Sales Control System of Alutop Company

by

Mrs. Lawan Suvajanakorn

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

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

July 2006

Sales Control System of Alutop Company

by
Mrs. Lawan   Suvajanakorn

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

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

July 2006

Project Title	Sales Control System of Alutop Company
Name	Mrs. Lawan Suvajanakorn
Project Advisor	Dr. Thanatpong Pratheepthaweephon
Acadamic Year	July 2006

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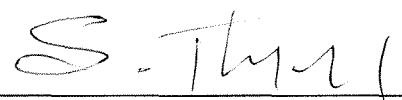
Approval Committee :

_____
(Dr. Thanatphong Pratheepthaweephon)
Advisor

_____
(Dr. Rapeepat Techakittiroj)
Program Director

_____
(Prof.Dr. Srisakdi Charmonman)
Chairman

_____
(Air Marshal Dr. Chulit Meesajjee)
Member

_____
(Assoc.Prof. Somchai Thayarnyong)
CHE Representative

July 2006

ABSTRACT

The project presents the analysis of existing system and design of a new information system for Alutop Company. It is the introduction of a computerized system to replace the existing system for sales control. There are many problems and discomfort in records keeping of sales volumes and information as well as updating and maintaining of the accuracy. The objective of the project is to develop a new system to ease the officers in checking of customers' orders, invoice issuing and evaluate the customer by the purchasing records.

The study of this project begins with an analysis of the current system, gathering of information and defining problems. After the investigation, the proposed system is designed to solve problems as well as improve the quality of workflow. The main objective of the proposed system is to increase work productivity in term of quantity and quality to the customers. An alternative selected is the use of computer to replace existing system. This is helpful for the manager to control and planning the production processing. The cost-benefit analysis is also provided to compare the two systems, existing and proposed one.

After this system is fully designed and developed, it will be installed for testing during testing period. The users need to learn about the new system before the actual usage. The time estimated of the project is about three to four months starting from the first study of existing system until the proposed system is launched. The break-even point of the systems would be compared for better decision making. For the proposed system introduced by this project, break-even point is 2.5 years after investment.

ACKNOWLEDGEMENTS

The project is completed by the contribution of many people. The writer would like to express appreciation and thanks for all of their co-operations and advice.

She would like to thank Dr. Thanatpong Pratheepthaweephon, her project advisor, for his valuable suggestions and guidance given in the preparation of this project.

She would appreciate to express her deep sense of gratitude to Prof.Dr. Srisakdi Charmonman, Chairman, MS(CIS) Board, and Air Marshal Dr. Chulit Meesajjee, Dean and co-advisor, Graduate school of Computer Information Systems, for providing the building blocks to this course.

She extends her sincere thanks to Mr. Thawatchai Suvajanakorn, the manager of Alutop Company, for his support and all information provided.

The acknowledgement cannot be completed if she does not mention her instructors. Therefore, she would like to express her gratitude to all of her instructors who have given her valuable knowledge and experience shared in the classes.

ii

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLE

I. INTRODUCTIONS

1.1 Background of the Project

High technology and development are shortening the distances between people around the world today. Globalization enhances the value of information to every business and at the same time, it offers new opportunities in business. Today, good managed information systems provide the great communication and analytic power to the firms' business running. To stay competitive, many organizations actually need to do re-engineering their present information systems. The use of modern technologies in managing information is an important thing that helps in simplifying and communicating among variety of communication methods as well as eliminates unnecessary workings.

Alutop Company still uses manual system to keep all the information. There is no usage of the computer. There are no relationships created among the bulk of this information. It needs the new information system to manage and consolidate this information to be more effective and can be used for making decisions. A sales control System is a project development for Alutop Company. All the processes concerning gathering information, generating useful report, and issuing documents such as quotation, invoice, receipt, etc. are done manually. It would be more effective to use computer information system and computer network to improve the system flow. It is the duty of analyst to define problems and provide an alternative solution for the new system, which can be actually developed and implemented.

1.2 Objectives of the Project

Alutop Company is presently operating and managing all information in the manual system basis. It experienced that there are many information items that needed to be taken care of with accuracy and efficiency. The human errors threaten the

1

accuracy of information, the sales status is not actually shown to the manager by the right time.

The main objectives of this project are to redesign Sales Control System from standalone computer to client-server computer. Database system should be created to save much more data in the same place, which is better than separating into a lot of data files. The objectives are summarized as follows:

(1) Study and analyze the existing system, define problems and understand user's requirements.

(2) Design and develop the computerized system to replace the existing operations.

(3) Conduct benefits and costs comparison between the existing system and the proposed system.

1.3 Scopes of the Project

The project focuses on Sales Control System by studying the inventory flow, which are involved with collecting information, updating data file, issuing necessary documents and generating summary reports. The scope can be summarized by the following.

For Sales Control System:

(1) To analyze and design the new effective computerized system to replace the present manual system.

(2) To construct new application software and hardware to support the information management system.

(3) To create database management system for the previous records and new information coming.

2

(4) To design and model the interfaces that are user friendly and easy to use, maintain and repair.

For information:

(1) Record keeping of all information related such as customers, sales persons and products.

(2) Update and maintain the information accuracy, including customer's details and orders.

For documentation:

(1) Generate well-designed summary reports of sales, order, etc.

(2) Issue documents such as quotation, purchase order, invoice.

(3) Summary of information in form of reports required by the manager.

1.4 Project Plan

The project plan is divided into four phases. These include the study of the existing system, new system analysis, new system design and model, and test and install the new system.

The first phase if the study of the existing system. By gathering all necessary data, the problems are to be defined. The workflow would be redesigned and developed to be more effective and cut out all redundant processes.

The second phase starts after finishing the first phase. It is the analysis of new modified system. There are only logical models of the new system, which are presented in form of a diagram.

The third phase is the creation of physical model of the last phase logical model. The new system is physically designed. It includes the design of user interfaces, input-output design, and reports documentation.

3

The last phase is the implementation of the new system model. The new system will be installed for testing first. It will be tested by the users. There may be new problems that may occur during this phase. All the problems must be tracked and solved in time. When the system is confidently checked without or at least error, it will be fully installed for a period. When no more problems are discovered, the previous manual system will be converted to the new system format.

The project plan is summarized with the estimated time span in Figure 1.1.

II.   EXISTING SYSTEM STUDY

2.1   Background of the Organization

Alutop Company is a medium-size factory. It has been organized since 1995. It produces aluminium extrusions that are used as materials for construction and furnishing. It is located in Samutsakorn province. The major raw material for the production is aluminium billet. The main customers are wholesalers, retailers and industrial site. The products almost are made to order, the stocks are produced during low season which is quite a short duration. The main problem is that manager cannot effectively plan for the production process without up to date information of customers' purchase order and sales volume.

The information system is still manually managed which consumes much time to complete. The information is not presented on the right time, it's too late for the manager to make any decisions. A computerized system is a good alternative to solve the problems. With high technology, the software can help to handle huge amount of information with less time consumption and to provide information accurately.

The organization chart of Alutop Company is shown in Figure 2.1. The details of the chart are explained below:

There are four major departments in Alutop Company

(1)   Sales & Marketing Department

This department is responsible for selling finished products to customers. It coordinates with Inventory Control Department to fulfill the customers' orders and delivery on time. It also deals with Accounting Department in term of product price quoted to customers' purchase order.

6

(2)   Production Department

It is responsible for production process control. The customer's order from Marketing Department will be implemented and finish goods are sent to Inventory Control Department and kept in the warehouse. It requests raw materials from Inventory Control Department. The main function of this department is to control and develop the quality of finished goods to be produced on time.

