



# ORDERING INFORMATION SYSTEM FOR FROZEN SEAFOOD MANUFACTURING

by

Mr. Boonsak Purinunthakorn

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

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

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Project Title                      Ordering Information System for Frozen Seafood Manufacturing

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Academic Year                 November 2000

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

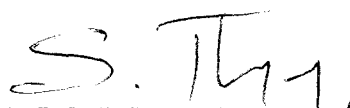
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## ABSTRACT

Nowadays the computer has been widely used in every field of the job. As there is rapid growth expansion and the competition among the world's marketing, it is essential for the company to be alert; and therefore, the computer information system have to be developed to help the operation, decision, and management.

The Ordering Information System (OIS) was developed to integrate the business application together in order to increase the efficiency of work and provide accurate and timely information for all management. This project was designed to improve the operation at Sales and Marketing Department. Therefore the manual system to manage customer orders will be replaced by the computerized system to reduce the order processing time and improve the accuracy of customer orders. The proposed system can also reduce the costs of using paper, and can generate the reports to support management with efficient information that helps management to be more accurate in planning and decision making.

## ACKNOWLEDGEMENTS

This project can be finished with the assistance of many people. The writer would like to express his deep gratitude to his advisor, Dr. Thotsapon Sortrakul for all of his valuable time in contributing comments and suggestions. He would like to thank the project committee members of Graduate School of Computer Information Systems at Assumption University for their advice. Finally, he would like to thank other people who are involved but not previously mentioned.



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## **I. INTRODUCTION**

### **1.1 Background of the Project**

The major responsibility of Sales and Marketing Department in any company is revenue generation and profitability for the company. For the Sales and Marketing Department, the customer's details, sales analysis and accuracy of the orders are essential to evaluate sales performance and forecasting the market. In addition, the sales analysis is also useful for Managing Director to make decision in the business. Consequently, a good information system is a strategic tool to achieve competitive advantage against competitors in the market.

As this rapid growth expansion and the competition among the world's seafood producers, it is essential for the company to be alert and therefore the computer information system have to be developed to help the operation, decision, and management.

Ordering Information System (OIS) is designed to integrate the business application together in order to increase the efficient of work and provide accurate and timely information for all of management.

### **1.2 Objectives of the Project**

The objectives of the Order Information System are as follows:

- (1) To design the computerized system for ordering process of KST.
- (2) To produce reports that cover major aspects and satisfy the management requirements.
- (3) Reducing errors and improving the accuracy of data input, customer details, and customer orders.
- (4) Reducing the costs of paper used.



- (5) To reduce the order processing time.
- (6) To support management with efficient information that helps management to be more accurate in planning.

### **1.3 Scope of the Project**

The project will cover the order processing tasks focused on management of sales orders from customer. The scopes of the project are as follows:

- (1) Study and analyze the existing order processing system.
- (2) Problem statements.
- (3) Analyze the proposed system.
- (4) Design database.
- (5) Design inputs and outputs.
- (6) Design user interface.
- (7) Implement the system.

### **1.4 Project Plan**

The project schedule is provided and shown in Figure 1.1

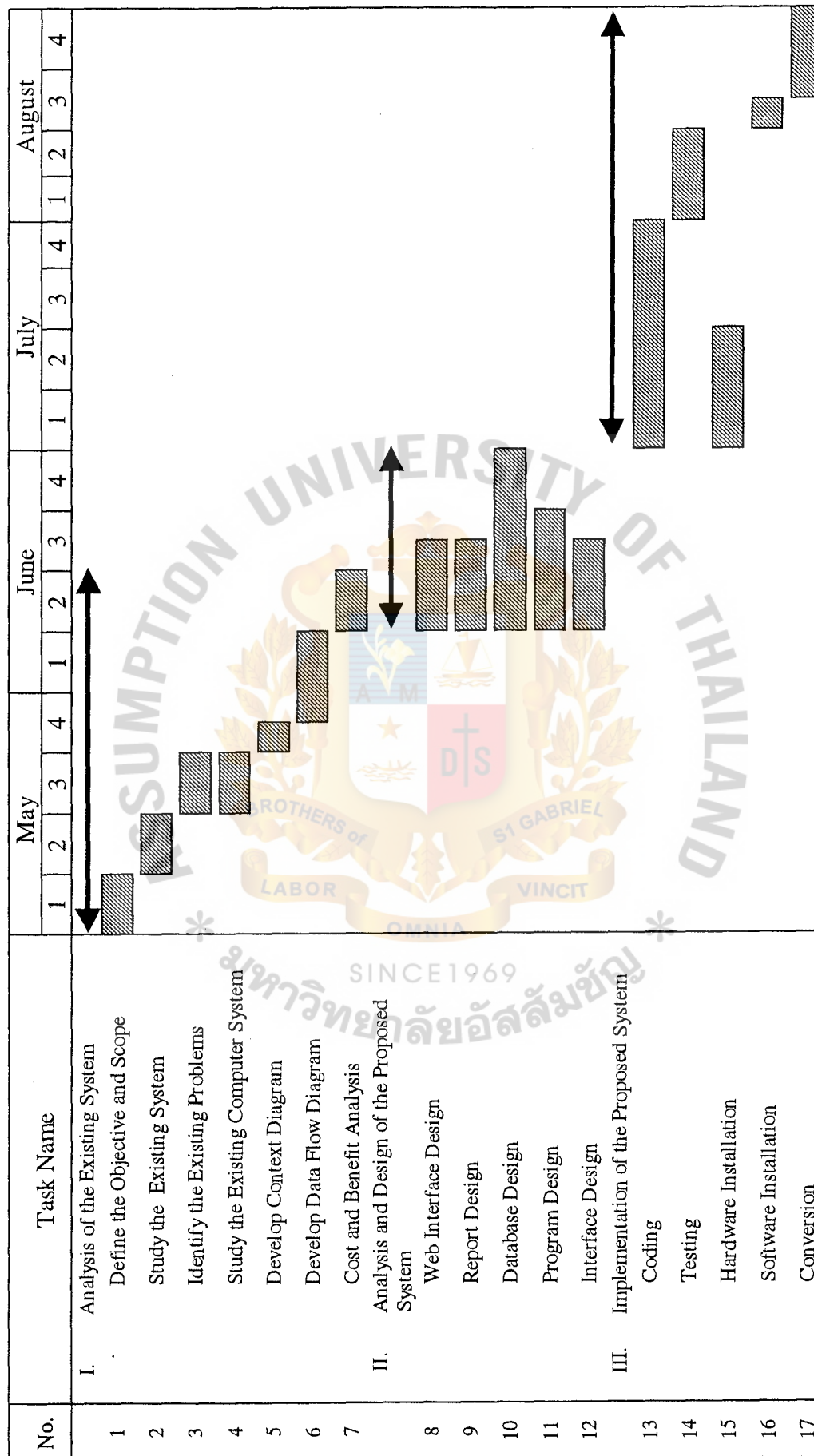


Figure 1.1. Project Schedule.

## **II. EXISTING SYSTEM**

### **2.1 Background of the Organization**

With the fund raised from the investing public through the Stock Exchange of Thailand, Kiang Huat Sea Gull Trading Frozen Food Public Co., Ltd. (KST) will be able to direct its skills and experience in the seafood processing sector to expand its business further and provide high returns for its employees, its shareholders and for the economy of Thailand.

KST was founded in 1978 with a registered capital of 5 million Baht to produce frozen seafood products. Since that time, the Songkhla-based company has expanded and consolidated its operations consistently. KST today, takes one more step forward to be the member of the Stock Exchange of Thailand.

The company takes pride in being able to export all its products. The market for the company's seafood can be classified into three categories:

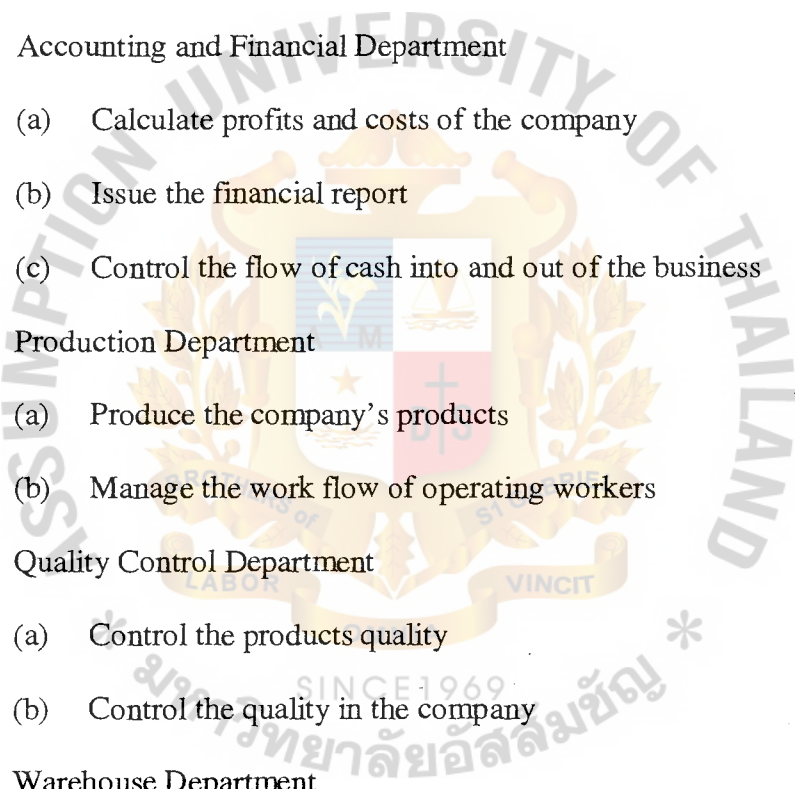
Regular market: KST's existing and well-established market includes Japan, USA and Western Europe.

New market: The company has successfully penetrated a number of new markets. These currently include Australia, France, Canada, Singapore, Hong Kong and Malaysia.

Potential market: KST is exploring additional markets. Examples of these markets are Taiwan, Korea, Scandinavian countries and Eastern Europe.

### **2.2 Existing Ordering Information System**

The organization structure of KST is shown on Figure 2.1. All department managers report directly to the managing director. The functions of each department are described below:

- 
- (1) Sales and Marketing Department
- (a) Making sale to the target
  - (b) Produce the requisition order
  - (c) Issue the invoice
- (2) Personnel Department
- (a) Managing the employees' information
  - (b) Evaluate the employees' attendance
- (3) Accounting and Financial Department
- (a) Calculate profits and costs of the company
  - (b) Issue the financial report
  - (c) Control the flow of cash into and out of the business
- (4) Production Department
- (a) Produce the company's products
  - (b) Manage the work flow of operating workers
- (5) Quality Control Department
- (a) Control the products quality
  - (b) Control the quality in the company
- (6) Warehouse Department
- (a) Collect all data of products in the warehouse
  - (b) Manage the optimal level of stock
  - (c) Deliver products to the customer
- (7) Raw-Material Purchasing Department
- (a) Purchase raw-materials to support the Production Department, and  
Sale and Marketing Department



(8) Engineering Department

- (a) Install and take care of all machines that are used in the company
- (b) Provide consultation and technical support to all departments

Currently, all ordering processes are done manually. The processes of the manual ordering system start when the customers send their orders to the Sales and Marketing Department. All orders are managed by Administrative Works to generate Purchase Order (P/O) that pass through Production and Warehouse Department, and to generate invoices that pass through Accounting and Finance Department. The details in P/O are such as: customer name, product name, brand name, quantity, product specifications, packing, shipping date, shipping destination, and other requirements of the customer. After customer received the products and settled the invoice, the administrative works will pass the statements to Accounting and Finance Department to generate receipt. The context diagram of existing system is shown in APPENDIX A.

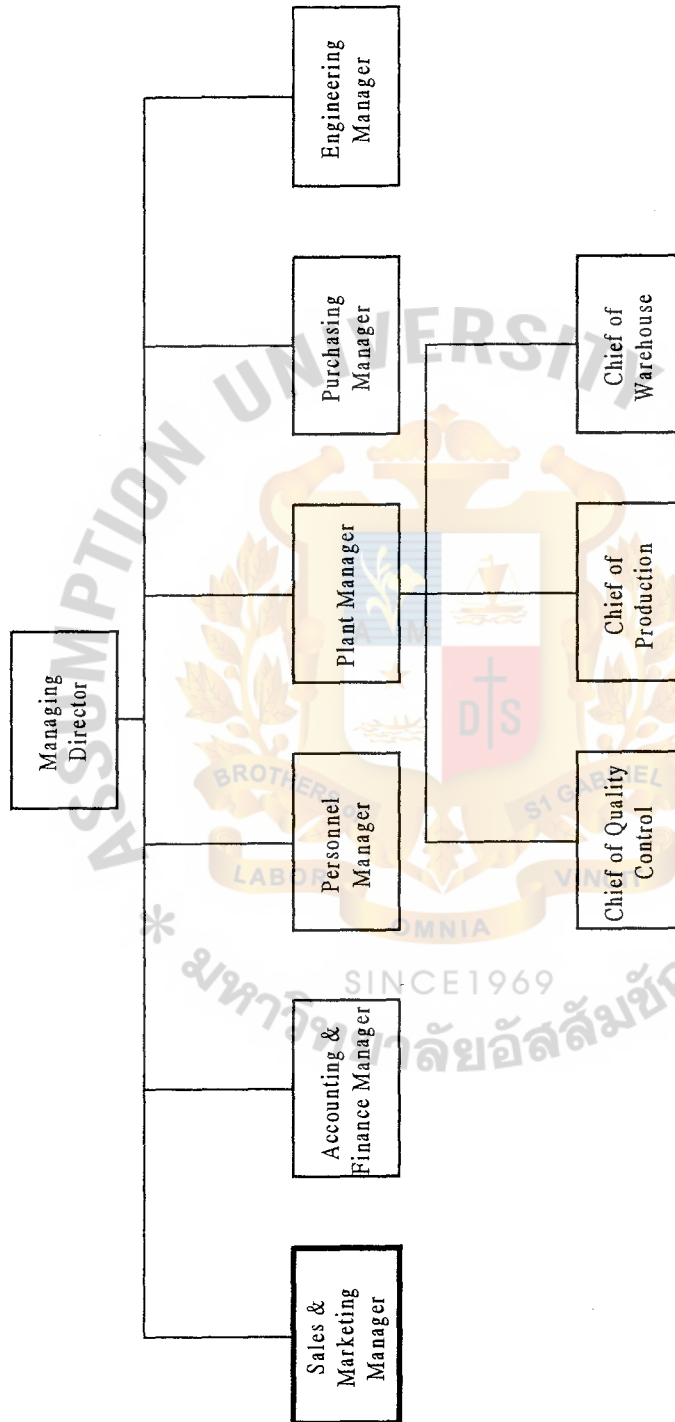


Figure 2.1. Organization Chart.

### 2.3 Current Problems and Areas for Improvements

Because of having many products and customers, there are problems in the existing system such as:

- (1) The details of each P/O are in many forms because it depends on customer and sale-persons.
- (2) There are a lot of transactions per day, which might be mistaken during operation.
- (3) Takes more time and is difficult to search the customer file.
- (4) A lot of paper is kept and has probability of losing and high costs.
- (5) Much duplicated information is in each department and is not updated information, which will lead to conflict between each department.
- (6) Data or information cannot be shared and retrieved by several users simultaneously.
- (7) Difficult to use sale data for decision making.

The top management nowadays, realizes the above problems and would like to use the computer system to enhance and to solve all the problems. Additionally, the OIS (Ordering Information System) must be implemented to support the computer system in order to increase efficient work and provide accurate and timely information for all management.

### **III. PROPOSED SYSTEM**

#### **3.1 User Requirements**

After we analyze the existing system, we found that the user requirements must be defined as follows:

- (1) The inputs are needed as database to generate the output requirements.
- (2) Reducing time and increasing accuracy in issuing order form, P/O, invoice.
- (3) Reducing redundancy and mistakes of data.
- (4) Generating required document immediately.
- (5) Providing accurate and meaningful information so that management is able to make better decisions planning, forecasting and controlling.

##### **3.1.1 Input Requirements**

The source documents that are required by the system are summarized below:

- (1) Customer order form – customers specify their order and requirements.
- (2) P/O form – sales and marketing department prepares for the purchase requirements that is received from warehouse department.
- (3) Stock information – warehouse department prepares for the update stock on hand information for sales and marketing department.
- (4) Product information – sales and marketing department prepares the product information for production and warehouse department.

