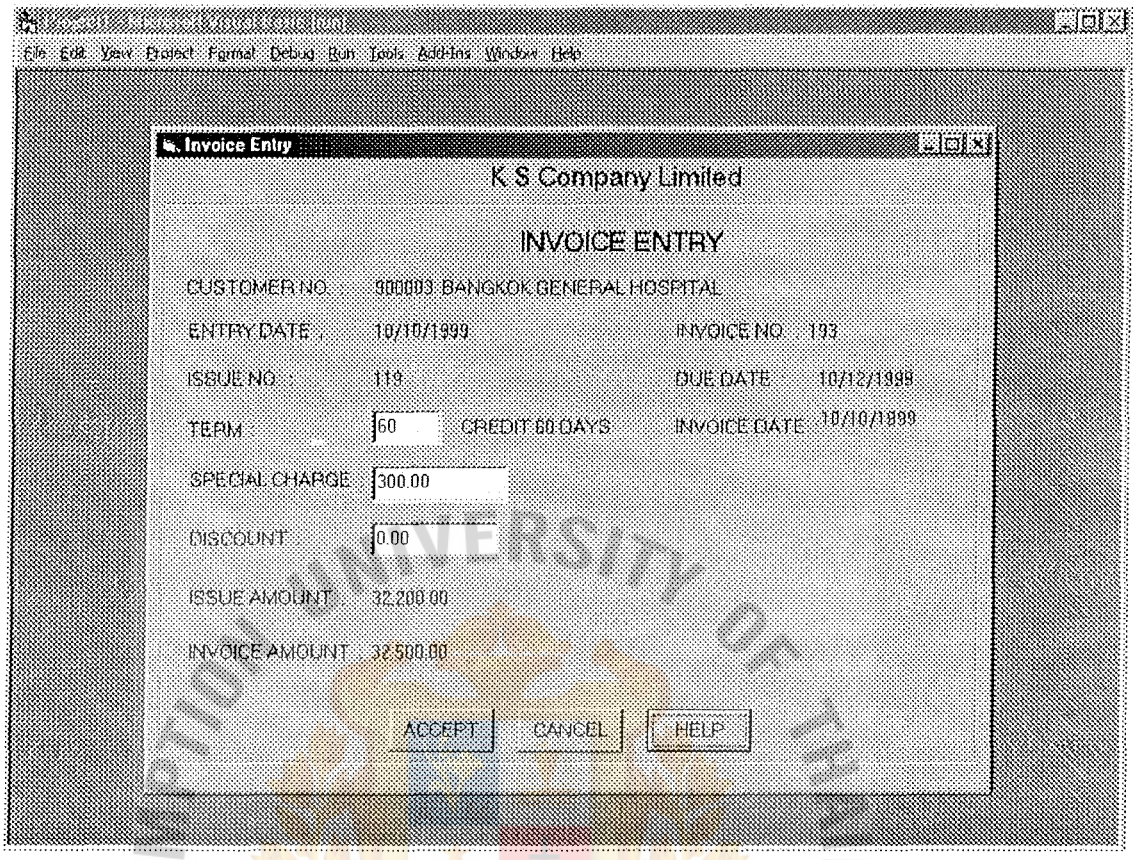


Figure H.12. Invoice Entry (Detail) Input Screen.

From Figure H.11. Invoice Entry Input Screen, user input information on the screen and clicks the add button. This screen will show which user must input information of invoice about terms of payment, special charge, and discount.

Detail on the screen

Customer no.	Customer number and his name
Entry date	Date of entry
Issue no.	Issue number
Invoice no.	invoice number generated by the system.
Due date	Due date of invoice calculated from terms payment and invoice date.

Invoice date	Date of invoice.
Term	Term payment of invoice.
Special Charge	Charge for delivery of the product.
Discount	Discount percentage of invoice.
Issue amount	Refers to cost of issue number.
Invoice amuont	Total amount on invoice.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