(3)   Inventory Control Department

All inventories are managed and controlled by this department. It controls the amount of inventory to be produced and keep stocks of raw material for production by purchasing from suppliers. The finished products will be stored in the warehouse and wait for distribution to customers later.

(4)   Accounting Department

It usually issues invoices for customers when delivering finished goods. It control employee's records and payroll system, payment for raw material purchasing and periodically generates reports of revenue and expenses. It also coordinates with Marketing Department and Inventory Control Department.

2.2   Existing System

Alutop Company is still manually managing sales orders and all about information. The data flow starts from sales person, who receives customers' orders and records to the purchase order. Then inventory status checking to check whether there is enough products stock to be sent to customer. If not, the production department will produce them and deliver to the customers. The workflow can be summarized as follows:

Process 1   Customer order accepted by Marketing Department is sent to Inventory Control Department for checking status everyday.

Process 2   After checking, there are two possible results

Products ready, informs Marketing Department to withdraw and deliver products to customer.

Products not ready, requests production order to Production Department.

Process 3   Create invoices and update customers' purchase order balance.

Process 4   Generate summary reports and submit to manager weekly.

Because all the processes are manually done, they are of course time consuming and human errors still effect the information accuracy. The use of many papers also creates more costs and wastes.

The managers realized about these and would like to improve the working to be more effective as well as productive. They are interested in the computerized system and would appreciate if it can replace the manually system with more effectiveness and efficiency. At the same time the new system would create variety type of reports that support the analyzing to the future plan.

2.3   Current Problems and Areas for Improvement

Current Problems

With the current manual system, there are many problems occurred. The problems here are in term of speed, information accuracy and amount of paper works. They are summarized as follows:

(1)   Manual system actually needs human to do all the processes, records keeping, invoices issuing, data updating, summary reporting and data storing. With many works to do, it needs so much time to complete all the processes. Human errors, surely, stand without any guarantee of information accuracy. Or it needs re-checking which result out to date information to the managers.

(2)   As mentioned above, there will be any mistakes appear anywhere. How can the users catch them? Re-checking is an alternative done, but it takes times and costs. The company must pay double money to keep all information accurate while the mistakes may stand still. So re-checking is just a good alternative but not the best. Human errors may occur in whatever processes.

(3)   Paper works are created much more along with the incoming data. There are a lot of paper files created: customers profile, purchase orders, sales journal and so on. These still do not cover the summary reports to be done. Imagine the storage for these papers several years, no one is interested to pick them again. Important information sleep in the store waiting for a time and one day, they are useless waste. It needs the effective information management.

Areas for Improvement

The areas to be improved are divided into three parts: speed, accuracy and cost saving.

In term of speed

It takes time for the users to gather raw data, create reports and consolidate the reports into the summary reports for the manager. It is time consuming for information retrieval, editing, storing and maintaining in form of handwriting or typing. The information is not ready on time, and sometimes, invalid information affects manager's decision.

In term of accuracy

Information accuracy is another point that must be taken care seriously. It is found that human errors reduce the information accuracy. It is useless to hold inaccurate information on hand. And it is sure that manager makes wrong analysis and decision.

In term of cost saving

It is studied that the existing system makes use of a number of papers. There are many paper works created everyday. All the data are recorded on papers and they must be summarized into report form again. This is quite a redundant process and double or triple the use of paper. When all the data are processed and summarized in a predefined format, it appears in a big amount of papers to be thrown away. It increases more and more cost to acquire new papers as well as damage used papers. The storage of these reports is also in trouble. The company needs to spend for the cabinets to store the increasing data files.

III. PROPOSD SYSTEM INTRODUCED

3.1 User Requirements

The proposed system is required to solve the problems of the existing system, which are previously mentioned. The following are the requirements of the user:

(1) To remove data redundancy.

The existing system is not well managed. It requires the officers to record the data in written form and then convert to summary report forms. The report is created by handwritten or typewritten. It is inconvenient to create a neat and well formatted report as well as correct errors. The officer had to make more than one reports using the same data source, which is redundant working. Computerized system can replace and create better outcomes. It can create better quality reports and also in a variety of styles by inputting the data only once. It also provides a better storage for the data with security.

(2) To reduce work and save time.

It is an objective of the proposed system to help the users to create the best work with less time spending. The existing system is time consuming. The officers need to gather the data and take more time to create a neat report with the least error both in the format and data accuracy. With the proposed system, the officers can save more time to create reports. It can help to create better works with shorter time spend.

(a) To provide security by allowing only authorized person to access the data on computer.

(b) To exchange information easily with other departments without any problems.

(c) To update any details at any time.

12

(d) To allow the manager to retrieve data via the computer system at anytime.

(e) To reduce paper work.

3.2 System Analysis and Design

After analyzing the existing system, under the problems defined, the proposed system is designed to overcome the problems and fulfill managers and users requirements. The proposed system can be easily introduced through diagram with explanations.

According to the context diagram in figure 3.1, there are five main processes:

Process 1 Generate information

The proposed system keeps all the information about customers, staffs and products. The system will create new identification number for new customers, staffs and products.

Process 2 Receiving order from customers

Customer can make orders both by fax or telephone. The proposed system creates the quotation form to the customer. Include all information of customer's quotation order number, customer information, product, amount, unit price, credit term and remarks.

Process 3 Checking product

The staff can call the customer orders from the proposed system to check whether there are available products stocks for that orders or not. Then products are prepared to send to customers or production request will be sent to production department.

Process 4 Sales

Sales process started from product sending, invoice issuing until payment receiving. The proposed system keeps record of this information to generate report later.

13

Process 5 Generating report

After updated all required information, the proposed system generates summary reports for the manager. The reports can be retrieved at any time on screen and periodically printed into paper form.
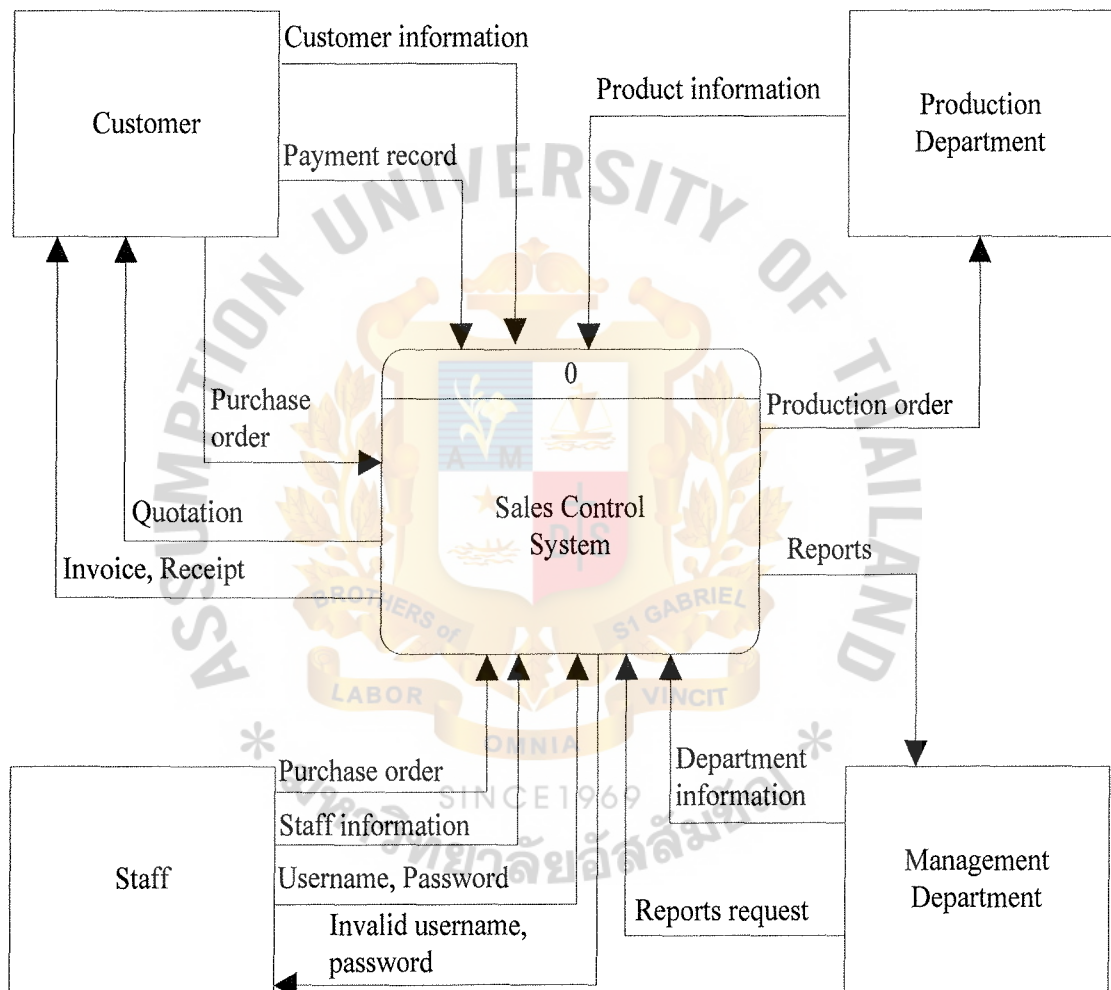
Figure 3.1.   Context Diagram of the Proposed System.