##### **3.1.2 Output Requirements**

The system generates output that have to communicate the information to the user without ambiguity. The output of the system can be classified as follows:



- (1) Forms which are
  - (a) Sales invoice is a document that informs customer about a payment due.
  - (b) Cash receipt is a document that acknowledges customer about his payment.
- (2) Daily reports that are produced by the system in order to serve as past references such as: sales order, invoice, payment, etc.
- (3) Management reports are reports that represent sales amounts in order to use in generating sales forecasting.

## **3.2 System Design**

### **3.2.1 Database Design**

The database model for the system is a relational database and each table is kept in a separate file. The normalization is attempted in the design of master files and other related files.

### **3.2.2 Data Flow Diagrams**

The diagrams are able to conceptualize how data are moved through the organization. Moreover, they are used to tell the system analyst about the information requirements of users. The followings are the 5 processes of a new system.

#### **Process 1.0: Verify Customer Status**

This is the process to check credit allowance of existing customer and to set credit limit for the new customer.

#### **Process 2.0: Provide Product Information**

While the customer requests for product information, sales representative has to check for the stock availability by retrieving stock information from warehouse database and responded to the customer.

#### Process 3.0: Approve Sales Order

After the customer status is valid, sales department has to check sales order whether the current order is less than credit limit or not. If the customer order is under condition, retrieving warehouse information will check order product availability. Whenever, everything is valid, sales department will approve sales order and then sales representative tries to close process by performing order response promptly. If the product is not available, sales representative will prepare purchase order and send it to production department to produce the new product.

#### Process 4.0: Customer Payment

After sales order is approved, invoice is issued and sent together with products and sale slip. Whenever, the customers make payment, receipt and products are sent to customer in return.

#### Process 5.0: Produce Management Report

After every process is completed, the customer billing statement is generated for notifying the customer about the payment balance. Day-end or month-end, reports will be generated by retrieving information from separated files in order to prepare a management report.

The context diagram and data flow diagram of proposed system is shown in APPENDIX A.

#### 3.2.3 Database and File Design

Database design translates the data models that were developed for the system users into data structures supported by the chosen database technology. Database design is concerned with the data focus from the perspective of the system designer. The end product is called a database schema, a technical blueprint of the database.

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The goals of database design are as follows:

- (1) A database should provide the efficient storage, update, and retrieval of data.
- (2) A database should be reliable - the stored data should have high integrity to promote user trust in that data.
- (3) A database should be adaptable and scalable to new and unforeseen requirements and applications.

This project, uses Microsoft Access 97, which provides many facilities that can be applied to the employee requirements and develop the Ordering Information System. There are tools for developing database, queries, and screen templates and report templates. We can develop this system by designing screens that can be composed with menus that provide for each operation such as data entry, data correction, data inquiry, and report generation, etc. This tool provides the facilities for the programmers to generate all input and output as declared in the program specification. Furthermore, this tool provides facilities to develop database and define relationship for each table that is used in the system. It can generate sample part of data dictionary by using this tool. They made this program to be an easy-to-use program and be user-friendly. It will make the users easy to learn in how to use the program. The process specification and file specification of this database is shown in APPENDIX B and APPENDIX C respectively.

## 3.2.4 Software Design and Module Specification

Structured design deals with the size and complexity of a program by breaking up the program into a hierarchy of modules that result in a computer program that is easier to implement and maintain. The concept of structured design is simple design a program as a top-down hierarchy of modules. The resulting hierarchy of modules can then be

evaluated according to certain quality acceptance criteria to ensure the best modular design for the program.

The primary tool used in structured design is the structure chart. Structure charts are used to graphically depict a modular design of a program. They show how the program has been partitioned into smaller more manageable modules, the hierarchy and organization of those modules, and the communication interfaces between modules. The structure charts and module specifications of Ordering Information System are shown in APPENDIX D and Data Dictionary is shown in APPENDIX E.

### 3.2.5 Input Design

Input design serves an important goal – captures and gets the data into a format suitable for the computer. And data constitute one of the fundamental building blocks for information systems. To actually input business data into a computer, we may have to design source documents, input screens, and methods and procedures for getting the data into the computer. The input designs are shown in APPENDIX F.

### 3.2.6 Output Design

We design the output with the following principles:

- (1) Computer outputs should be simple to read and interpret.
- (2) The timing of computer outputs is important.
- (3) The distribution of computer outputs must be sufficient to assist all relevant system users.
- (4) The computer outputs must be acceptable to the system users who will receive them.

The output designs are shown in APPENDIX G.



### 3.3 Hardware and Software Requirements

#### 3.3.1 Hardware Requirements

In the system, all computers are connected to LAN network. File server will be used in order to store and share the data for all workstations. Hardware requirements for the system are presented as follows:

(1) File Server

- Processor Pentium III 700 MHz
- SDRAM 128 MB up to 4 GB
- 512K L2 Cache
- 15 GB Hard Drive Ultra Wide SCSI
- Ethernet Built-in 10/100 Mbps
- Internal IDE CD-ROM 40X
- Internal tape back up drive
- Mouse & Keyboard
- 15" color monitor

(2) Workstation

- Processor Pentium III 500 MHz
- Integrated 128 Kb L2 Cache
- SDRAM 64 MB
- 6.4 GB Hard Drive Ultra DMA 66
- Floppy Disk 1.44 MB
- Internal IDE CD-ROM 40X
- Mouse & Keyboard
- 15" color monitor

(3) Dot Matrix Printer

- (4) UPS 600 VA
- (5) Networking Devices

Figure 3.1. shows network design of the proposed system.

### 3.3.2 Software Requirements

The Ordering Information System is run on Microsoft Windows98 operating system and uses Microsoft Access97 as an implementing program. It supports the user to interface with database and also control on-line database. Additionally, it allows multiple access to data and control concurrently running user application programs serving many users. The system software will be prepared to run a network system. The software requirements of the system are considered the following:

- (1) Microsoft Windows98
- (2) Microsoft WindowsNT
- (3) Microsoft Office97

### 3.4 Security and Control

The security and control in the proposed system is considered as one of the major points that is needed to be in the system, because sales-order is very sensitive, the security system is brought to use. The following ways can be used to establish security:

- (1) Physical Security – refers to securing the computer facility, equipment and software through physical means including controlling access to the computer room via machine-readable badges. Physical Security should be made by:
  - (a) Accessing to the terminals via password or badges
  - (b) Automatic logging off when unsuccessful attempts occur
- (2) Operation Logging – maintaining operation log for each I/O device.

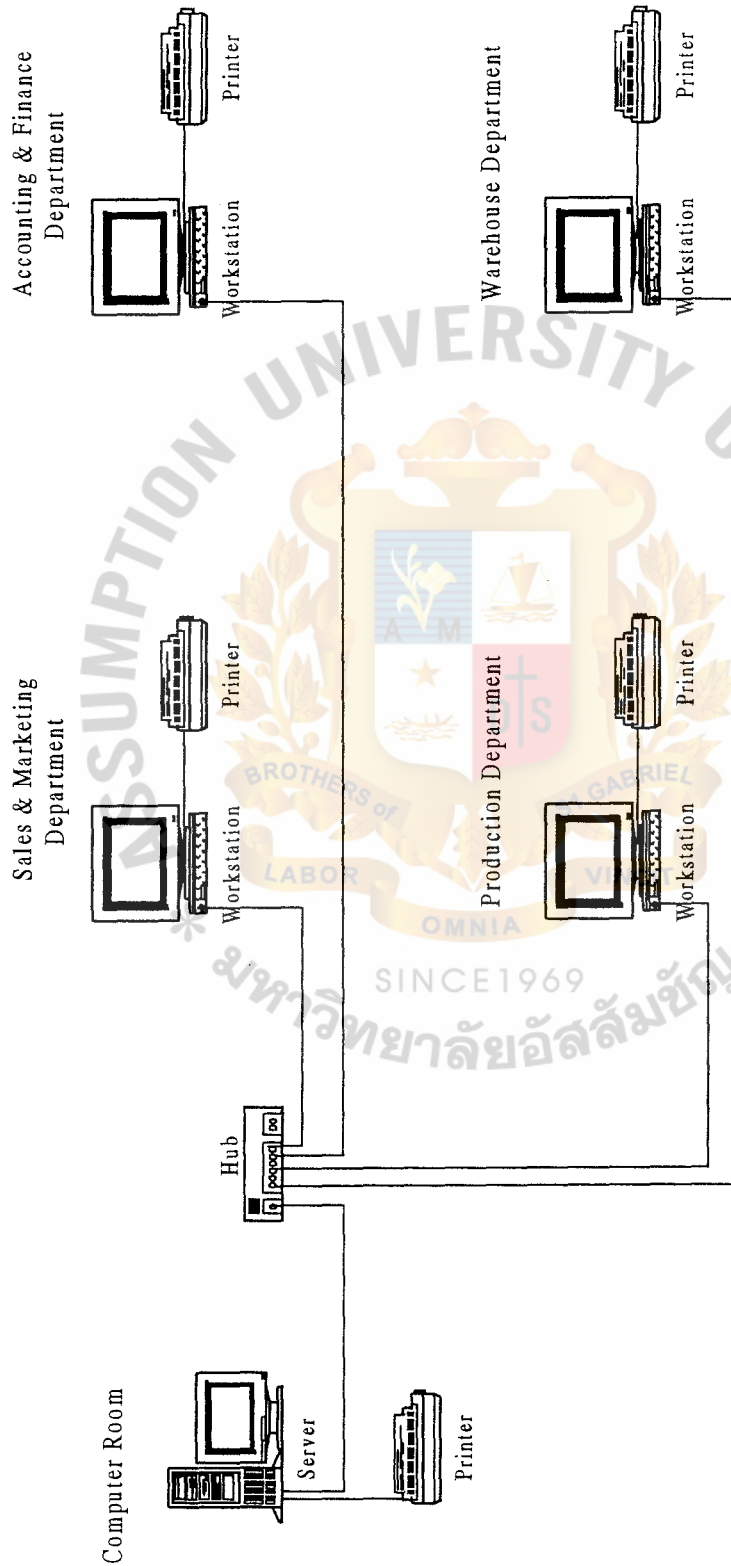


Figure 3.1. Network Design.

- (3) Program Protection – every user is responsible for their UserID and Password. The system will keep the log of activity of every user that accesses into the system.
- (4) Data Protection – data may be lost any time if the data is improperly updated by a system failure: Make use of transaction logging, back up, recovery and restart utilities by using the operating system.
- (5) Input Control – the authorized transactions can only be allowed to input to the system.
- (6) Prevention – store programs and data files in a safe place under desirable environmental conditions with physical security.

### **3.5 Systems Cost Evaluation and Comparison (Feasibility Analysis)**

There are many ways for organization use to conduct the cost-benefit feasibility analysis. Frequently, a company may have set policies regarding how investments will be measured. Numerous measures such as payback analysis, return on investment, and net present value may be required for this decision. In this project, we evaluate the solution independently for operational, technical, economic, and schedule feasibility.

#### **3.5.1 Cost Analysis**

The purpose of cost analysis is to calculate all anticipated cost associated with the system that is compared between existing system and proposed system.

##### **Cost of Existing System**

The cost of existing system consists of equipment cost, salary cost, maintenance cost, office supplies and miscellaneous cost as shown in Table 3.1.

##### **(1) Equipment cost**

Equipment cost such as typewriter is about 8,500 Baht.

(2) Salary cost

The salary of all officers who are keeping and operating information of the customer order in the organization is about 408,000 Baht per annual and increase 10% each year.

(3) Maintenance cost

Maintenance cost of all equipment in the office is about 3,000 Baht a year and increase 10% each year.

(4) Office supplies and miscellaneous cost

Office supplies and miscellaneous cost are about 9,000 Baht a year and increase 10% each year.

Table 3.1. Cost of Existing System, Baht.

Cost Items	Year				
	1	2	3	4	5
<u>Equipment Cost</u>					
Typewriter 1 unit @ 8,500	8,500	-	-	-	-
Total Fixed Cost (Baht)	8,500	-	-	-	-
<u>Operating Cost</u>					
<u>Salary Cost:</u>					
Stock Officer 1 persons @ 10,000	10,000	11,000	12,100	13,310	14,641
Sales Officer 2 persons @ 12,000	24,000	26,400	29,040	31,944	35,138
Total Monthly Salary Cost (Baht)	34,000	37,400	41,140	45,254	49,779
Total Annual Salary Cost (Baht)	408,000	448,800	493,680	543,048	597,353
<u>Maintenance Cost</u>	3,000	3,300	3,630	3,993	4,392
<u>Office Supplies &amp; Miscellaneous Cost:</u>					
Paper Per Annual	3,500	3,850	4,235	4,659	5,124
Utility Per Annual	2,000	2,200	2,420	2,662	2,928
Miscellaneous Per Annual	3,500	3,850	4,235	4,659	5,124
Total Annual Office Supplies & Miscellaneous Cost	9,000	9,900	10,890	11,979	13,177
Total Annual Operating Cost (Baht)	420,000	462,000	508,200	559,020	614,922
Total Existing System Cost (Baht)	428,500	462,000	508,200	559,020	614,922



Table 3.2. Five Years Accumulated Existing System Cost, Baht.

Year	Total Existing System Cost	Accumulated Cost
1	428,500	428,500
2	462,000	890,500
3	508,200	1,398,700
4	559,020	1,957,720
5	614,922	2,572,642
Total	2,572,642	

#### Cost of Proposed System

To develop the proposed system, it will be necessary to purchase new computer, server, and network equipment. The cost of hardware and software is shown in Table 3.3.

The operating cost of the proposed system is shown in Table 3.4. and consists of the following:

(1) Equipment cost

Equipment cost such as computers and printers is about 650,000 Baht.

(2) Implementation cost

Implementation cost such as computer set up cost and training cost is about 90,000 Baht.

(3) Salary cost

The salary of all officers who are keeping and operating the proposed system is about 264,000 Baht per annual and increase 10% each year.

(4) Maintenance cost

Maintenance cost of all equipment in the office is about 8,000 Baht a year and increase 10% each year.

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### (5) Office supplies and miscellaneous cost

Office supplies and miscellaneous cost are about 12,000 Baht a year and increase 10% each year.

Table 3.3. Hardware and Software Cost of Proposed System.

Hardware/ Software	Unit	Amount (Baht)
File Server	1	250,000
PC Workstation	4	200,000
Printer	4	100,000
LAN Card	4	12,000
Switching HUB	1	8,000
UPS	5	58,000
Application Software		22,000
Total		650,000

Table 3.4. Cost of Proposed System, Baht.

Cost Items	Year				
	1	2	3	4	5
<u>Equipment Cost</u>					
Hardware & Software	130,000	130,000	130,000	130,000	130,000
Total Fixed Cost (Baht)	130,000	130,000	130,000	130,000	130,000
<u>Implementation Cost</u>					
Set up Cost	30,000	-	-	-	-
Training Cost	60,000	-	-	-	-
Total Implementation Cost	90,000	-	-	-	-
<u>Operating Cost</u>					
<u>Salary Cost:</u>					
Stock Officer 1 persons @ 10,000	10,000	11,000	12,100	13,310	14,641
Sales Officer 1 persons @ 12,000	12,000	13,200	14,520	15,972	17,569
Total Monthly Salary Cost (Baht)	22,000	24,200	26,620	29,282	32,210
Total Annual Salary Cost (Baht)	264,000	290,400	319,440	351,384	386,522
<u>Maintenance Cost</u>	8,000	8,800	9,680	10,648	11,713
<u>Office Supplies &amp; Miscellaneous Cost:</u>					
Paper Per Annual	2,500	2,750	3,025	3,328	3,660
Utility Per Annual	4,000	4,400	4,840	5,324	5,856
Miscellaneous Per Annual	5,500	6,050	6,655	7,321	8,052
Total Annual Office Supplies & Miscellaneous Cost	12,000	13,200	14,520	15,972	17,569
Total Annual Operating Cost (Baht)	284,000	312,400	343,640	378,004	415,804
Total Existing System Cost (Baht)	504,000	312,400	343,640	378,004	415,804

Table 3.5. Five Years Accumulated Proposed System Cost, Baht.