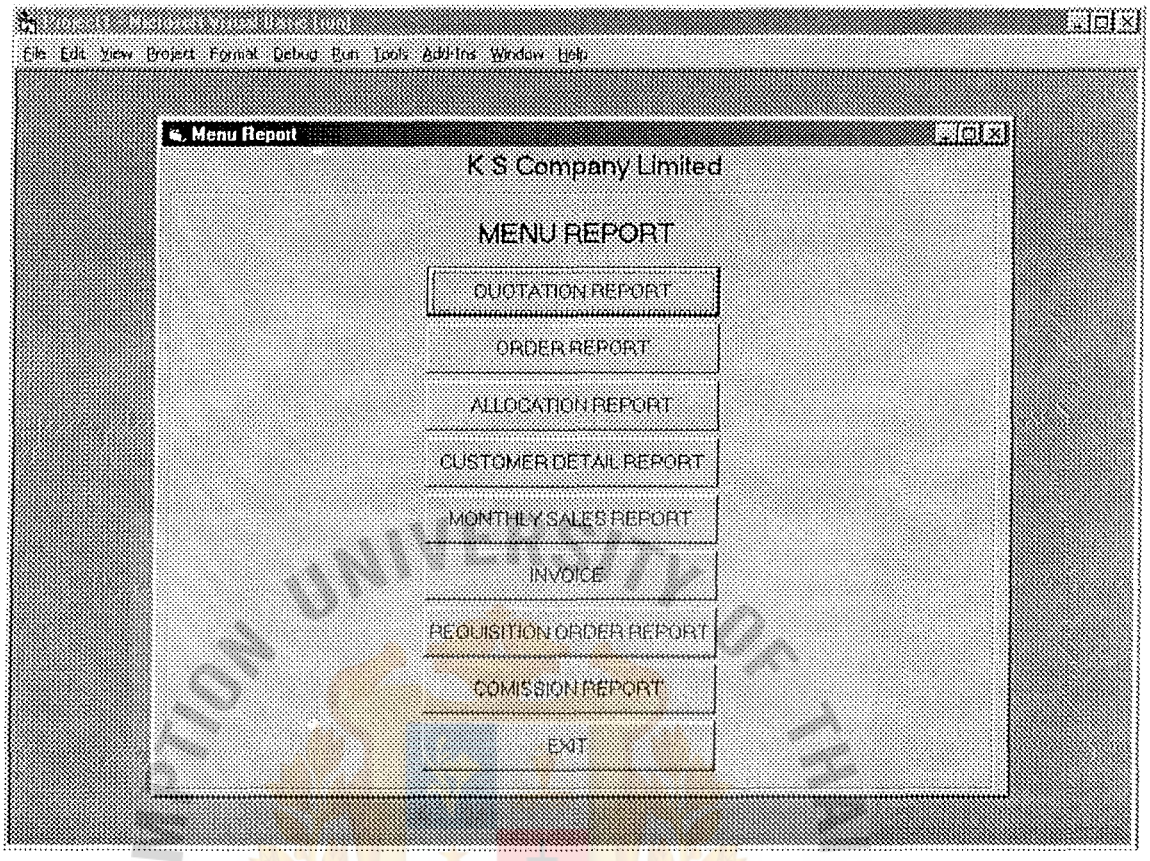


Figure H.13. Menu Report Screen.

This is the preview report menu. The user can click any button that he/she would like to produce reports.

APPENDIX I

ELECTRONIC DATA INTERCHANGE

ASSUMPTION UNIVERSITY OF THAILAND
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Electronic Data Interchange (EDI)

Definition

The concept of EDI: the use of direct links between computers, even between computers on different sites, to transmit data that would otherwise usually be sent in printed form. EDI is most often thought of as replacing standardized documents such as order forms, delivery notes, and invoices, the technique is highly flexible. EDI can be used for a large number of applications in a very wide range of industries. The EDI model involves trading partners. These are the organizations who want to exchange data; they may be customer and supplier, two companies with a common customer, or two banks whose customers want to deal with one another.

The flow of data between trading partners is divided into exchanges. The simplest form of exchange is where one partner wants to send a single message to the other, and to know whether or not the other received it, but there may be subsequent messages, in some way linked to the first, that form part of the same exchange.

Each exchange is divided into message. It is on the message that mot EDI standards concentrate. If we can pass messages successfully and reliably from one partner to the other, then we can operate EDI. Each message has an originator who sends the message, and a destination, which is the other trading partner. It is possible for one message to have several destinations, although usually the protocol of the EDI system will not allow this.

EDI Standard in the Project

The protocol is the set of rues which lays down how messages are structured, what data must be present and in what order, and what additional information can be given if wanted. The protocol is part of an EDI standard. Other parts of the standard will define the electrical interface, and how identification numbers and passwords for

originators and destinations are allocated. In this project used EDIFACT standard. EDIFACT is standard of the international business messages.

EDI Process in the Project

This project is used EDI technology in part of quotation entry and order entry process.

EDI Benefit

The main ones are:

1. Faster transaction turn-around: Customers do not have to wait days for an order to come through.
2. Less paperwork: User does not have to make copies of everything they send out.
3. Saving in staff time
4. Fewer errors
5. Improved service to customers

EDI Security

The main aims of the security function in an EDI system are to ensure that:

1. Nobody can leave a 'fake' message on the system without it being easily detected.
2. Nobody can alter or delete any message while it is in the system.
3. No user system can receiver or read messages not intended for it.
4. No activity by one user can affect any other user.

For an EDI system to be secure, it must:

1. Only be accessible using special software, where the software itself cannot be copied or used to transmit data other than the EDI messages from a particular source.

2. Positively check the identity of every computer logging in to the EDI system. Some access control systems simply assume that any system that gives a correct password sequence is legitimate

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

BIBLIOGRAHPY

1. C.J. DATE, An Introduction to Database Systems, Volume I Fifth Edition by Addison – Waley Publishing Company, 1990

2. EDWARD YOURDON, Modern Structure Analysis, Prentice-Hall International, Inc., 1989

3. ELMASRI,R, Fundamentals of Database Systems., the Bannjamin/Cumming Publishing Company, Inc., 1989

4. KENALL E. and KENALL J.E., System Analysis and Design, Prentice-Hall International, Inc., 1989

5. PAGE-JONES, M,. The Practical Guide to Structure System Design, Prentice-Hall International, Inc., 1989

6. SENN,J.A., Analysis and Design of Information System, McGRAW-HILL Publishing Company, 1989

7. STAMPER, DAVID A., Business Data Communications, Third Edition by The Bennjamin/Camming Publishing Company, 1990

8. SOKOL, PHYLLIS K., From EDI to Electronic Commerce : a business initiative, McGRAW-HILL Company, 1995

9. MIKE HENDRY, Implementing EDI, Artech House Boston, London, 1993