3.3 Hardware and Software Requirements

The proposed system is designed on client/server model. There are one server and three clients.

3.3.1 Hardware Requirements

The proposed system is not complicated. It requires local area network system to share the main database.

Table 3.1. Hardware Specification, One Server PC and Three Workstation Sets.

Hardware	Specification
CPU	Intel Pentium 4 speed 2.8Ghz
Memory	256MB SDRAM, expandable to 512 MB
Hard disk	80GB
Floppy Drive	1.44MB diskette drive
Optical Drive	CD-RW
Display	15" LCD
Accessory	104 Keys Keyboard, mouse and mouse pad, UPS 500 VA
Network	LAN Card 10/100 Mb
Printer	Epson LX 300+

3.3.2 Software Requirements

The software is required to run on the above hardware. It operates all the processes and serves the users need. It includes the system to manage the sales control information.

Table 3.2. Software Specifications.

Software	Specification
Operating System	Microsoft Windows 2000
Application Software	Microsoft Office 2000, Visual Basic 6.0
Communication Software	Microsoft Network
DBMS	Microsoft access 2000

15
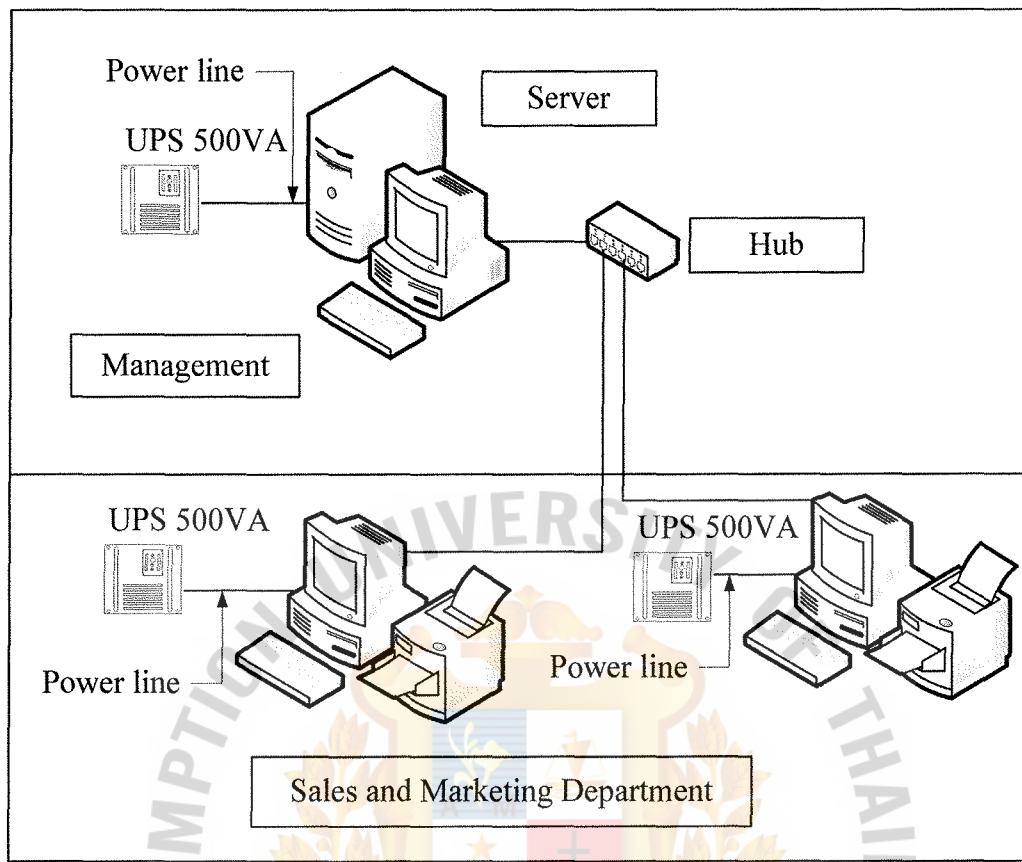
Figure 3.2. Network Configuration of the Proposed System.

3.4 Security and Control

It is important to protect all information confidentially. Only the authorized persons can access to the computerized system. The security control is decided into three parts.

(1) System access

Password is set up on screen only by the authorized person to enter the program in order to prevent unauthorized person entering the system. Authorized persons have different priority and service to read, write, modify and delete data.

(2) Data accuracy control

All the data entry and modification must be double-checked either from screen display or from the printout form generated. File back up is done every month.

(3)   Other security

Virus is another serious point to take good care. Software is installed in all computers in the system for protection. Each user should scan unknown floppy disk every time before use.

3.5   System Cost Evaluation and Comparison

3.5.1   Cost Analysis

The costs of existing system are summarized in the table. They included fixed cost, fixed one time cost, and operating cost, variable by time.

Table 3.3.   Existing system Cost Analysis (per Annum), Baht.

Cost Items	Cost	
Fixed Cost		
Office equipment cost		
Typewriter	1 unit @ 4,500	= 4,500
Calculator	2 unit @ 800	= 1,600
Cabinet	4 unit @ 10,000	= 40,000
Total Fixed Cost		46,100
Operating Cost		
Salary cost		
Staff	2 person @ 15,000 x 12 months	= 360,000
Part time worker	1 person @ 7,000 x 12 months	= 84,000
Total annual salary cost		444,000
Office supply cost		
Stationary	1,700 x 12 months	= 20,400
Paper	1,500 x 12 months	= 18,000
Miscellaneous cost	1,500 x 12 months	= 18,000
Total office supply cost		60,000
Utility cost	3,000 x 12 months	= 36,000
Total Annual Operating Cost		540,000
Total Cost		586,100

17

Table 3.4. Proposed system Cost Analysis (per Annum), Baht.