Year	Total Proposed System Cost	Accumulated Cost
1	504,000	504,000
2	312,400	816,400
3	343,640	1,160,040
4	378,004	1,538,044
5	415,804	1,953,848
Total	1,953,848	

### 3.5.2 Benefits Analysis

#### (1) Tangible Benefits

Tangible benefits of this system are as follows:

- (a) Reduce the annual salary.
- (b) Reduce expense, such as office supplies, paper, folder, cabinet, etc.
- (c) Increase efficiency in selling processes.

#### (2) Intangible Benefits

Intangible benefits of this system are as follows:

- (a) Reduce error from human operations and the missing of order's details.
- (b) Increase efficiency of data analysis and reporting to Management Department.
- (c) Increase customer goodwill.
- (d) Improved working environment.

### 3.5.3 Cost Comparison

The cost comparison between cost of the existing system and proposed system is shown in Table 3.6. The difference between the systems is shown by using break-even analysis with the help of graph, which is shown in Figure 3.2. After six months, the cost of the new system would reach the break-even point and thereafter it will become more economical to operate than the current system.

Table 3.6. The Comparison of the System Costs, Baht.

Year	Accumulated Existing System Cost	Accumulated Proposed System Cost
1	428,500	504,000
2	890,500	816,400
3	1,398,700	1,160,040
4	1,957,720	1,538,044
5	2,572,642	1,953,848

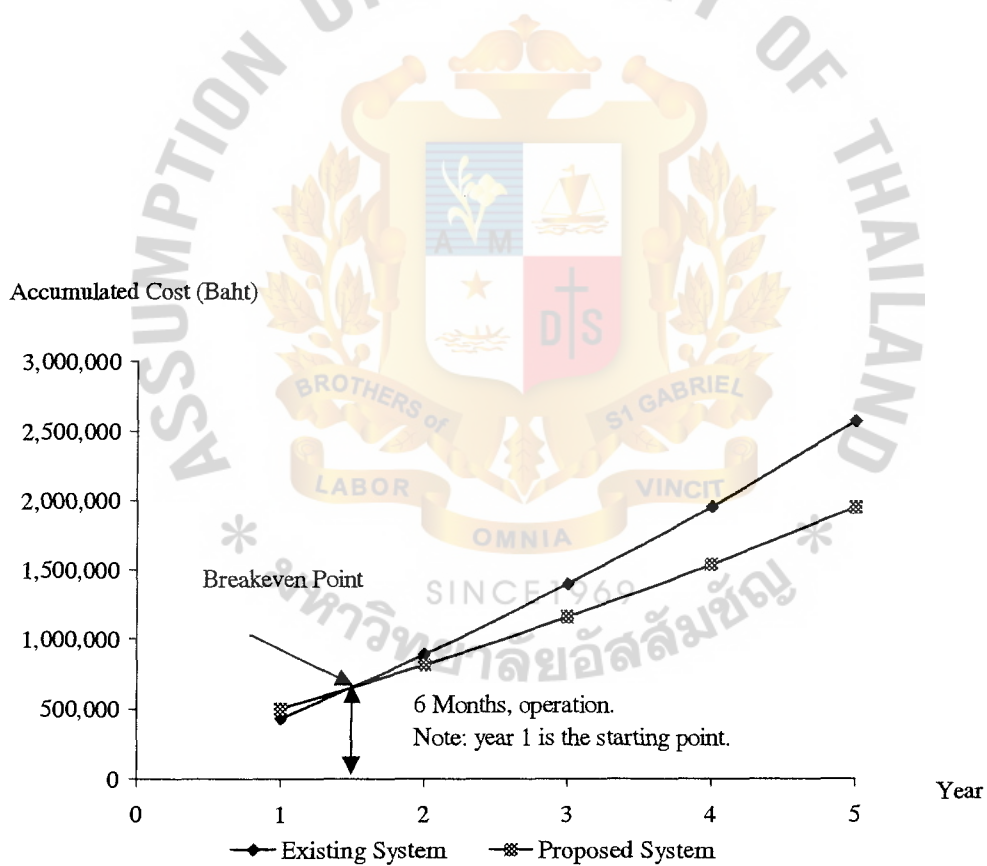


Figure 3.2. The Cost Comparison between Existing and Proposed System.



## Payback Analysis

The payback analysis technique is a simple method for determining if and when an investment will pay for itself. Because systems development cost are incurred long before benefits begin to accrue, it will take some time period for the benefits to overtake the cost. Payback analysis determines how much time will lapse before accrued benefits overtake accrued and continuing cost. This period of time is called the payback period. Payback analysis is shown in Table 3.7. You can see a proposed system that will be developed at a cost of 740,000 Baht. The estimated net operating cost for each of the next four years are also recorded in the table. The estimated net benefits over the same four operating years are also shown. You need to adjust cost and benefits to be of present value. The present value of a baht in year  $n$  depends on something typically called a discount rate. The discount rate is the opportunity cost of being able to invest money in other projects, including the possibility of investing in the stock market, money market funds, bonds, and the like. Alternatively, a discount rate could represent what the company considers an acceptable return on its investments. The present value can be calculated using the following formula:

$$PV_n = 1/(1 + i)^n$$

Where  $PV_n$  is the present value of 1 baht  $n$  years from now and  $i$  is the discount rate.

Figure 3.3. shows that payback period of this proposed system is about 3 years and 5 months.

Table 3.7. Payback Analysis of Proposed System, Baht.

Cost Items	Year				
	1	2	3	4	5
Development Cost	740,000	-	-	-	-
Operation & Maintenance Cost	284,000	312,400	343,640	378,004	415,804
Discount Factors for 12%	1.000	0.893	0.797	0.712	0.636
Time-adjusted Cost	1,024,000	278,973	273,881	269,139	264,451
Cumulative Time-adjusted Cost	1,024,000	1,302,973	1,576,854	1,845,993	2,110,444
Benefit Derived from Operation of New System	-	350,000	700,000	1,050,000	1,400,000
Discount Factors for 12%	1.000	0.893	0.797	0.712	0.636
Time-adjusted Benefits	-	321,550	557,900	747,600	890,400
Cumulative Time-adjusted Benefits over lifetimes	-	321,550	870,450	1,618,050	2,508,450
Cumulative Lifetime adjusted Cost + Benefits	-1,024,000	-990,423	-706,404	-227,943	398,006

Cumulative Cost (Baht)

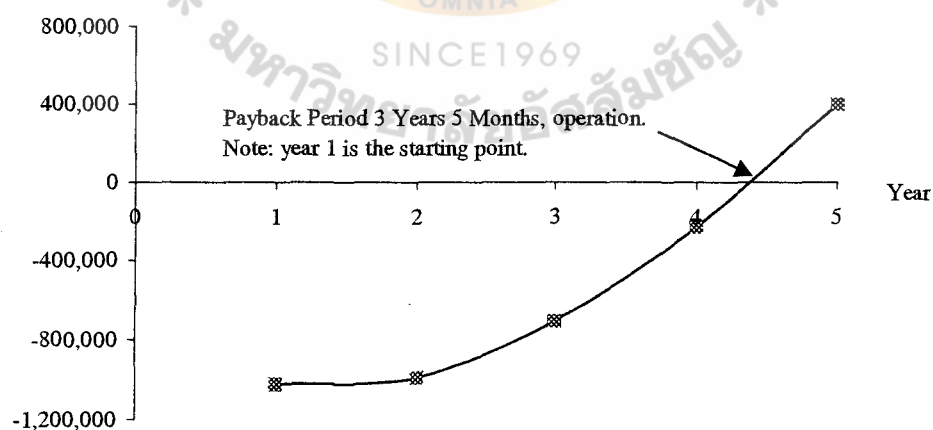


Figure 3.3. Payback Period of Proposed System.

## Return-on-Investment Analysis

The return-on-investment (ROI) analysis technique compares the life time profitability of alternative solutions or projects. The ROI for a solution or project is a percentage rate that measures the relationship between the amount the business gets back from an investment and the amount invested. The ROI is calculated as follows:

$$\text{ROI} = (\text{Estimated lifetime benefits} - \text{Estimated lifetime cost}) / \text{Estimated lifetime cost}$$

Therefore, the ROI of this proposed system is:

$$\begin{aligned}\text{ROI} &= (2,528,450 - 2,110,444) / 2,110,444 \\ &= 0.19 \text{ or } 19\%\end{aligned}$$

## Net Present Value

Net Present Value (NPV) is discount cash flow approach based on the present value of money. The Net Present Value formula is shown below:

$$\text{NPV} = \text{Sum of the discounted benefits} - \text{Sum of the discounted cost}$$

Therefore, the NPV for this proposed systems is:

$$\text{NPV} = 2,528,450 - 2,110,444 = 398,006 \text{ Baht}$$

## IV. PROJECT IMPLEMENTATION

### 4.1 Overview of Project Implementation Schedule

The implementation will start after the management decides to accept the new system. It consists of the installation of the new system and the removal of the current system. It concerns hardware, software, and people. The implementation process consists of four stages, which have to be performed in sequence. The four stages of implementation are as follows:

#### 4.1.1 Programming

In this stage, the application programs are written in order to perform any computerized operating functions.

#### 4.1.2 Testing

It involves the testing of the program, a full systems test, and the documentation of the programs. Testing must be done before the system is actually activated. Testing stage involves the following:

- (1) Testing individual program
- (2) Data testing
- (3) System testing
- (4) Operation testing
- (5) Report testing

#### 4.1.3 Installation

At this stage, the overall systems are installed. Hardware installation usually involves vendor especially in case of on-line and real-time systems. While software installation involves loading the entire written application programs onto the computer and setting them ready for operation.

## 4.1.4 Training

Users who will be associated with or affected by the system will be trained to operate and use the system. The training can be classified into:

- (1) Overview training: all people in the organization must learn or get some knowledge benefits to cooperate with the user of the system.
- (2) Detailed training: only the users of the system must participate to know how to operate the system.

## 4.2 Test Plan and Results

System testing before turning a system over to the user is a significant part of the system life cycle. Testing is a process that involves identifying and correcting errors in system before releasing it to operations. The most common way of testing is the top down approach. It will test from general level to more specific levels in order to ensure that the program runs in an expected manner. Moreover, it will check that the system meets user requirements.

The proposed system will be tested before implementing. The testing plans can be described as follows:

- (1) Testing individual program. It is completed during the programming task by the development team. Program testing concentrates on the programs themselves in an attempt to make sure that each program works properly.
- (2) Data testing. The testing consists of running a new or modified program, which appears to be working correctly with sample data. The sample data should be enough to cover all the conditions the program will encounter in its predicated future.
- (3) User acceptance testing. It is users' responsibility to make their own data to test the system that meets requirements.



- (4) System testing. This is to ensure that all the programs of the new system work together, as they should. Acceptance evaluates the extent to which the new system meets user requirements under normal operating conditions, this is often the last chance to test and re-link the program before the software is converted from development to operations.
- (5) Operation acceptance testing. This is to ensure that the proposed system will function in the production environment without adversely affecting the existing system.



## V. CONCLUSIONS AND RECOMMENDATIONS

### 5.1 Conclusions

The purpose of the Ordering Information System (OIS) project is to analyze, design, and implement the system to support sales and customer information system. It reveals that management objectives can be achieved by a computer based system which provides the automated office. The problems of the existing system come from the manual operation that is inefficient and ineffective. The new system is identified as an integrated system covering all aspects of sales, ordering, stock, and sales analysis to accomplish the information requirement.

The proposed system can reduce the problems due to accurate information. It reduces staff workload and increase staff performance and productivity, increase the accuracy of data, and reduce overhead and operating cost including manpower related to the system. It provides the reports and reduces the tedious works by using an interactive facility.

Tables 5.1. shows the time performance on each process of the proposed system compared with existing system. It shows that each process of the proposed system performs less time than each process of the existing system, which has to operate many work steps in manual system. So, it can be concluded that the proposed system is more efficient and effective than existing system.

Table 5.1. The Degree of Achievement of the Proposed System.

Process	Existing System	Proposed System
Verify Customer Status	20 mins.	5 mins.
Provide Product Information	15 mins.	5 mins.
Approve Sales Order	30 mins.	10 mins.
Customer Payment	1 hr.	10 mins.
Produce Management Report	45 mins.	5 mins.
Total	2 hrs. 50 mins.	35 mins.

#### Process Verify Customer Status

This is the process to check credit allowance of existing customer and to set credit limit for the new customer. With proposed system, sales officer can search customer record faster than existing system about 15 minutes per record.

#### Process Provide Product Information

While the customer requests for product information, sales representative has to check for the stock availability by retrieving stock and product information from warehouse database and responses to the customer. With proposed system, this process is faster than existing system about 10 minutes per record.

#### Process Approve Sales Order

After the customer status is valid, sales department has to check sales order whether the current order is less than credit limit or not. Whenever, everything is valid, sales department will approve sales order and then sales representative tries to close process by performing order response promptly. With proposed system, this process is faster than existing system about 20 minutes per record.

### Process Customer Payment

After sales order is approved, invoice is issued and sent together with products and sale slip. Whenever, the customers make payment, receipt and products are sent to customer in return. With proposed system, this process is faster than existing system about 50 minutes per record.

### Process Produce Management Report

After every process is completed, the customer billing statement is generated for notifying the customer about the payment balance. With proposed system, all management reports are produced faster than existing system about 40 minutes per record.

The overall time that can be reduced by using proposed system is about 2 hours and 15 minutes per record.

From the Cost and Benefit Analysis has shown that, at the beginning the cost of proposed system is higher than existing system. But after six months the cost of proposed system would reach the break-even point and it will become more economical to operate than the current system. From payback analysis, which determines how much time will lapse before accrued benefits overtake accrued and continuing cost, payback period of proposed system is about three years and five months. The return-on-investment (ROI) of this proposed system is 19%, which is a percentage rate that measures the relationship between the amount the business gets back from an investment and the amount invested.

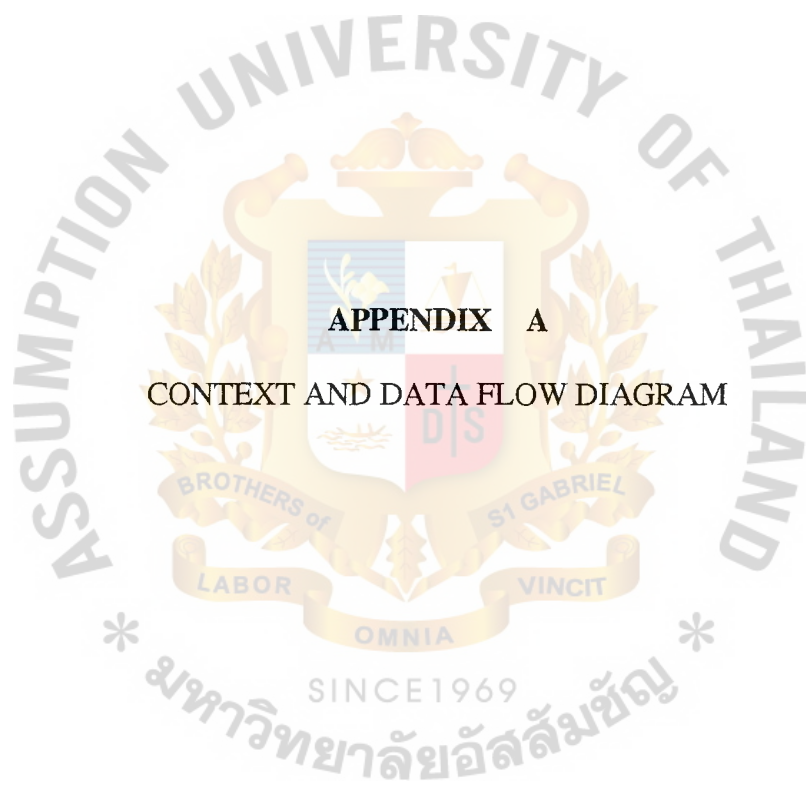
The proposed system gives more benefit than the existing system in a long period. Management can access the information easily and the system can produce the management report so it acts as a decision support system to help making decisions.

## 5.2 Recommendations

Some recommendations for the success of the proposed system are as follows:

- (1) Training of computer usage and system knowledge should be set up for the user group. This will help the user not only to operate the system more efficiently but also to create new ideas for further modification of the system.
- (2) There should be a suitable person to directly response to and handle the new system for efficiency in implementing the project.
- (3) The new system should be designed for the future expansion of business and can work with other systems such as Inventory System to achieve the best performance.
- (4) The new system should be developed to electronic commerce system that customer can order products by using Internet and can contact the company by electronic mail.
- (5) Modification or creating all data can be done only by authorized people or in authorized ways.
- (6) The computer room must be securely locked with security access control.
- (7) All data files and system program must be stored on the secondary storage media to ensure the correctness of data and system operation in case of operation failure.
- (8) The operating manual of the new system and contingency plan should be created as the guideline for users.





**APPENDIX A**

**CONTEXT AND DATA FLOW DIAGRAM**

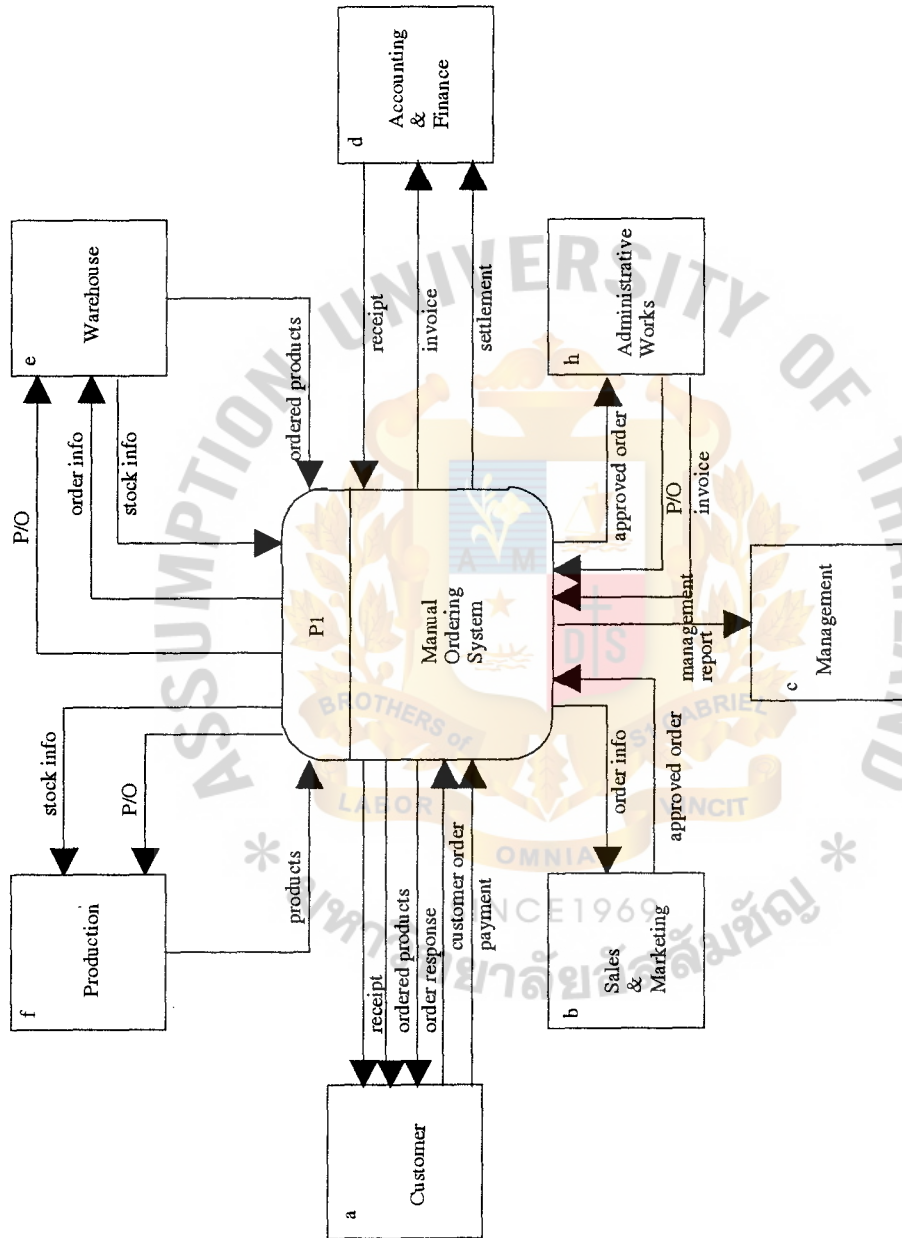


Figure A.1. Context Diagram of the Existing System.

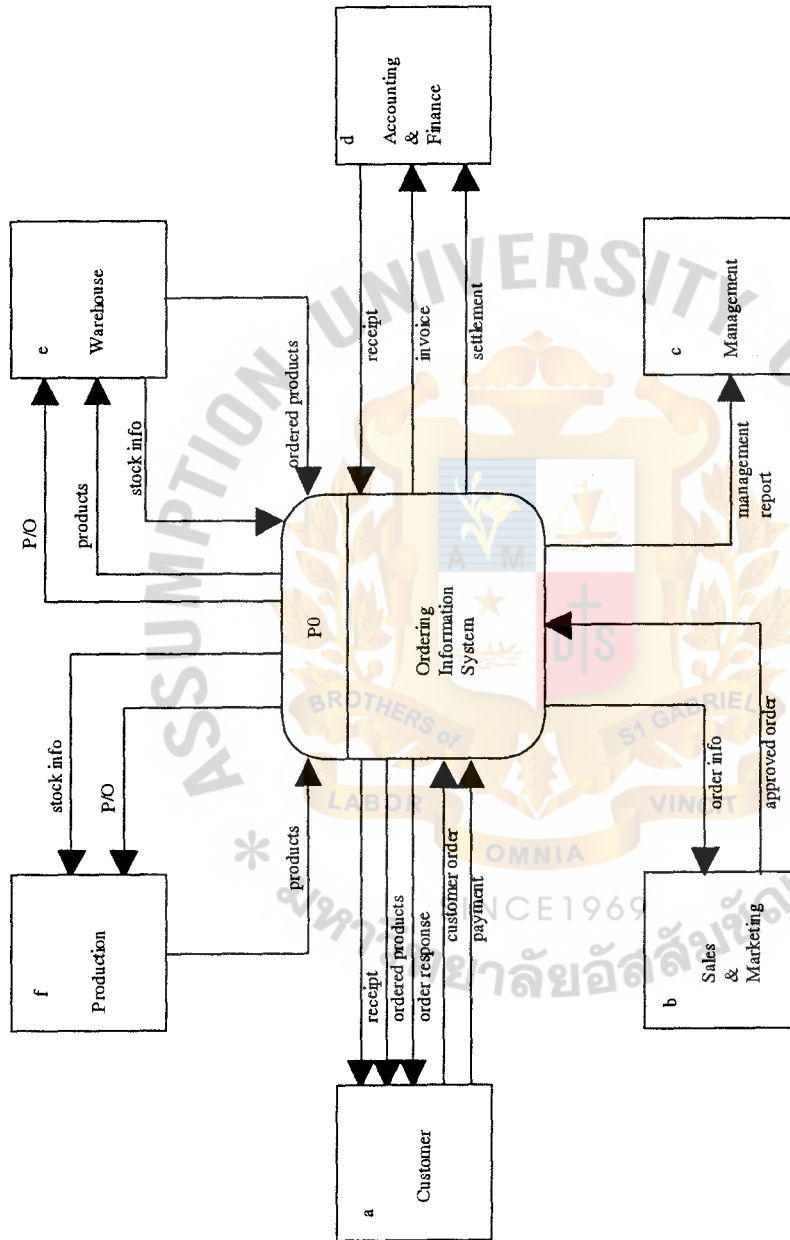


Figure A.2. Context Diagram of the Proposed System.

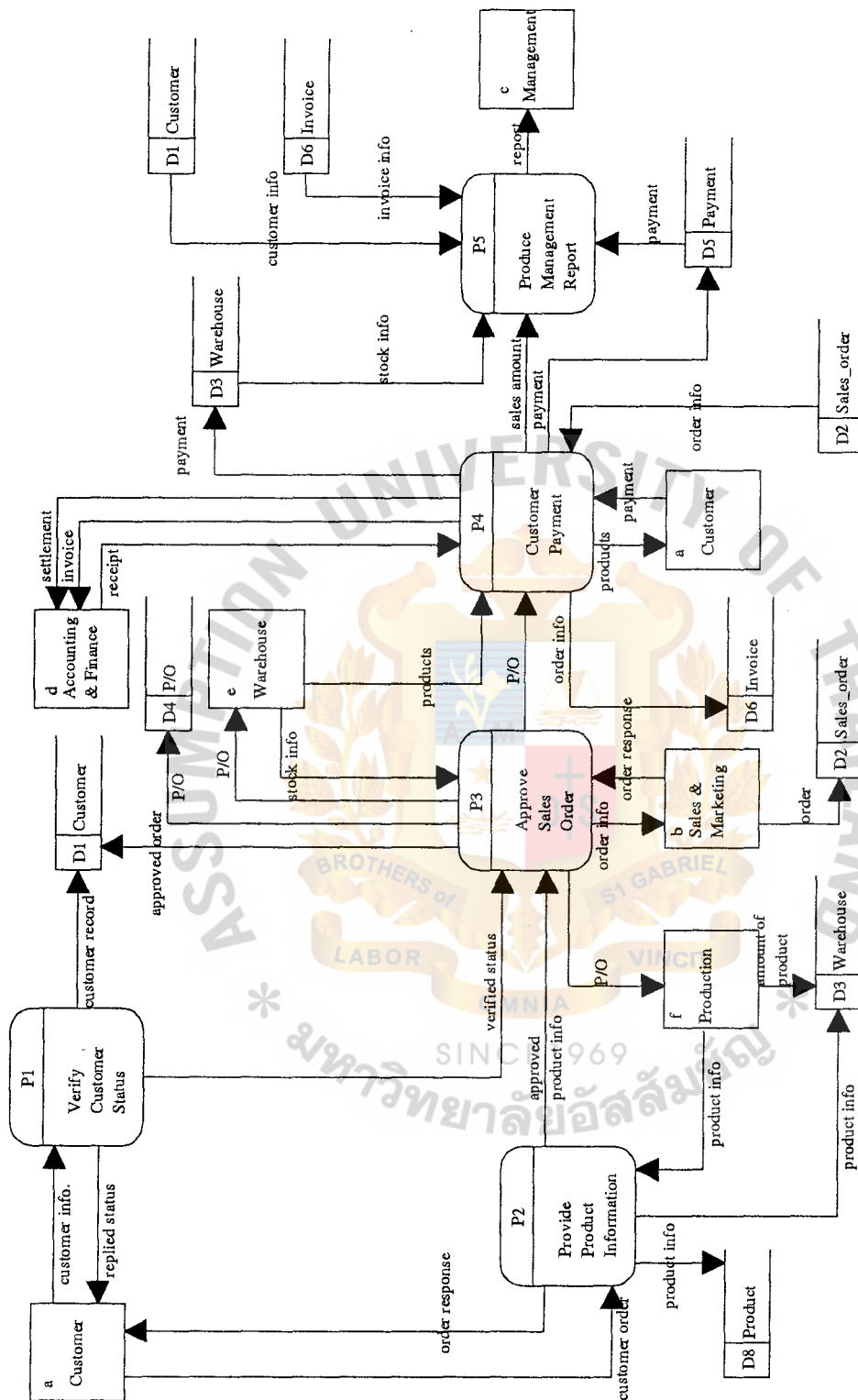


Figure A.3. Data Flow Diagram Level 0 of the Proposed System.

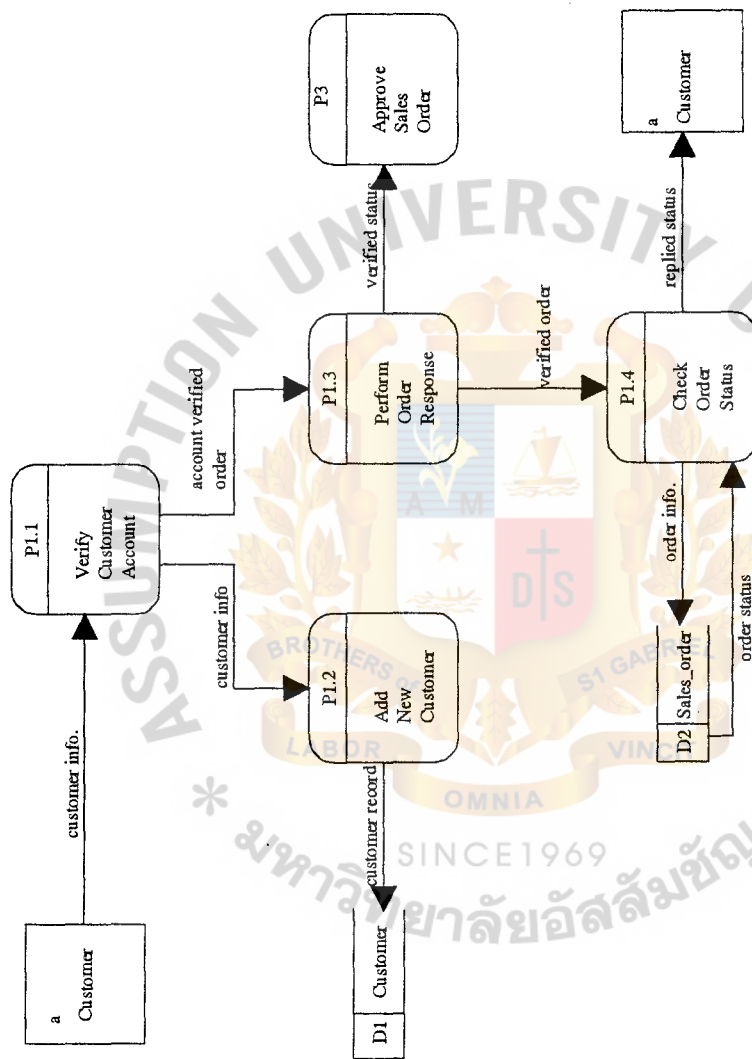


Figure A.4. Data Flow Diagram Level 1: Verify Customer Status (Process 1).



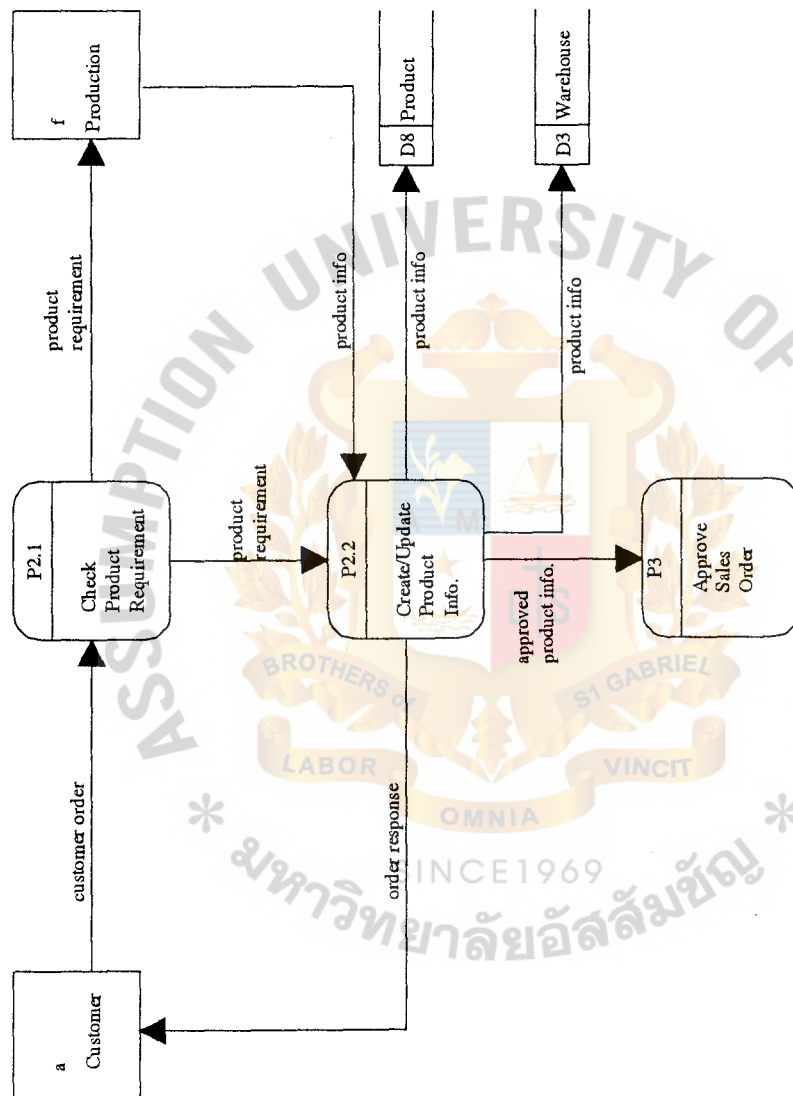


Figure A.5. Data Flow Diagram Level 1: Provide Product Information (Process 2).