Cost Items	Cost	
Fixed Cost		
Hardware	3 unit @ 25,000	= 75,000
Software	1 unit @ 10,000	= 10,000
Network Interface	3 unit @ 1,000	= 3,000
HUB	1 unit @ 1,500	= 1,500
Implementation cost		
System Analyst		100,000
Programmer		70,000
Training and set up cost		15,000
Total implementation cost		185,000
Office equipment cost		
Printer Epson LQ300+	2 unit @ 7,500	= 15,000
Cabinet	2 unit @ 10,000	= 10,000
Total Fixed Cost		299,500
Operating Cost		
Salary cost		
Staff	2 person @ 15,000 x 12 months	= 360,000
Total Annual Salary Cost		360,000
Office Supply Cost		
Stationary	1,500 x 12 months	= 18,000
Paper	1,000 x 12 months	= 12,000
Miscellaneous cost	1,000 x 12 months	= 12,000
Total Office Supply cost		42,000
Maintenance cost	500 x 12 months	= 6,000
Utility Cost	3,000 x 12 months	= 36,000
Total Annual Operating Cost		444,000
Total Cost		743,500

3.5.2 Benefit Analysis

There are two types of benefits, tangible and intangible. Tangible benefits can be estimated in term of money while intangible benefits cannot. Intangible benefits are estimated in term of time saving, improving in quality, decreasing human error, reducing risk of data loss and satisfy customer needs. The table below compares the time used in any process comparing between existing system and proposed system.

Table 3.5.   Degree of Achievements. (time saving)

Process Name	Completion time of Existing System	Completion time of Proposed System	Time Saving
Prepare customer quotation form.	15 minutes	2.5 minutes	12.5 minutes
Invoice issuing	15 minutes	2.5 minutes	12.5 minutes
Prepare weekly sales reports.	45 minutes	5 minutes	40 minutes
Calculate monthly sales amounts of a customer.	100 minutes	5 minutes	95 minutes
Search the latest product price sold to customer.	10 minutes	1 minute	9 minutes

While tangible benefits can be calculated and predicted, the cost comparison of existing system and proposed system must be compared in form of money. Hereby the cost saving when operating on the proposed system is the meaning of tangible benefit at the same time.

19

Table 3.6.   Cost Comparison between the Existing System and Proposed System, Baht.

(Estimated inflation rate 10% per year)

Cost items	Year 1	Year 2	Year 3	Year 4	Year 5
Existing System:					
Fixed Cost	46,100	0	0	0	0
Operating Cost	540,000	594,000	653,400	718,740	790,614
Total Cost	586,100	594,000	653,400	718,740	790,614
Accumulated Cost	586,100	1,180,100	1,833,500	2,552,240	3,342,854
Proposed System:					
Fixed Cost	299,500	0	0	0	0
Operating Cost	444,000	488,400	537,240	590,964	650,060.40
Total Cost	743,500	488,400	537,240	590,964	650,060.40
Accumulated Cost	743,500	1,231,900	1,769,140	2,360,104	3,010,164.4

3.5.3   Breakeven Analysis

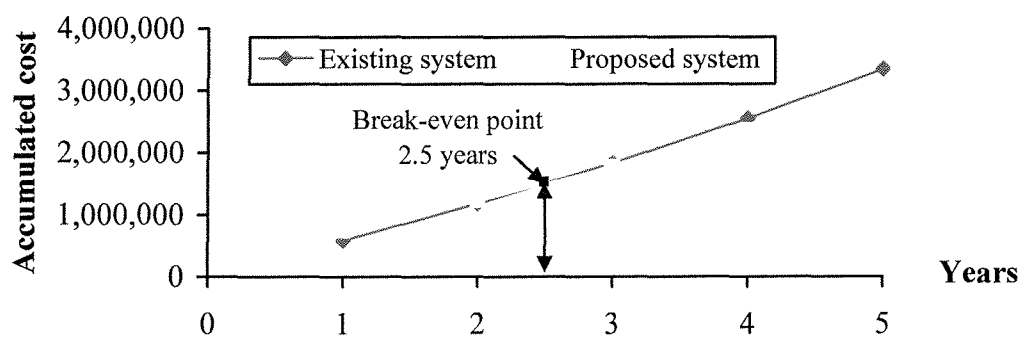According to the Table 3.6, the curve can be plotted to find the breakeven point.

Figure 3.3. Cost Comparison Chart between Existing and Proposed System.

20

From the figure 3.3, the graph shows that the proposed system can save more cost and break even point is about 2.5 months after investment. The proposed system is recommended to be launched.

3.5.4   Payback Period

The payback period method shows how and how long both the costs of running the existing system and the proposed system will be regained. Discounted payback period is calculated based on the fact that a baht earned today is more valuable than baht of the future.

Table 3.7. Accumulated Cost Saving between The Existing System and Proposed system – Tangible Benefits Estimated Derived From Proposed System, Baht.

| Cost items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Accumulated Existing System Cost	46,100	586,100	1,180,100	1,833,500	2,552,240	3,342,854
Accumulated Proposed System Cost	299,500	743,500	1,231,900	1,769,140	2,360,104	3,010,164
Cost Saving	-253,400	-157,400	-51,800	64,360	192,136	332,689.60
Discount rate 10%	1.00	0.91	0.83	0.75	0.68	0.68
Time-adjusted	-253,400	-143,234	-42,994	48,270	130, 652.5	206,267.50
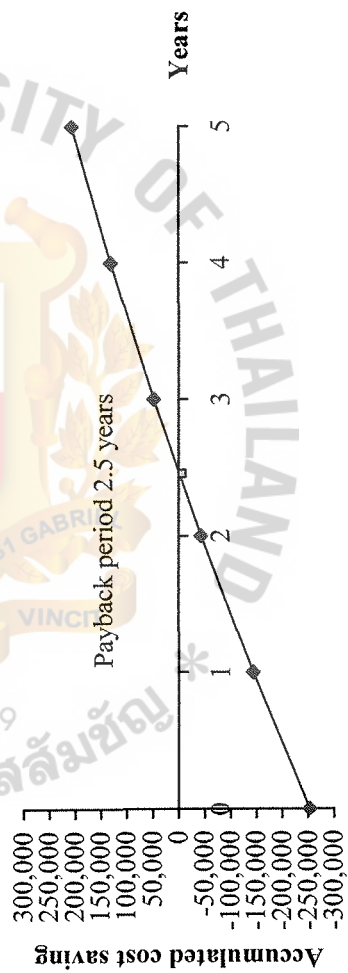
Figure 3.4. Payback Period of the Proposed System.

IV. PROJECT IMPLEMENTATION

4.1 Overview of Programming the System

This is the overview of the project implementation plan. The implementation of the proposed system starts after the management team has approved the proposed system. There are three steps for implementation starting from application development, test and install, and data conversion.

During the test period, problems that have not been anticipated during the study and design phase may occur. The solutions for these problems may require system design modification.

The proposed system must be completely programmed by the programmer. After the programming is finished, it has to be tested to ensure that it can operate without any errors and fully accurate. If there are any errors, they must be corrected and tested again. The testing must be done until the program is reliable and fulfill all users' requirements. The program must guarantee data accuracy and security of data storage. After the testing is completely finished, and it seems to be reliable, it will be installed and tested by the user for a period of time. Until there are no more errors in the program, all the previous information will be converted into the new system format.

4.2 Application Development

This is the programming of the proposed system. After the proposed system is approved, the modules are to be transformed into an executable program.