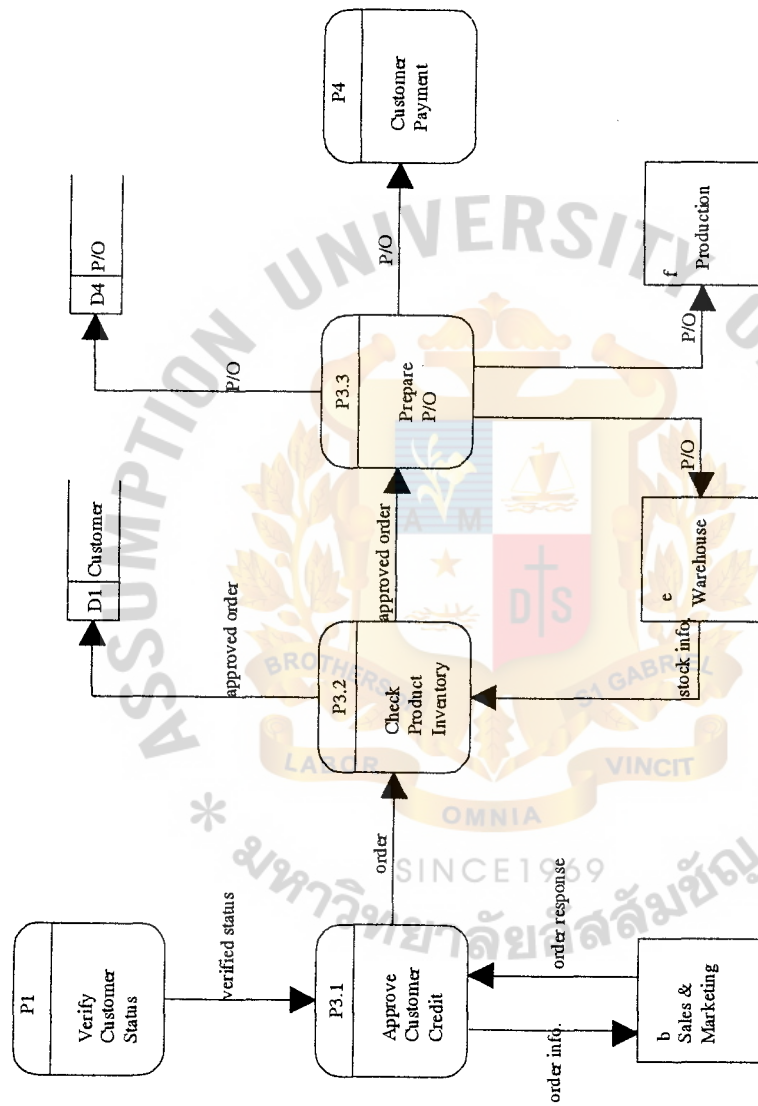


Figure A.6. Data Flow Diagram Level 1: Approve Sales Order (Process 3).

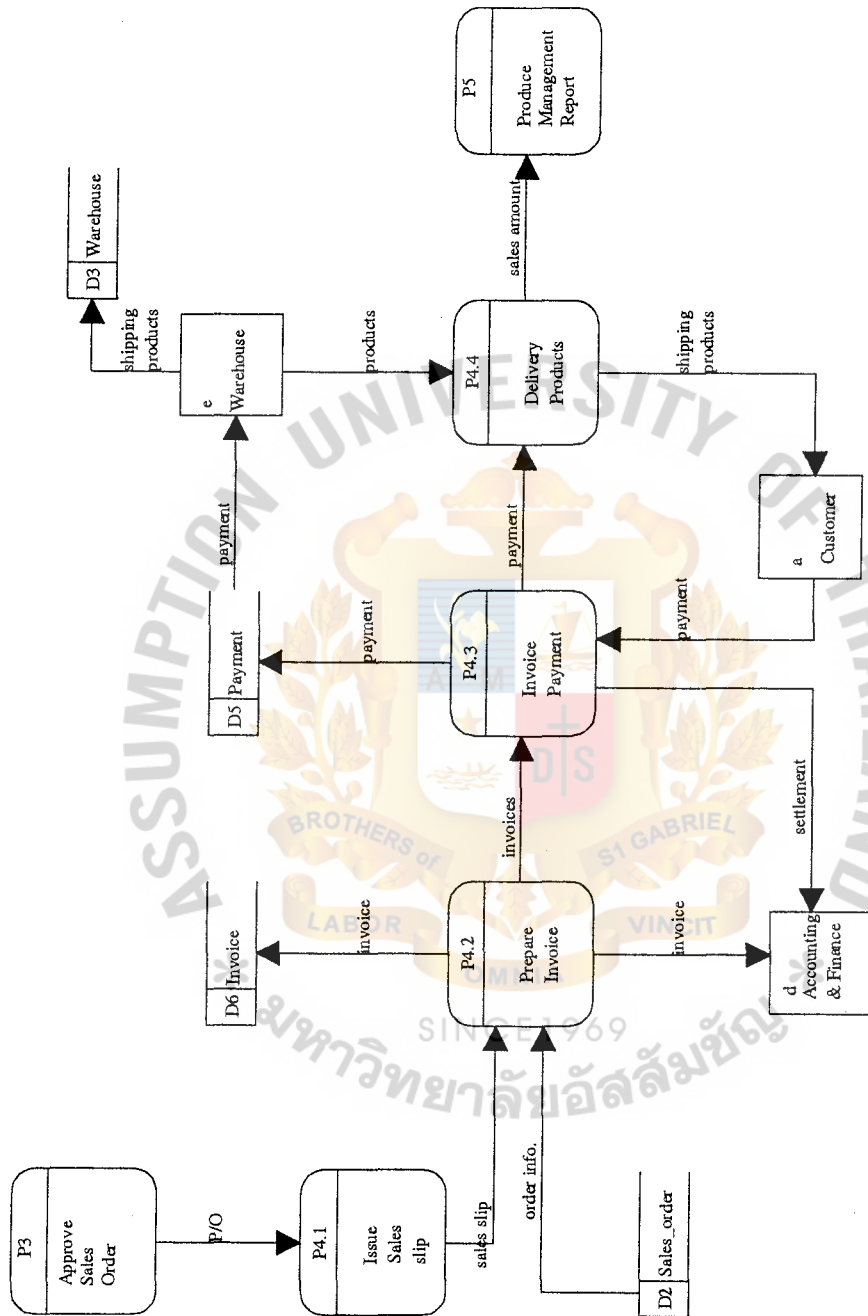


Figure A.7. Data Flow Diagram Level 1: Customer Payment (Process 4).

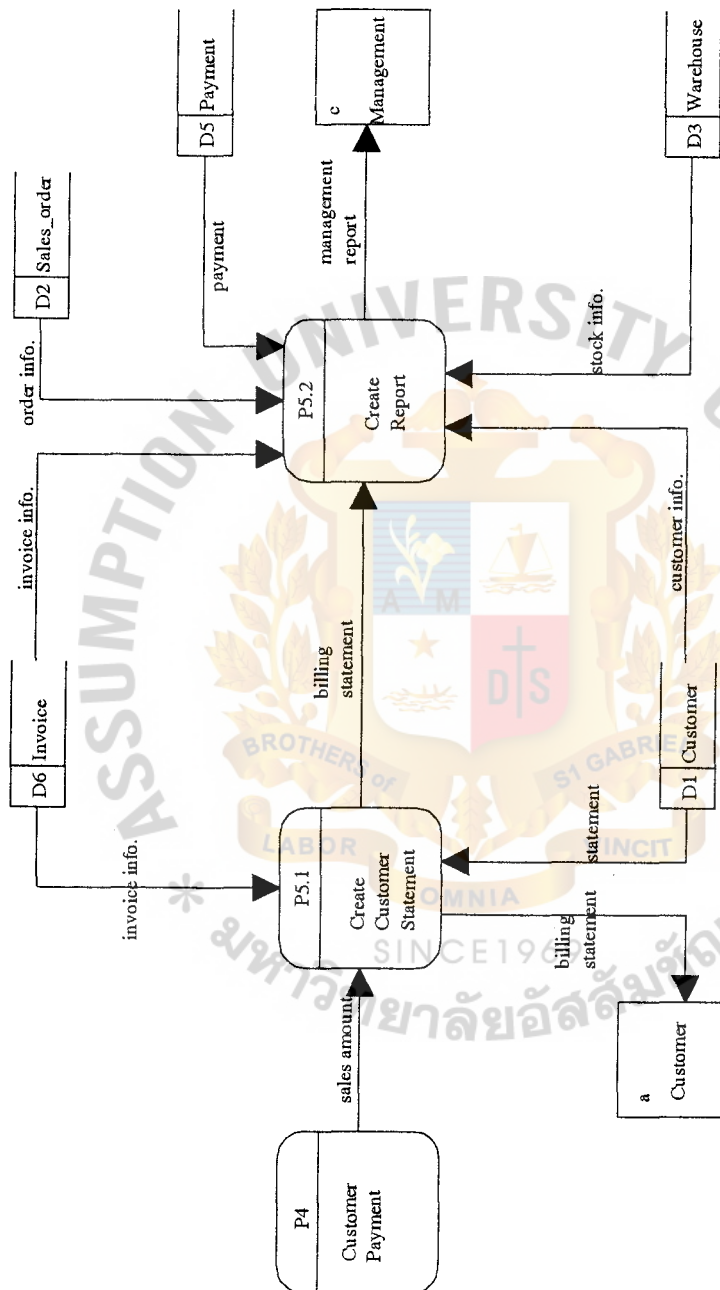


Figure A.8. Data Flow Diagram Level 1: Produce Management Report (Process 5).

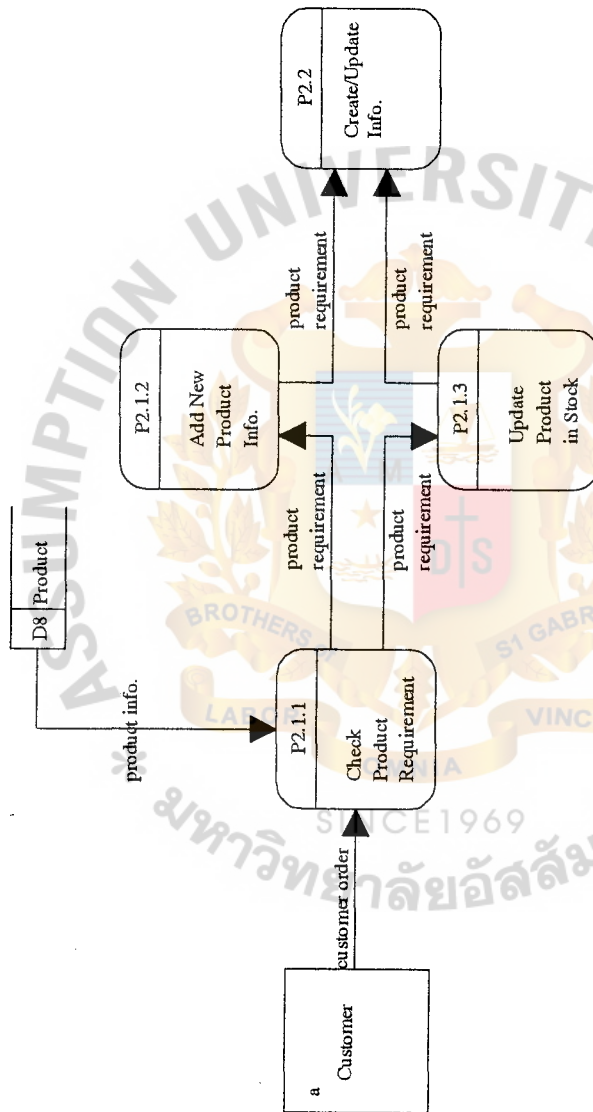


Figure A.9. Data Flow Diagram Level 2: Check Product Requirement (Process 2.1).



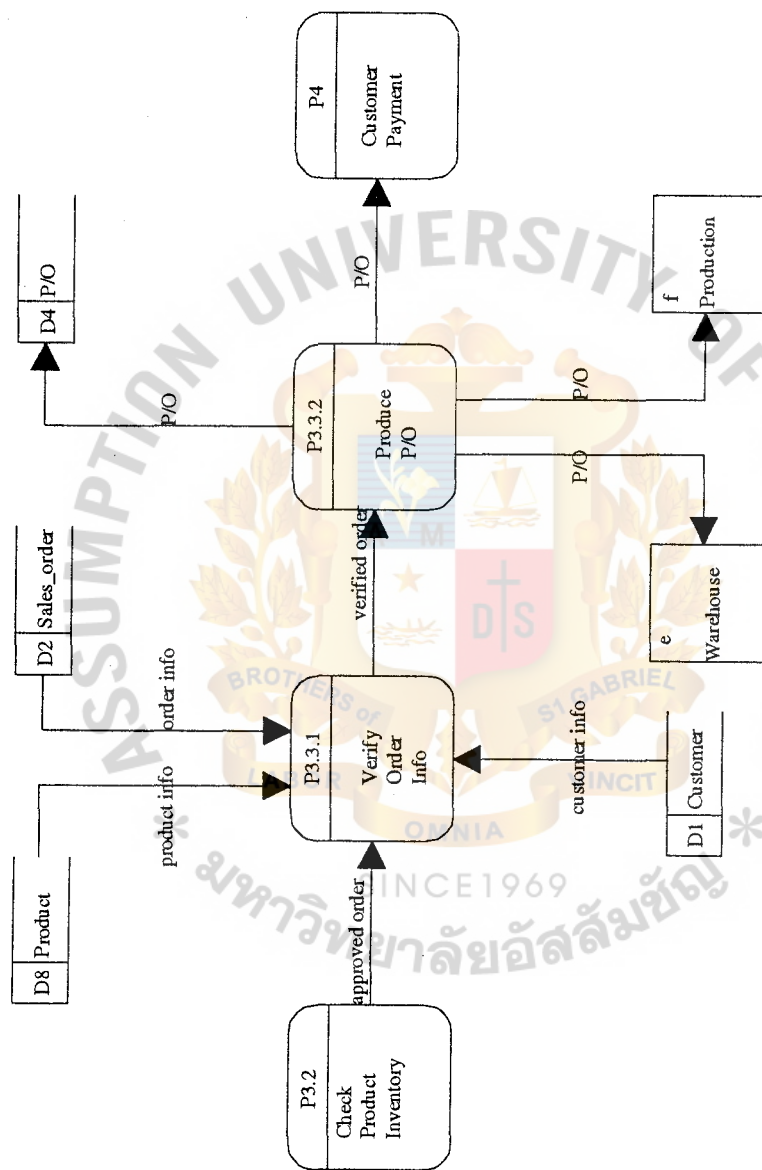


Figure A.10. Data Flow Diagram Level 2: Prepare P/O (Process 3.3).



## APPENDIX B

### PROCESS SPECIFICATION

Table B.1. Process Specification of Process Verify Customer Account.

Process Name	Verify Customer Account
Process Number	1.1
Description	Processes to verify customer account and get customer information from customer.
Inbound	Customer info.
Outbound	Customer info., account verified order

Table B.2. Process Specification of Process Add New Customer.

Process Name	Add New Customer
Process Number	1.2
Description	Process to add new customer record to customer master file.
Inbound	Customer info.
Outbound	Customer record

Table B.3. Process Specification of Process Perform Order Response.

Process Name	Perform Order Response
Process Number	1.3
Description	Process to receive account verified order from Process Verify Customer Account and send verified status to Process Approve Sales Order, send verified order to Process Check Order Status.
Inbound	Account verified order
Outbound	Verified status, verified order

Table B.4. Process Specification of Process Check Order Status.

Process Name	Check Order Status
Process Number	1.4
Description	Process to receive verified order from Process Perform Order Response, get order status from Sales order file, and send replied status reply to customer.
Inbound	Verified order, order status
Outbound	Order info., replied status

Table B.5. Process Specification of Process Check Product Requirement.

Process Name	Check Product Requirement
Process Number	2.1
Description	Process to receive customer order, checks and sends product requirement to Production and to Process Create/Update Product Info.
Inbound	Customer Order
Outbound	Product requirement

Table B.6. Process Specification of Process Check Product.

Process Name	Check Product
Process Number	2.1.1
Description	Receive customer order and checking about required product, get product info. from Product master file.
Inbound	Customer order, product info.
Outbound	Product requirement



Table B.7. Process Specification of Process Add New Product Info.

Process Name	Add New Product Info.
Process Number	2.1.2
Description	Process to add new product information and send to Production.
Inbound	Product requirement
Outbound	Product requirement

Table B.8. Process Specification of Process Update Product in Stock.

Process Name	Update Product in Stock
Process Number	2.1.3
Description	Process to update product information and send to Production.
Inbound	Product requirement
Outbound	Product requirement

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Table B.9. Process Specification of Process Create/Update Product Info.

Process Name	Create/Update Product Info.
Process Number	2.2
Description	Process to get product information from Production and product requirement of the customer to create or update product information, send update product information to Product and Warehouse master file.
Inbound	Product requirement, product info.
Outbound	Product info., order response, approved product info.

Table B.10. Process Specification of Process Approve Customer Credit.

Process Name	Approve Customer Credit
Process Number	3.1
Description	Receive verified status to approve customer credit, receive order response from Sales and Marketing and prepare order.
Inbound	Verified status, order response
Outbound	Order info., order

Table B.11. Process Specification of Process Check Product Inventory.

Process Name	Check Product Inventory
Process Number	3.2
Description	Receive order from process Approve Customer Credit, get stock info. from Warehouse to approve order and send to prepare P/O.
Inbound	Order, stock info.
Outbound	Approved order

Table B.12. Process Specification of Process Prepare P/O.

Process Name	Prepare P/O
Process Number	3.3
Description	Receive approved order and prepare P/O, send to P/O master file, Production, and Warehouse
Inbound	Approved order
Outbound	P/O, approved order

Table B.13. Process Specification of Process Verify Order Info.

Process Name	Verify Order Info.
Process Number	3.3.1
Description	Process to get product information from Product master file, get order information from Sales_order master file, and customer information from Customer master file to check all information and send verified order to produce P/O.
Inbound	Approved order, product info., order info., and customer info.
Outbound	Verified order

Table B.14. Process Specification of Process Generate Inventory Report.

Process Name	Generate Inventory Report
Process Number	3.3.2
Description	Process to receive verified order and produce purchase order to keep at P/O master file and send to Warehouse and Production.
Inbound	Verified order
Outbound	P/O

Table B.15. Process Specification of Process Issue Sales Slip.

Process Name	Issue Sales Slip
Process Number	4.1
Description	Process to receive P/O and issue sales slip.
Inbound	P/O
Outbound	Sales slip

Table B.16. Process Specification of Process Prepare Invoice.

Process Name	Prepare Invoice
Process Number	4.2
Description	Process to receive sales slip from process Issue Sales Slip, get order information from Sales_order master file, generate invoice and keep in Invoice master file, and send invoice to Accounting and Finance.
Inbound	Sales slip, order info.
Outbound	Invoice

Table B.17. Process Specification of Process Invoice Payment.

Process Name	Invoice Payment
Process Number	4.3
Description	Process to get payment from customer and keep payment in Payment master file, send the settlement to Accounting and Finance, and send the payment to process Delivery Products.
Inbound	Invoices, payment
Outbound	Payment, settlement

Table B.18. Process Specification of Process Delivery Products.

Process Name	Delivery Products
Process Number	4.4
Description	Process to receive payment and get products from Warehouse and send to Customer.
Inbound	Payment, products
Outbound	Shipping products, sales_amount



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Table B.19. Process Specification of Process Create Customer Statement.

Process Name	Create Customer Statement
Process Number	5.1
Description	Process to get invoice information from Invoice master file and get statement from Customer master file to create customer statement and billing statement to customer.
Inbound	Sales_amount, invoice info., statement
Outbound	Billing statement

Table B.20. Process Specification of Process Create Report.

Process Name	Create Report
Process Number	5.2
Description	Process to receive billing statement from process Create Customer Statement, get information of invoice, order, payment, customer, and stock to create report and send report to Management.
Inbound	Billing statement, invoice info., order info., payment, stock info., customer info.
Outbound	Management report



**APPENDIX C**  
**FILE SPECIFICATION**

Table C.1. File Specification of Customers File.

Table Name	Attribute Name	Data Type	Length	Description
Customers	CustomerID	Number	Long Integer	ID No. of Customer
	CompanyName	Text	50	Company Name
	ContactFirstName	Text	30	Contact Name
	ContactLastName	Text	50	Contact Last Name
	BillingAddress	Text	255	Billing Address
	City	Text	50	City of Customer
	StateOrProvince	Text	20	State or Province of Customer
	PostalCode	Text	20	Postal Code of Customer
	Country	Text	50	Country of Customer
	ContactTitle	Text	50	Contact Title
	PhoneNumber	Text	30	Phone No. of Customer
	FaxNumber	Text	30	FAX No. of Customer

Table C.2. File Specification of Employees File.

Table Name	Attribute Name	Data Type	Length	Description
Employees	EmployeeID	Number	Long Integer	ID No. of Employee
	FirstName	Text	50	Employee Name
	LastName	Text	50	Employee Last Name
	Title	Text	50	Employee Title
	Workphone	Text	30	Telephone No.
	Extension	Text	30	Extension No.

Table C.3. File Specification of Order Details File.

Table Name	Attribute Name	Data Type	Length	Description
Order Details	OrderDetailID	Number	Long Integer	ID No. of Order Detail
	OrderID	Number	Long Integer	ID No. of Order
	ProductID	Number	Long Integer	ID No. of Product
	Quantity	Number	Long Integer	Quantity of Product
	UnitPrice	Currency	Currency	Price of Product
	Discount	Number	Double	Discount of Order

Table C.4. File Specification of Orders File.

Table Name	Attribute Name	Data Type	Length	Description
Orders	OrderID	Number	Long Integer	ID No. of Order
	CustomerID	Number	Long Integer	ID No. of Customer
	EmployeeID	Number	Long Integer	ID No. of Employee
	OrderDate	Date/Time	Short Date	Date of Order
	PurchaseOrder Number	Text	30	Purchase Order No.
	ShipName	Text	50	Name of Shipping Company
	ShipAddress	Text	255	Address of Shipping Company
	ShipCity	Text	50	City of Shipping Company
	ShipStateOrProvince	Text	50	State or Province of Shipping Company
	ShipPostalCode	Text	20	Postal Code of Shipping Company
	ShipCountry	Text	50	Country of Shipping Company
	ShipPhoneNumber	Text	30	Phone No. of Shipping Company
	ShipDate	Date/Time	Short Date	Date of Shipping Company
	ShippingMethodID	Number	Long Integer	Shipping Method
	FreightCharge	Currency	Currency	Freight Charge
	SalesTaxRate	Number	Double	Tax Rate of Sales

Table C.5. File Specification of Payment Methods File.

Table Name	Attribute Name	Data Type	Length	Description
Payment Methods	PaymentMethodID	Number	Long Integer	ID No. of Payment Method
	PaymentMethod	Text	50	Payment Method
	CreditCard	Text	50	Credit Card Details

Table C.6. File Specification of Payments File.

Table Name	Attribute Name	Data Type	Length	Description
Payments	PaymentID	Number	Long Integer	ID No. of Payment
	OrderID	Number	Long Integer	ID No. of Order
	PaymentAmount	Currency	Currency	Amount of Payment
	PaymentDate	Date/Time	Short Date	Date of Payment
	CreditCardNumber	Text	30	Credit Card No.
	CardholdersName	Text	50	Credit Card Name
	CreditCardExpDate	Date/Time	Short Date	Expiring Date of Credit Card
	PaymentMethodID	Number	Long Integer	ID No. of Payment Method



Table C.7. File Specification of Products File.

Table Name	Attribute Name	Data Type	Length	Description
Products	ProductID	Number	Long Integer	ID No. of Product
	ProductName	Text	50	Name of Product
	UnitPrice	Currency	Currency	Price of Product

Table C.8. File Specification of Shipping Methods File.

Table Name	Attribute Name	Data Type	Length	Description
Shipping Methods	ShippingMethodID	Number	Long Integer	ID No. of Shipping Method
	ShippingMethod	Text	20	Shipping Method

Table C.9. File Specification of Stocks File.

Table Name	Attribute Name	Data Type	Length	Description
Stocks	StockID	Number	Long Integer	ID No. of Stock
	ProductName	Number	Long Integer	Name of Product
	ProductionDate	Date/Time	Short Date	Date of Production
	Quantity	Number	Long Integer	Quantity of Product
	Total	Number	Long Integer	Total No. of Product in Stock



**APPENDIX D**  
**STRUCTURE CHART**

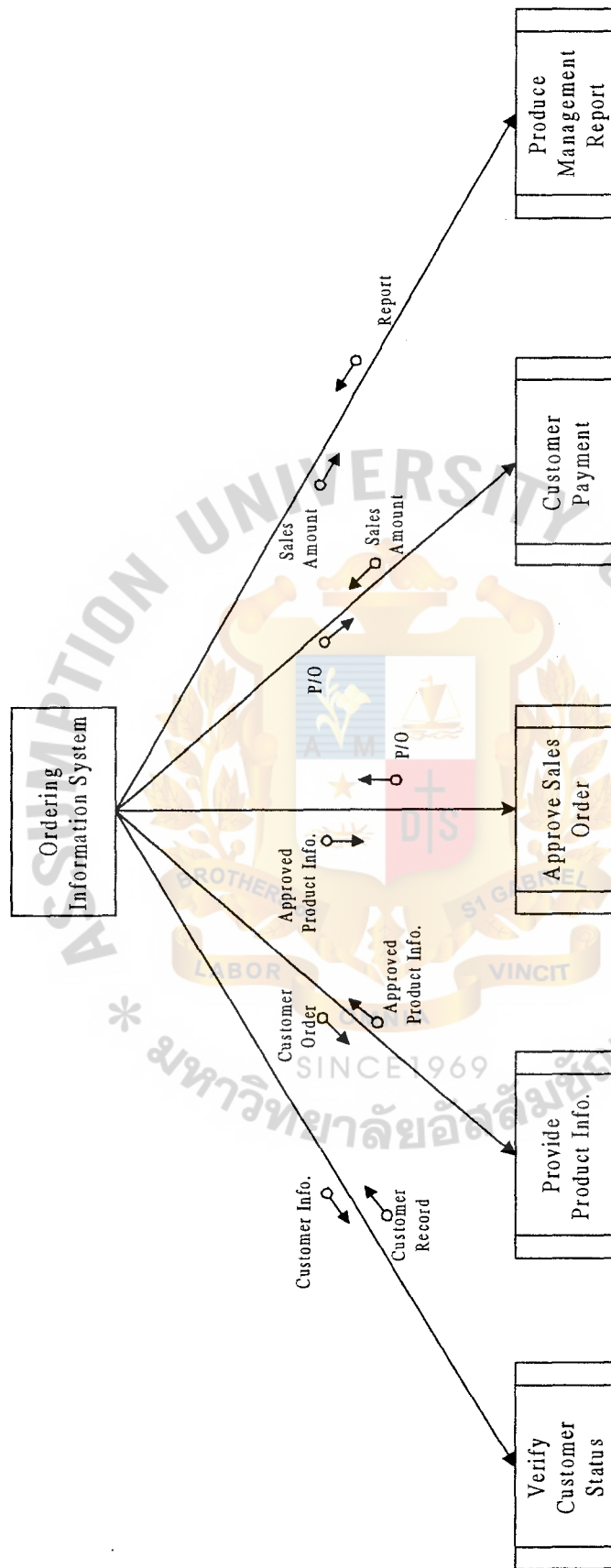


Figure D.1. Structure Chart of Ordering Information System.

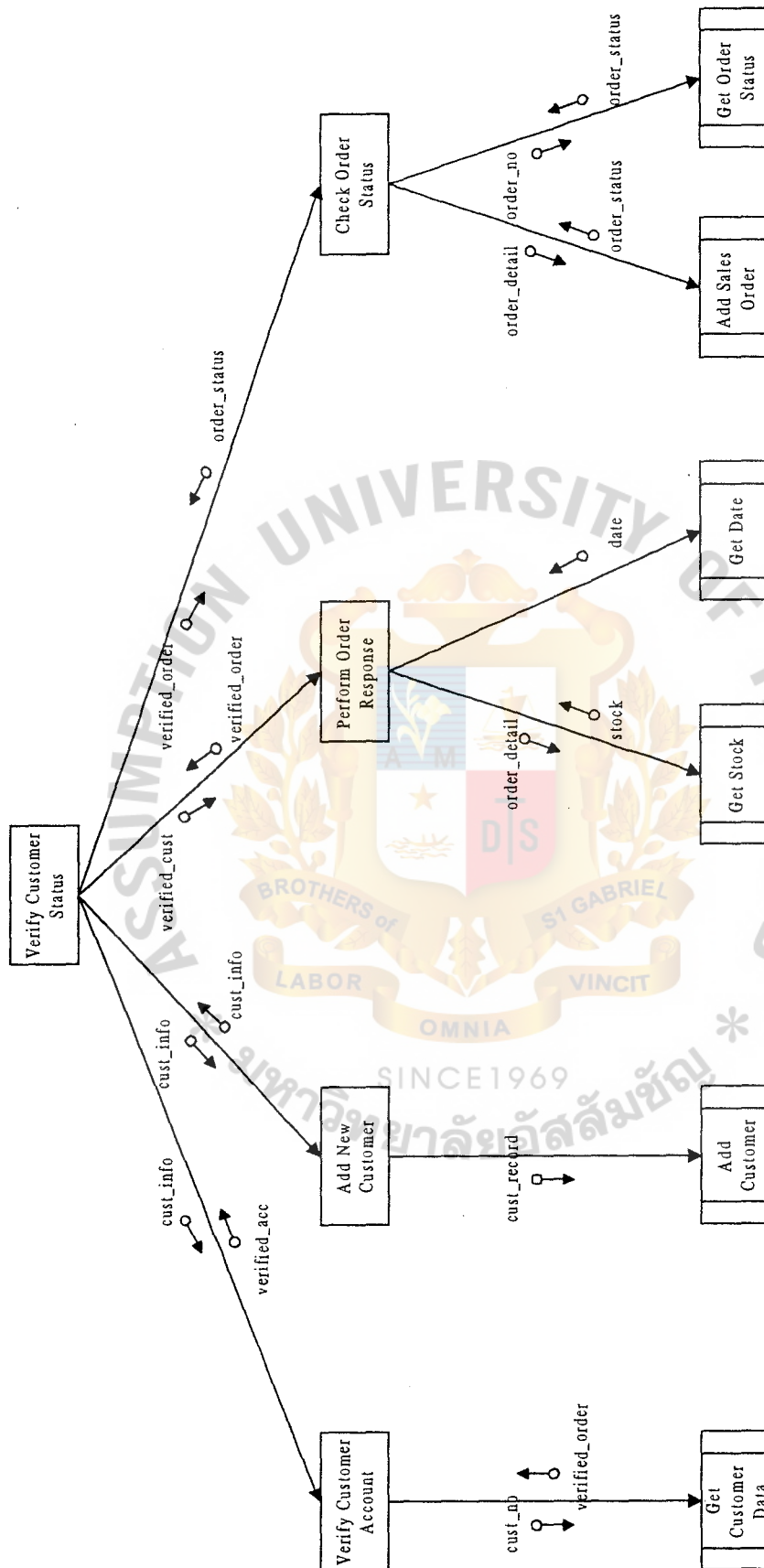


Figure D.2. Structure Chart: Verify Customer Status.