The proposed system is developed and programmed in Microsoft Access 2000 and user interface by Visual Basic 6.0. The database is designed and normalized before by the system modeling. This is the responsibility of database specialist to complete the programming task. Because the proposed system application for programming is the standard software available together with the Windows operating system, it creates no

23

more cost to acquire other new software. Microsoft Access is run on Windows, which is a user friendly system; the proposed system seems to be quite easy for the user to learn and perform operations.

4.3 System Test and Installation

When the program is completed, then the system must be tested for execution and accuracy. The testing is the modeling of the actual process to be done.

First, the programmer is supposed to test each module separately so that he can ensure that all modules are going to function according to requirements. Then programmer will test the linkage between modules if they can operate the linking functions. After that the full system is tested, the users come to involve and try the whole system by inputting testing data. This is to first introduce the program for user if it is user friendly or not. The purpose of this test is to ensure that the system can be easily operated and well documented. The test will cover a period of time. All the problems that occur during this period must be overcome. These problems may lead to redesigning of the system to completely solve the problems. Before fully installing the program, the programmer will test it until all the modules are implemented and debugged.

After the system is completely tested, the program will be fully installed for usage. The programmer still follows up the program and the system to make sure that there are no problems that cannot be solved and that the user can correctly use the program.

4.4 Data Conversion

After the installation is completed and the system runs smoothly, the user will convert the previous records of all information in paper form into the system,

24

computerized format. This conversion must be done, because the new system requires not only the new input data but also the previous records.

This conversion will be done after all errors are removed during the test period by the users. Because errors can create a lot of problems to the system, it may affect the system operations. After all the data are converted to the proposed system, they must be again investigated. Any edits will be done to complete missing points in the information.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

This project introduces the new proposed system for Alutop Company to manage sales control system. This is to create the newly designed computerized system to replace the existing system. The objectives of the new system are to ease the work process, save loss from human error and create better management method to the sales operation. The existing system is inconvenient for both officers and managers. It is a manual system, in which the users need to use typewriter or handwriting to create reports and all documents. This requires filling of all documents but they become harder as the amount of paper increase everyday. This is quite a busy and time consuming process.

The proposed system, then, is designed to improve the work process and create well managed system for sales control system. Furthermore, the proposed system can eliminate problems and add some securities to the information. It makes use of computer, create application software and database management system to manage all the data entry into the system. It can create a good report form for the manager. It can keep huge amount of information with small memory storage, thus safe storage cost. And the retrieval can be done easily, solving time consuming problem and having timely information. The information accuracy is guaranteed by the system. In any case of error, the system may not lose all information because of back up file system. The proposed system can be divided into 2 main parts: application software and database management. For programming part, Microsoft Visual Basic 6.0 is created to be application software. This program operates all functions in the system. For data part, Microsoft Access 2000 is selected because this is quite an easy program for the user to

understand. It works as database management. The advantages of this strategy are summarized as follows:

1. In case of any errors - These two programs perform their own work separately with the linkage between application software and database management. When the problems occur, it is easy to solve them independently. The problems do not reflect another part.

2. Future upgrade – The upgrade can be done separately at any time. They need no mutual upgrading. As the information grows, the database system might be upgrade to more powerful and complicated program such as SQL. It can upgrade only DBMS while using the present application software. But the system that uses Microsoft Access as both application and database management cannot. It create a new whole system.

By using computer, the system can be expanded to support more complicated work while maintaining all historical information. The use of high technology can help human to work easier, save time and cost, manage variety of information into systematic and various formats and retrieve them easily. ..

5.2 Recommendations

The proposed system promises an efficient and affective way of managing all related information of sales control system. The recommendations to be made for the organization are summarized as follows:

(1) Improve the skills of the officers by providing good training facilities regularly.

(2) Provide investment plan for the future expansion.

(3) Ensure the accuracy of the system whenever any changes are made.

(4) Provide frequent reviews to keep up to date with increasing user requirements.

(5)   Prepare required reports as often as possible to track the accuracy of the system.

(6)   Realize the necessary use of computer remaining departments.

The proposed system for sales control system should be regularly checked and tested to avoid any unknown problems that may occur in any time. The back up file must be kept updated. That means the system should be maintained for its accuracy all the time. Then the system can create more analysis reports to serve the manager's needs in the future. This is the beginning for the company to operate with computerized system. This system can be developed more and more. The new requirements can be added all the time. For example, in case that the manager is on vacation, he can enter the system on line to check the desired information by internet. The programmer just only set up one client computer to connect to the internet and read the acquired information or operate other processes by the user on line. This method can protect the server from virus on the internet because the connection is indirectly connected to the server.