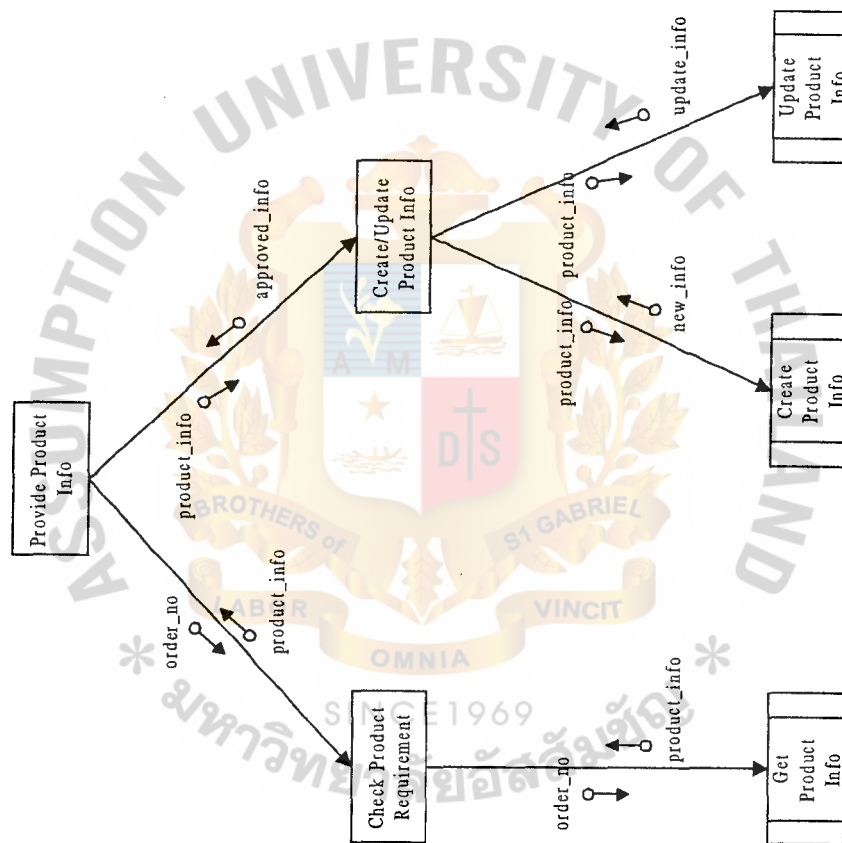


Figure D.3. Structure Chart: Provide Product Information.

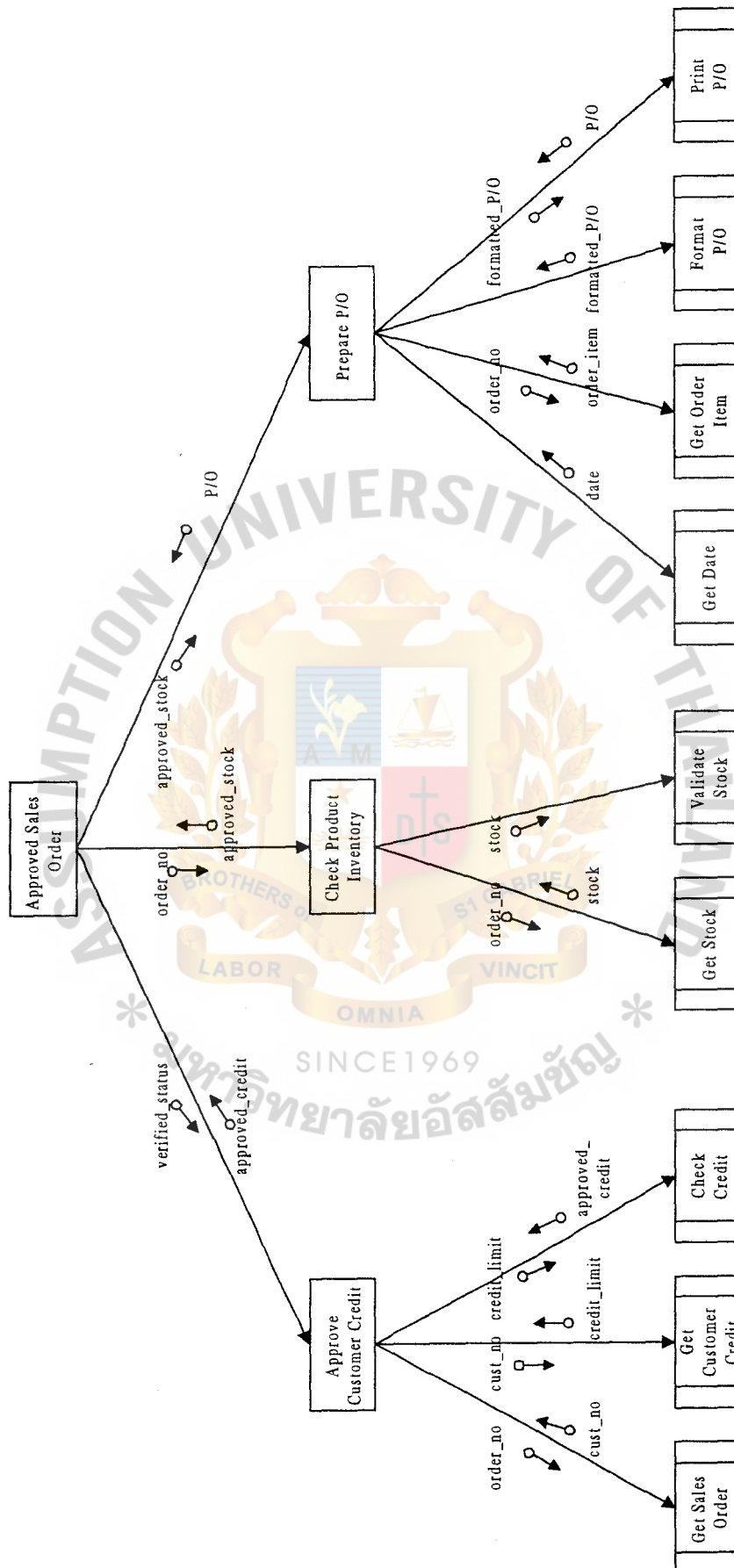


Figure D.4. Structure Chart: Approved Sales Order.



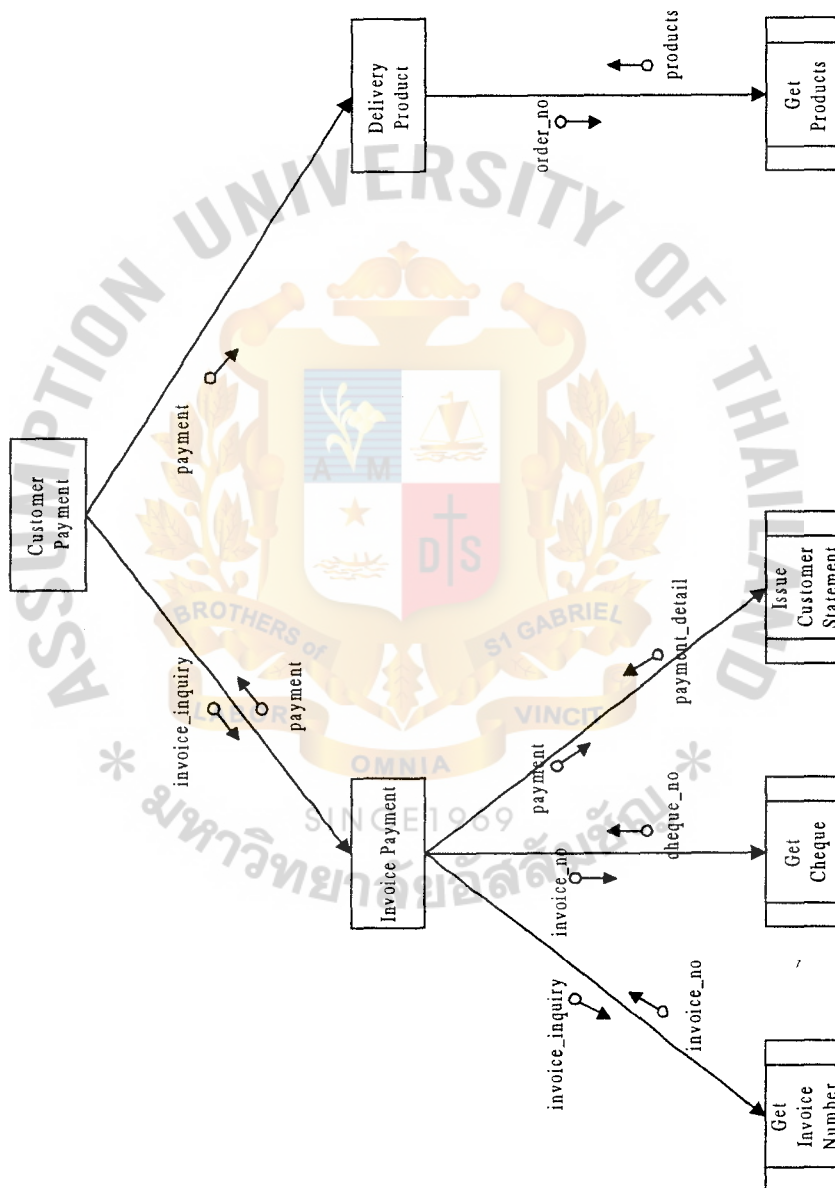


Figure D.5. Structure Chart: Customer Payment.

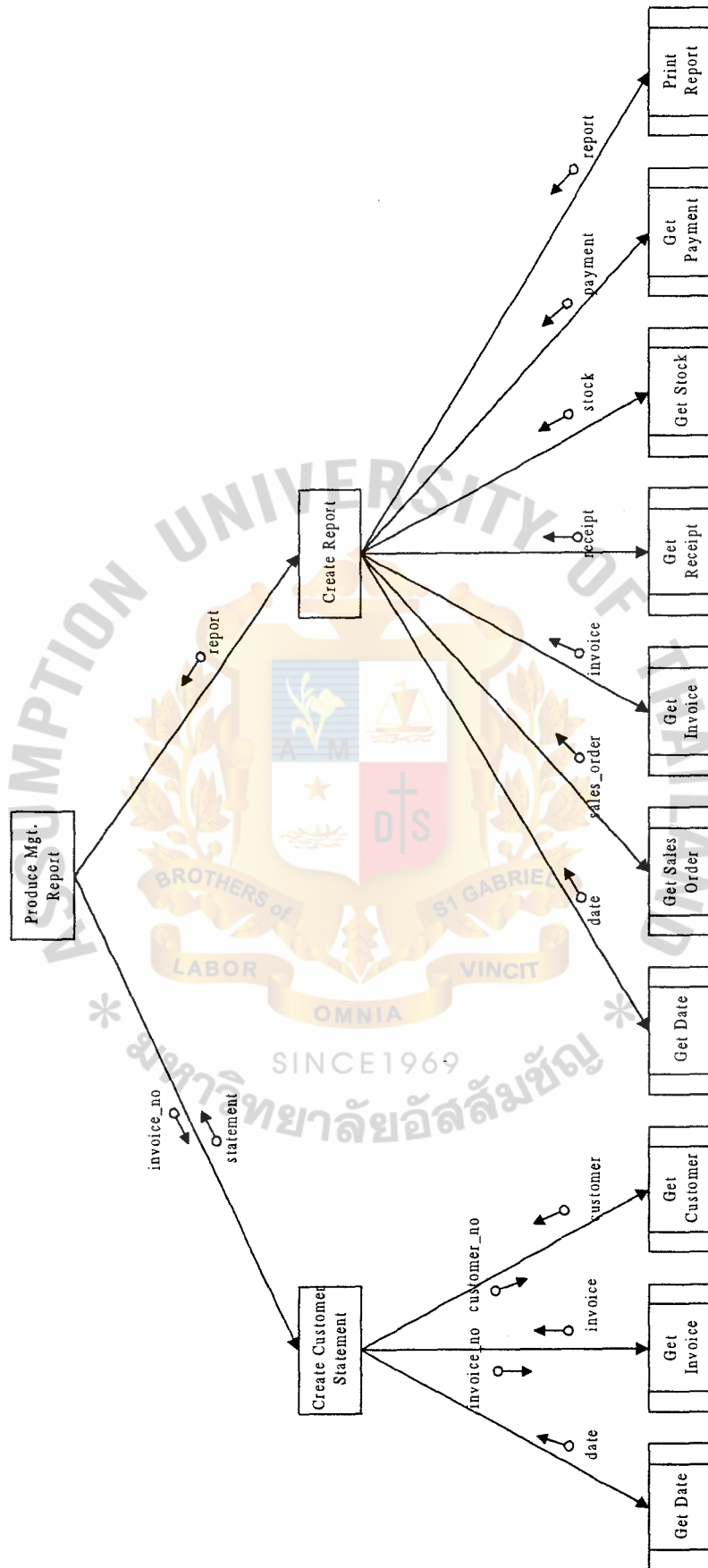


Figure D.6. Structure Chart: Produce Management Report.



## APPENDIX E

### DATA DICTIONARY

## DATA DICTIONARY

A data dictionary is a document that supports data flow diagrams. It contains all the terms and their definitions for data flows and data stores related to a specific system. The purpose of a data dictionary is to define the contents of the data flows and data stores, with the exception of the procedures that are defined separately through the use of process descriptions. It also contains definitions for data and control items on structure charts.

The symbols used in constructing data dictionary are:

=	means	EQUIVALENT TO
+	means	AND
{ }	means	REPEATING data elements
[ ]	means	EITHER one data element OR another
**	means	COMMENT
@	means	IDENTIFIER (key field) for a store
	means	SEPARATES alternative choices in the { } construct
( )	means	OPTIONAL data element

Table G.1. Data Dictionary.

Data Name	Definition
Approved_Product_Info	* Approve Product Information *
Approved_Credit	* Approve Customer Credit *
Approved_Info	* Approve Customer Information *
Approved_Stock	* Approve Stock of Products *
Cheque_No	* Cheque Number *
Credit_Limit	* Credit Limit of Customer *
Cust_No	* ID Number of Customer *
Cust_Info	* Details of Customer * CustomerNo + ContactFirstName + ContactLastName + CompanyName + BillingAddress + City + StateOrProvince + PostalCode + Country + ContactTitle + PhoneNumber + FaxNumber
Cust_Order	* Order of Customer * OrderNo + Cust_No + EmployeeNo + OrderDate + PurchaseOrderNo + ShipName + ShipAddress + ShipCity + ShipStateOrProvince + ShipPostalCode + ShipCountry + ShipPhoneNumber + ShipDate + ShippingMethodNo + FreightCharge + SalesTaxRate
Date	* Date of Order *
Invoice_No	* ID Number of Invoice *
Invoice_Detail	* Details of Invoice * Invoice_No + Date + Cust_Info + Cust_Order + Order_Detail + Payment_Detail
Order_No	* ID Number of Order *

Table G.1. Data Dictionary (Continued).

Data Name	Definition
Order_Detail	* Details of Order * OrderDetailNo + OrderNo + ProductNo + Quantity + UnitPrice + Discount
P/O	* Purchase Order *
Payment	* Customer Payment *
Payment_No	* ID Number of Payment *
Payment_Detail	* Detail of Customer Payment * Payment_No + Order_No + PaymentAmount + PaymentDate + PaymentMethod_No
Product_No	* ID Number of Product *
Product_Info	* Details of Product * Product_No + ProductName + UnitPrice
Report	* Report for Management *
Sales Amount	* Amount of Sales *
Stock_No	* ID Number of Stock *
Stock	* Stock of Products * Stock_No + ProductName + ProductionDate + Quantity + Total





## APPENDIX F

### INPUT DESIGN

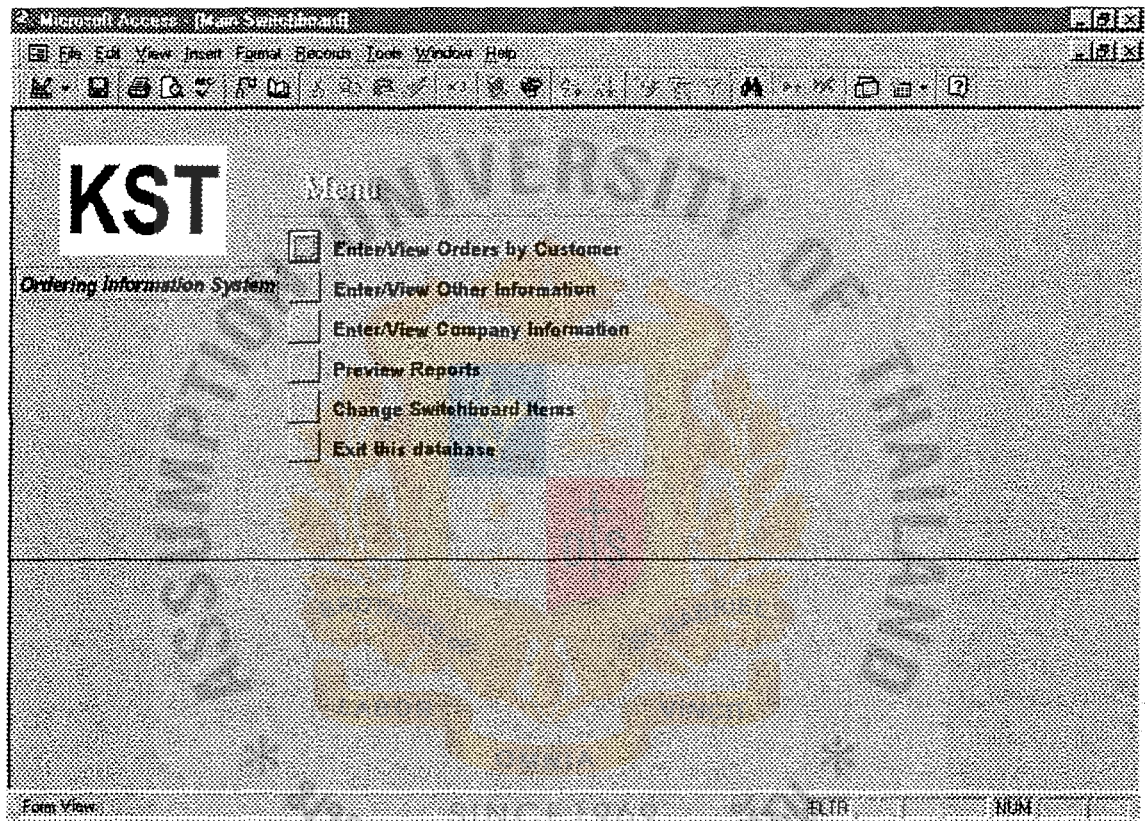


Figure F.1. Main Menu of Ordering Information System.