28

APPENDIX A

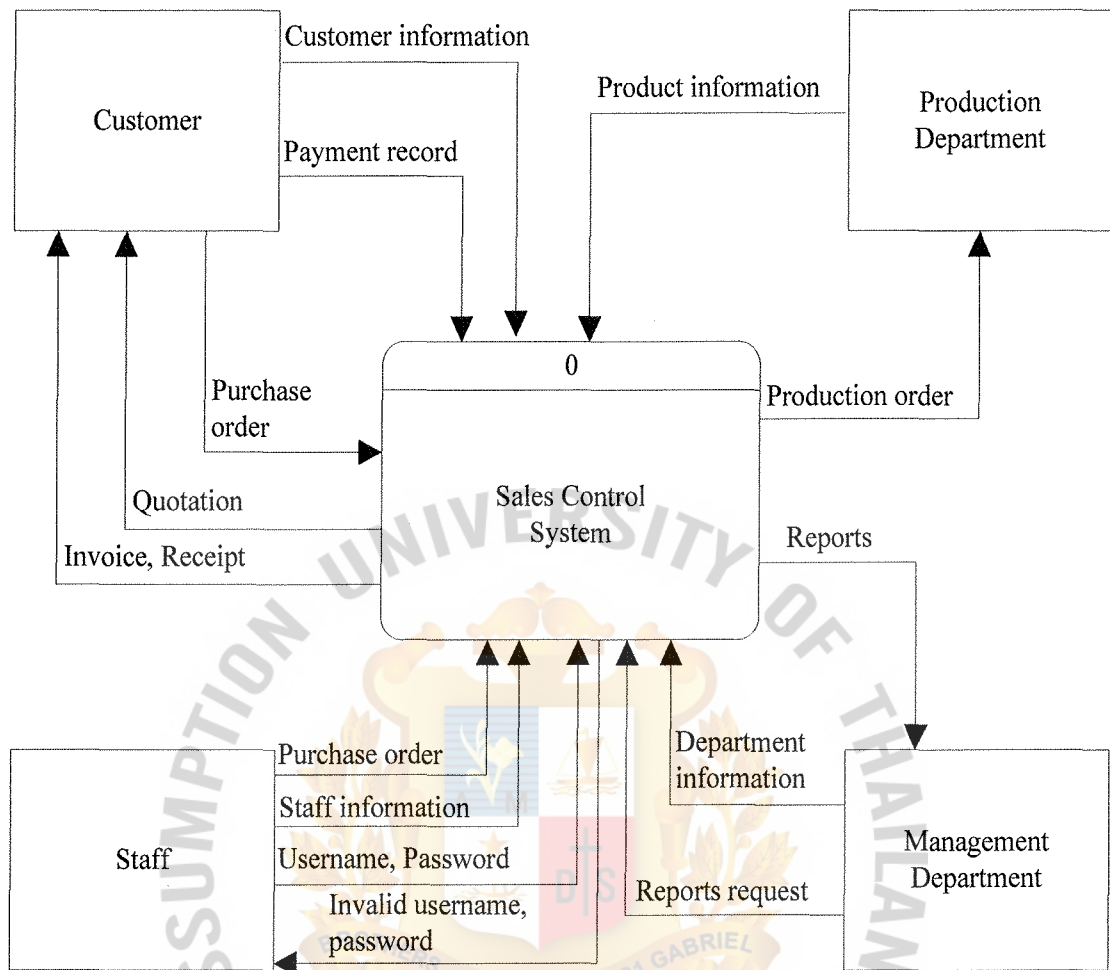CONTEXT DIAGRAM AND DATA FLOW DIAGRAM OF PROPOSED SYSTE
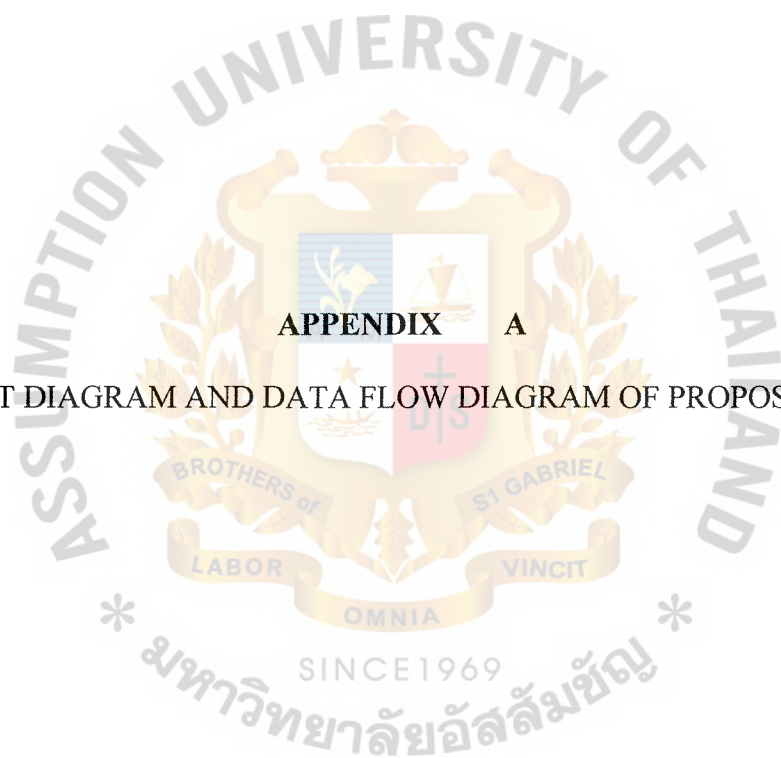
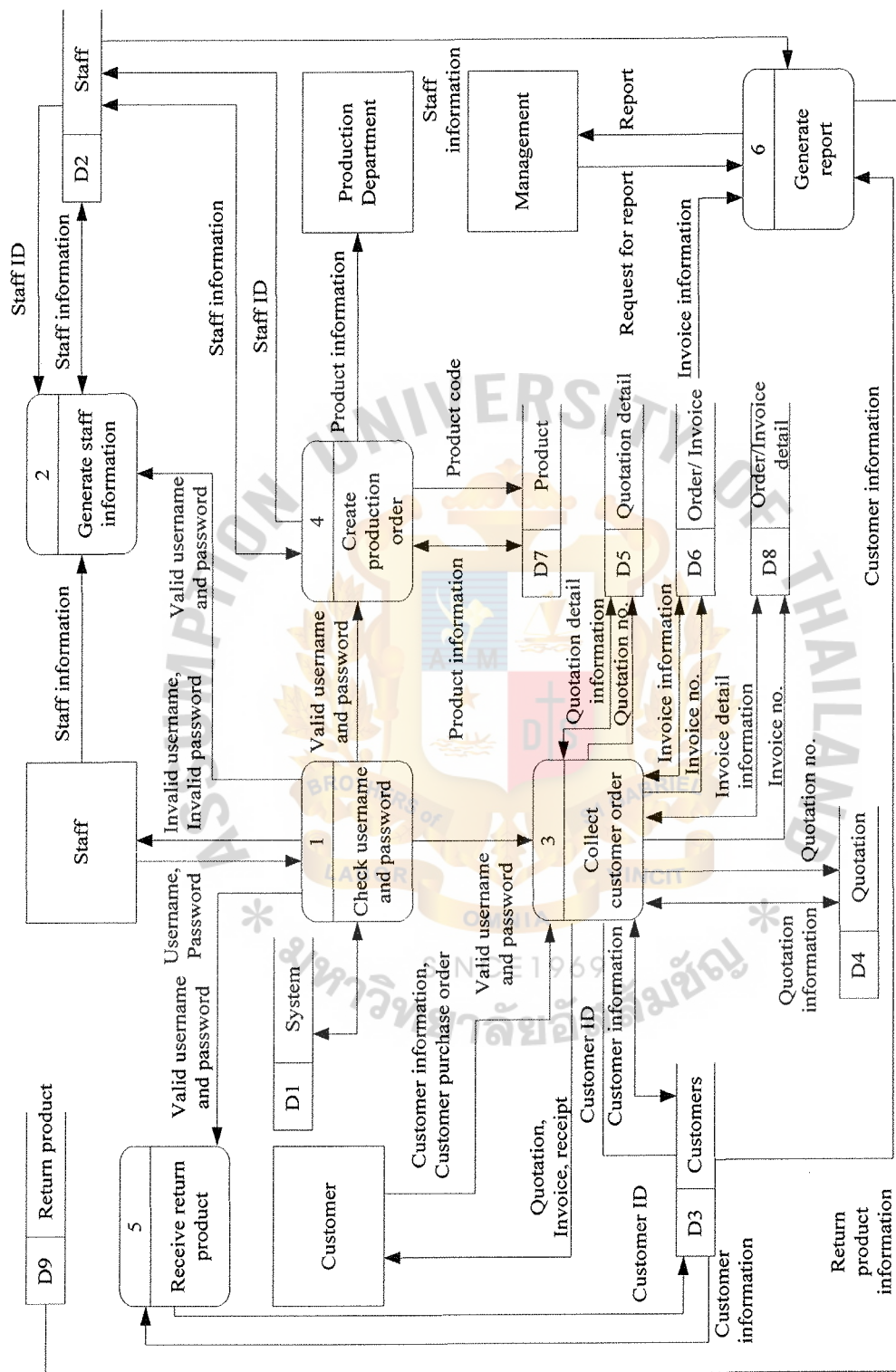Figure A.1. Context Diagram of Proposed System.