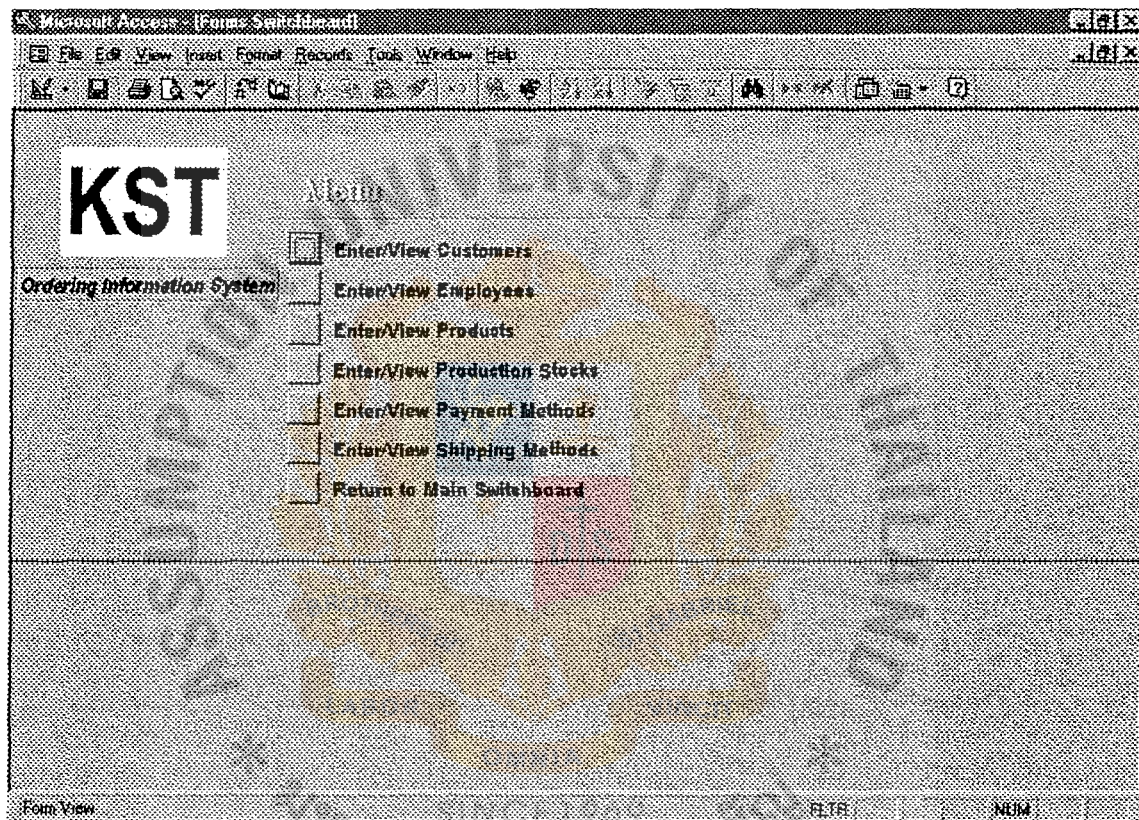


Figure F.2. Menu to Enter/View Other Information.

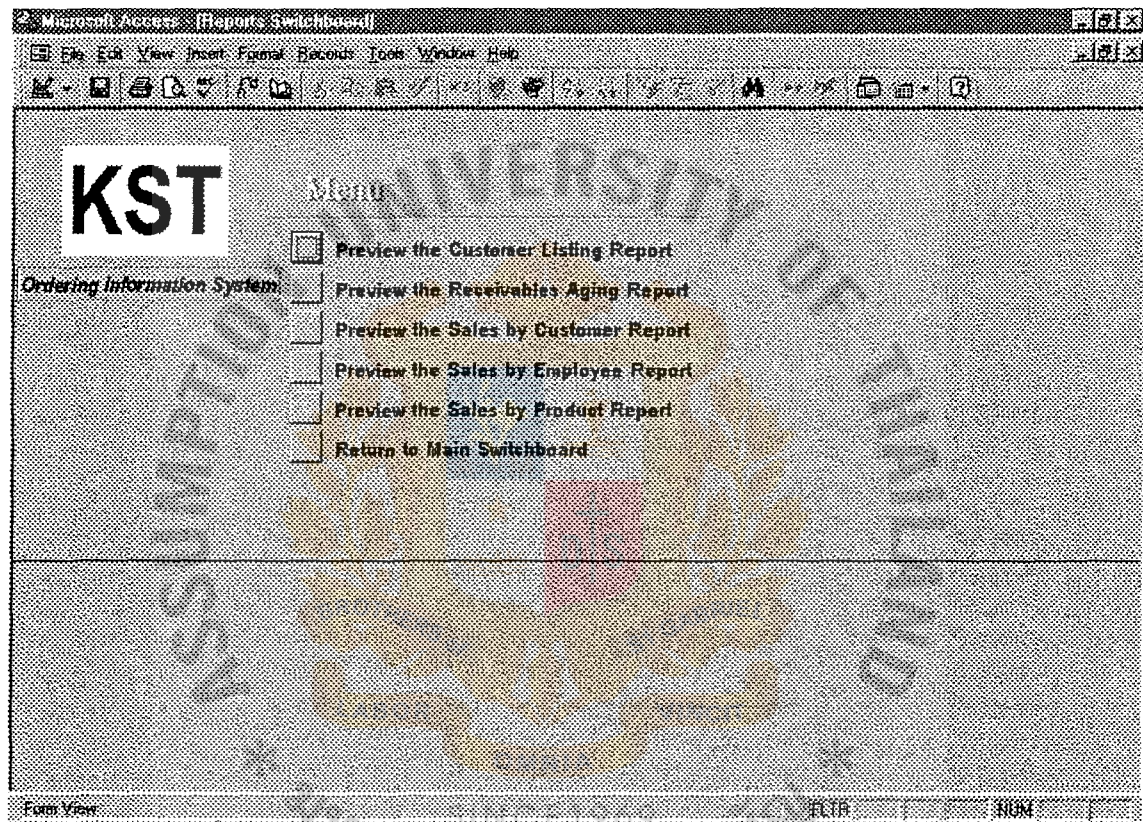


Figure F.3. Menu to Preview Reports.



**My Company Information**

### Company Information

Enter your company's name and address information here. You will save the information by closing the form.

Company	Kiang Huat Sea Gull Trading P	Default Terms	Net 10 days.
Address	4/2 Moo3, Asia43 Rd.,	Invoice Descr	Thank you for placing your order with us.
Postal Code	90310	Phone Number	074 210 883
City	NaMom	Fax Number	074 210 050
State/Province	Songkhla		
Country	Thailand		
Sales Tax Rate	7.00%		

Figure F.4. Enter/View Company Information Form.

# St. Gabriel's Library

Microsoft Access - [Orders]

File Edit View Insert Format Records Tools Window Help

**Sales Order**

Employee: Buchanan, Steven Order ID:

Product	Unit Price	Quantity	Discount	Line Total
Cooked Headless Shrimp	\$40.00	200	0.00%	\$8,000.00
Pango	\$45.00	500	0.00%	\$22,500.00
Black Tiger Shrimp (Block)	\$27.00	200	0.00%	\$5,400.00
Black Tiger Shrimp (IQF)	\$32.00	200	0.00%	\$6,400.00
Fish Fillet	\$39.00	400	0.00%	\$15,600.00

PQ Number: 52 Order Subtotal: \$57,900.00

Sales Tax Rate: 7.00% Freight Charge: \$200.00

Order Date: 2/2/95 Sales Tax: \$4,053.00

Ship Date: 3/2/95 Order Total: \$62,153.00

Shipping Method: Speedy Express Total Payments: \$10,000.00

Shipping Options: Amount Due: \$52,153.00

Record: 1 of 5

Form View NUM

Figure F.5. Enter/View Sales Order Form.



Microsoft Access - [Customers]

File Edit View Insert Format Records Tools Window Help

**Add/Remove Customers**

CustomerID		
CompanyName	Let's Stop N Shop	ContactTitle
ContactFirstName	Jaine	ContactLastName
BillingAddress	87 Polk St. Suite 5	
City	San Francisco	StateOrProvince
PostalCode	94117	Country
PhoneNumber	(415) 555-5938	FaxNumber
		(415) 555-5939

Record: 1 of 3

Form View

Figure F.6. Enter/View Customer Form.

Microsoft Access - [Employees]

File Edit View Insert Format Records Tools Window Help

**Add/Remove Employees**

First Name	Stever
Last Name	Buchanan
Title	Sales Representative
Work Phone	(706) 555-1189
Extension	

Record: 1 of 5

Form View

NUM

Figure F.7. Enter/View Employees Form.



Microsoft Access [Products]

File Edit View Insert Format Records Tools Window Help

**Add/Remove Products**

Product ID	1
Product Name	Black Tiger Shrimp (Block
Unit Price	\$27.00

Record: 1 of 10

Form View

NUM

Figure F.8. Enter/View Products Form.

Microsoft Access - [Stocks]

File Edit View Insert Format Records Tools Window Help

**Production Stocks**

StockNo	1
ProductName	Black Tiger Shrimp (IQF)
ProductionDate	1/9/00
Quantity	500

Record: 1 of 2

Form View NUM

Figure F.9. Enter/View Production Stocks Form.



# St. Gabriel's Library

Microsoft Access - [Payment Methods]

File Edit View Insert Format Records Tools Window Help

**Payment Method**

Payment Method ID

Payment Method

Credit Card? ☐

Record: 14 of 4

Form View

Figure F.10. Enter/View Payment Methods Form.

Microsoft Access - [Shipping Methods]

File Edit View Insert Format Records Tools Window Help

Shipping Method

ShippingMethodID: 1

ShippingMethod: Speedy Express

Record: 1 of 4

Form View

NUM

Figure F.11. Enter/View Shipping Methods.





# St. Gabriel's Library

## KST Invoice

Kiang Huat Sea Gull Trading Frozen Food Public Co., Ltd.

4/2 Moo3, Asia43 Rd., NaMom, Songkhla, 90310, Thailand

Phone: (074) 210883 Fax: (074) 210050

<b>Invoice Date</b>	2/2/99	<b>Contact Name</b>	Jaime Yorres	<b>Customer ID</b>	1
<b>Order ID</b>	1	<b>Terms</b>	Net 10 days.	<b>Ship Date</b>	2/3/99
<b>Order Date</b>	2/2/99	<b>Ship Via</b>	Speedy Express	<b>PO Number</b>	52

**Bill To:** Let's Stop N Shop

87 Polk St.

San Francis CA

94117

USA

ID	Product Name	Quantity	Unit Price	Discount	Line Total
6	Cooked Headless Shrimp	200	\$40.00	0.00%	\$8,000.00
9	Pango	500	\$45.00	0.00%	\$22,500.00
1	Black Tiger Shrimp (Block)	200	\$27.00	0.00%	\$5,400.00
2	Black Tiger Shrimp (IQF)	200	\$32.00	0.00%	\$6,400.00
10	Fish Fillet	400	\$39.00	0.00%	\$15,600.00
Subtotal					\$57,900.00
Freight Charge					\$200.00
Sales Tax					\$4,053.00
Order Total					\$62,153.00
Total Payments					\$10,000.00
Total Due					\$52,153.00

Thank you for placing your order with us.

Figure G.1. KST's Invoice.

# **KST** *Customer Listing*

<i>Company Name</i>	<i>Contact Name</i>	<i>City</i>	<i>State/Province</i>	<i>Phone Number</i>	<i>Fax Number</i>
Let's Stop N Shop	Yorres, Jaime	San Francisco	CA	(415) 555-5938	(415) 555-5939
Old World Delicatessen	Phillips, Rene	Anchorage	AK	(907) 555-7584	(907) 555-2880
Rattlesnake Canyon Grocery	Wilson, Paula	Albuquerque	NM	(505) 555-5939	(505) 555-3620

Figure G.2. Customer Listing Report.

# KST

## Receivables Aging

Customer Name	Current	31-60 Days	61-90 Days	91+ Days	Balance
Let's Stop N Shop	\$0.00	\$0.00	\$0.00	\$103,119.00	\$103,119.00
Old World Delicatessen	\$0.00	\$0.00	\$0.00	\$46,180.80	\$46,180.80
Rattlesnake Canyon Groc	\$0.00	\$0.00	\$0.00	\$44,088.80	\$44,088.80
<b>Grand Total</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$0.00</b>	<b>\$193,388.60</b>	<b>\$193,388.60</b>

Figure G.3. Receivables Aging Report.

# KST Sales by Customer

For Orders Record Between: 1/1/99 and 12/31/99

Company Name	Total Units	Total Sales	Sales Tax	Total Freight	Amount Invoiced
Let's Stop N Shop	3300	\$131,700.00	\$9,219.00	\$1,200.00	\$142,119.00
Old World Delicates	1200	\$46,300.00	\$0.00	\$13.00	\$46,313.00
Rattlesnake Canyon	1100	\$44,400.00	\$0.00	\$15.00	\$44,415.00
<b>Grand Total</b>	<b>5600</b>	<b>\$222,400.00</b>	<b>\$9,219.00</b>	<b>\$1,228.00</b>	<b>\$232,847.00</b>

Figure G.4. Sales by Customer Report.

# KST

## Sales by Employee

For Orders Record Between: 1/1/99 and 12/31/99

Employee Name	Total Units	Total Sales	Sales Tax	Total Freight	Amount Invoiced
Buchanan, Steven	2700	\$107,000.00	\$5,817.00	\$508.00	\$113,325.00
Davolio, Nancy	1100	\$43,800.00	\$2,093.00	\$203.00	\$46,096.00
Fuller, Andrew	900	\$35,400.00	\$448.00	\$307.00	\$36,155.00
Leverling, Janet	500	\$20,800.00	\$861.00	\$202.00	\$21,863.00
Peacock, Margaret	400	\$15,400.00	\$0.00	\$8.00	\$15,408.00
<b>Grand Total</b>	<b>5600</b>	<b>\$222,400.00</b>	<b>\$9,219.00</b>	<b>\$1,228.00</b>	<b>\$232,847.00</b>

Figure G.5. Sales by Employee Report.



<div> <div>KST</div> <div>Sales by Product</div> </div>		
For Orders Record Between: 1/1/99 and 12/31/99		
Product Name	Total Units	Total Sales
Black Tiger Shrimp (Block)	400	\$10,800.00
Black Tiger Shrimp (IQF)	900	\$28,800.00
Cooked Headless Shrimp	1100	\$44,000.00
Cooked Head-On Shrimp	900	\$40,500.00
Fish Fillet	700	\$27,300.00
Frozen Head-On Shrimp	100	\$4,000.00
Pango	1000	\$45,000.00
Sushi	100	\$4,000.00
White Shrimp (Block)	400	\$18,000.00
Grand Total	5600	\$222,400.00

Figure G.6. Sales by Product Report.

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