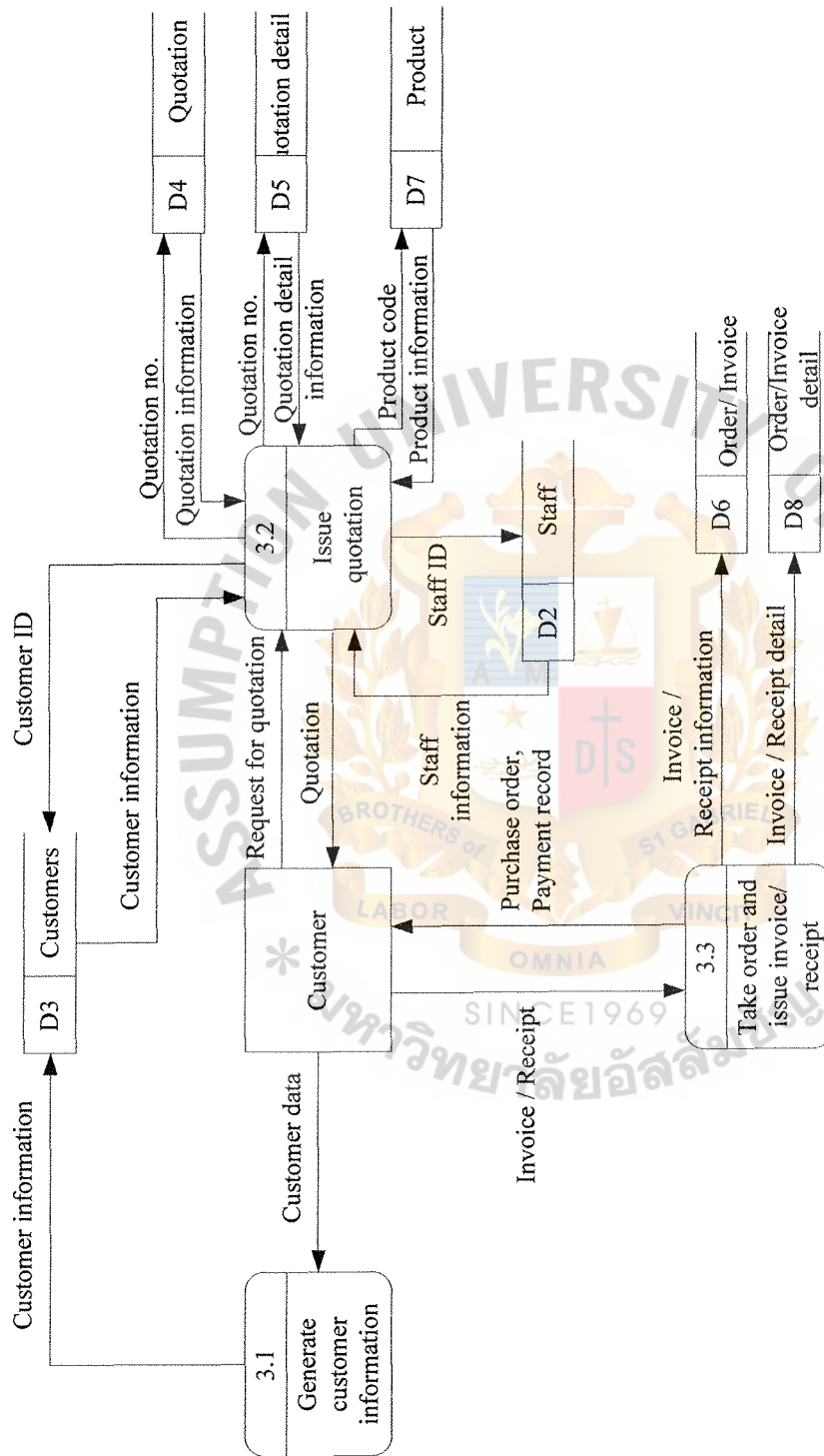Figure A.2.   Level 0 Dataflow Diagram of Sales Control System.

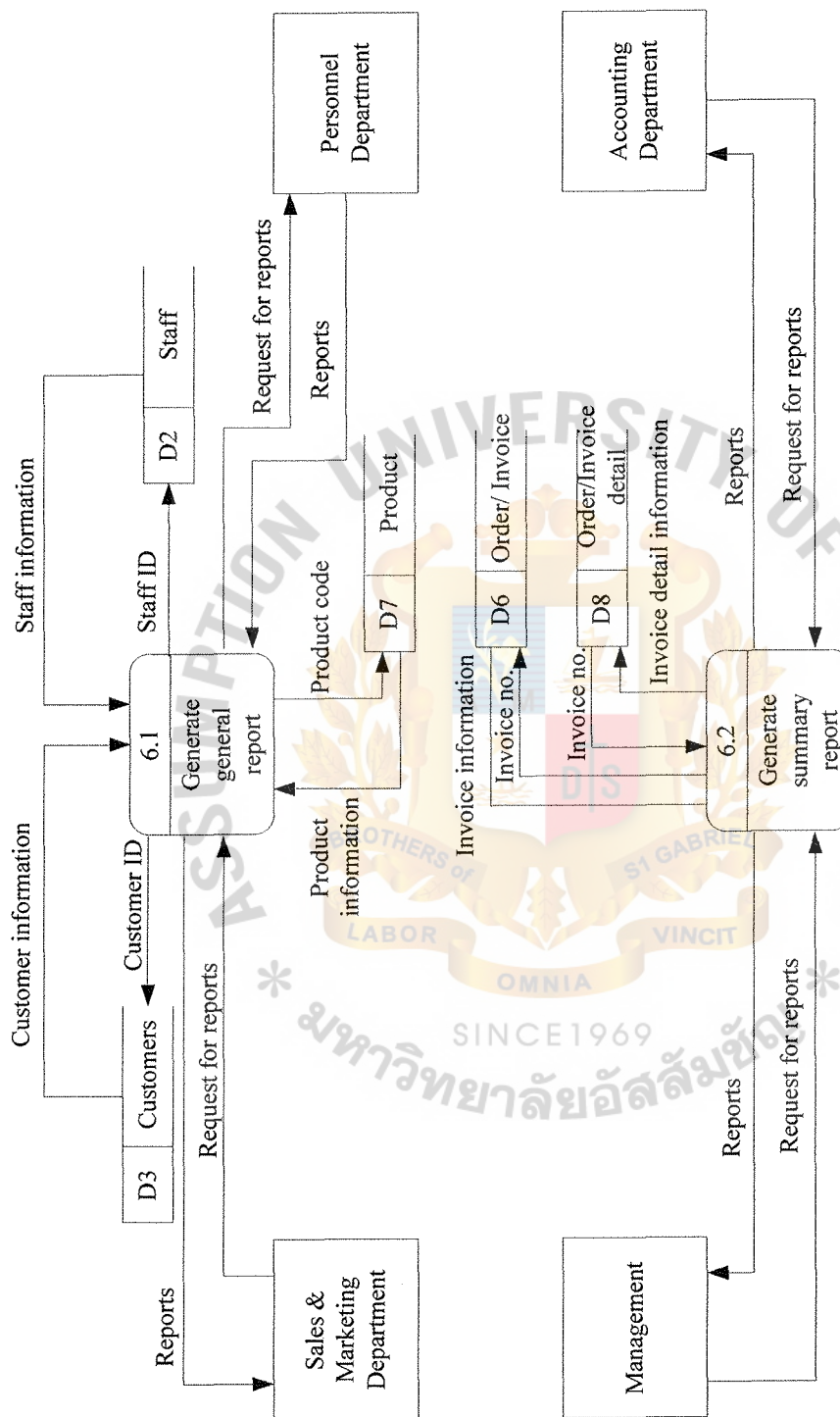Figure A.3.   Level 1 Dataflow Diagram of Process 3 Collect Customer Order.
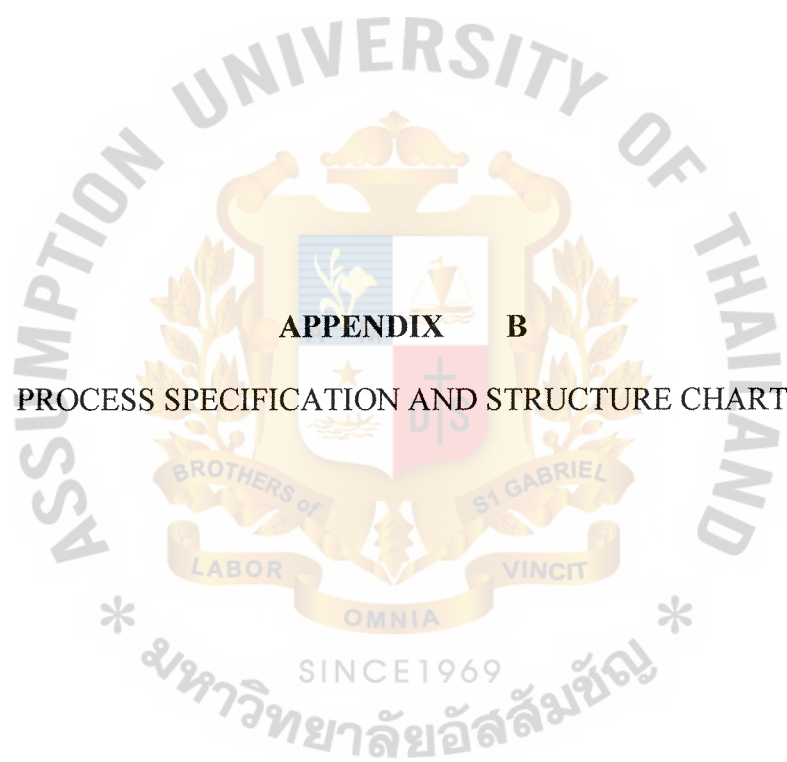
31

Figure A.4. Level 1 Dataflow Diagram of Process 6 Generate Report.

APPENDIX   B

PROCESS SPECIFICATION AND STRUCTURE CHART

Table B.1. Process 1 Check Username and Password.

Process Name	Check Username and Password
Data In (Input)	Username Password
Data Out (Output)	Invalid user Valid user
Process Description	System checks username and password if he or she is authorized person in the system or not
Process Logic	User enters username and password. If "username" and "password" is true, then enter the program, else "Invalid user"

Table B.2. Process 2 Generate Staff Information.

Process Name	Generate Staff Information
Data In (Input)	Staff ID, Staff name, Staff surname, Position, Department, Staff address, Staff telephone/ mobile phone no., staff password
Data Out (Output)	Staff information Staff report
Process Description	Collect all staff information
Process Logic	Open "Staff file" Read "Staff information" Close "Staff file" Open "Staff file" Add new "Staff data" Save information in "Staff file" Open "Staff file" Update "Staff file" Save information in "Staff file" Open "Staff file" Delete "Staff file" Save information in "Staff file"

Table B.3.1. Process 3.1 Generate Customer Information.

Process Name	Generate Customer Information
Data In (Input)	Customer ID, Customer name, Customer address, Customer telephone, Customer fax, Customer mobile phone no., Status
Data Out (Output)	Customer information Customer report
Process Description	Collect all customer information
Process Logic	Open "Customer file" Read "Customer information" Close "Customer file" Open "Customer file" Add new "Customer data" Save information in "Customer file" Open "Customer file" Update "Customer file" Save information in "Customer file" Open "Customer file" Delete "Customer file" Save information in "Customer file"

34

Table B.3.2. Process 3.2 Issue Quotation.

Process Name	Issue Quotation
Data In (Input)	Quotation no., Issue date, Staff name, Customer ID, Customer name, Contact person, Subtotal, Vat, Total, Payment term, Note.
Data Out (Output)	Quotation information Quotation
Process Description	Quotation information to customer
Process Logic	Open "Quotation file" Read "Quotation information" Read "Customer information" from "Customer file" Read "Staff information" from "Staff file" Read "Quotation detail information" from "Quotation detail file" Close "Quotation file" Open "Quotation file" Read "Quotation last number" Generate new "Quotation number" Add new "Quotation data" Read "Customer information" from "Customer file" Read "Staff information" from "Staff file" Read "Quotation detail information" from "Quotation detail file" Save information in "Quotation file" Open "Quotation file" Enter "Quotation number" Update "Quotation information" Read "Customer information" from "Customer file" Read "Staff information" from "Staff file" Read "Quotation detail information" from "Quotation detail file" Save information in "Quotation file"

35

Table B.3.3. Process 3.3 Take Order and Issue Invoice/ Receipt.

Process Name	Take Order and Issue Invoice/ Receipt
Data In (Input)	Invoice no., Issued date, Staff name, Customer ID, Customer name, Customer PO no., Subtotal, Vat, Total, Payment term, Note
Data Out (Output)	Customer order information Invoice/ Receipt Sales report
Process Description	Issue invoice / receipt according to accepted quotation
Process Logic	Open "Order/ Invoice file" Read "Order/ Invoice information" Read "Customer information" from "Customer file" Read "Staff information" from "Staff file" Read "Invoice detail information" from "Order/ Invoice detail file" Close "Order/ Invoice file" Open "Order/ Invoice file" Read "Invoice last number" Generate new "Invoice number" Add new "Order/ Invoice data" Read "Customer information" from "Customer file" Read "Staff information" from "Staff file" Read "Invoice detail information" from "Order/ Invoice detail file" Save information in "Order/ Invoice file" Open "Order/ Invoice file" Enter "Invoice number" Update "Order/ Invoice information" Read "Customer information" from "Customer file" Read "Staff information" from "Staff file" Read "Invoice detail information" from "Order/ Invoice detail file" Save information in "Order/ Invoice file"

Table B.4. Process 4 Create Production Order.

Process Name	Create Production Order
Data In (Input)	Quotation no.
Data Out (Output)	Quotation report
Process Description	Request product from Production Department
Process Logic	Open "Order/ Invoice file" Enter "Quotation number. Read "Order/ Invoice information" Read "Customer information" from "Customer file" Read "Staff information" from "Staff file" Read "Invoice detail information" from "Order/ Invoice detail file" Close "Order/ Invoice file"

Table B.5. Process 5 Receive Return Product.

Process Name	Receive Return Product
Data In (Input)	CN no., Date issued, Staff name, Customer ID., Invoice no., Invoice issued date, Total invoice amount, Product code, Amount, Price per unit, Subtotal, Vat, Total, Note
Data Out (Output)	Return product bill
Process Description	Receive return product from customers
Process Logic	Open "Return Product file" Read "Return product information" Close "Return Product file" Open "Return Product file" Add new "Return product number" Enter "Return product data" Close "Return Product file"

Table B.6.1 Process 6.1 Generate General Report.

Process Name	Generate General Report
Data In (Input)	Customer ID, Staff ID, Product Code
Data Out (Output)	Customer report Staff report Product report
Process Description	Generate general information of customer, staff and product
Process Logic	Open "Customer file" Enter "Customer name or Customer ID" Read "Customer information" Close "Customer file" Open "Staff file" Enter "Staff name or Staff ID" Read "Staff information" Close "Staff file" Open "Product file" Enter "Product name or Product Code" Read "Product information" Close "Product file"

Table B.6.2 Process 6.2 Generate Summary Report.

| Process Name	Generate Summary Report
Data In (Input)	Product name., Customer name, Invoice issued date
Data Out (Output)	Sales sorted by invoice Sales sorted by customer Sales sorted by product
Process Description	Generate summary repot of all sold out products
Process Logic	Open "Order/ Invoice file" Select "Report sorted by product" Select "Date start" Enter "Product name" and/ or Enter "Customer name" Read "Report information" Print Close "Order/Invoice file" Open "Order/ Invoice file" Select "Report sorted by customer" Select "Date start" Enter "Product name" and/ or Enter "Customer name" Read "Report information" Print Close "Order/Invoice file" Open "Order/ Invoice file" Select "Report sorted by invoice" Select "Date start" Enter "Product name" and/ or Enter "Customer name" Read "Report information" Print Close "Order/Invoice file"
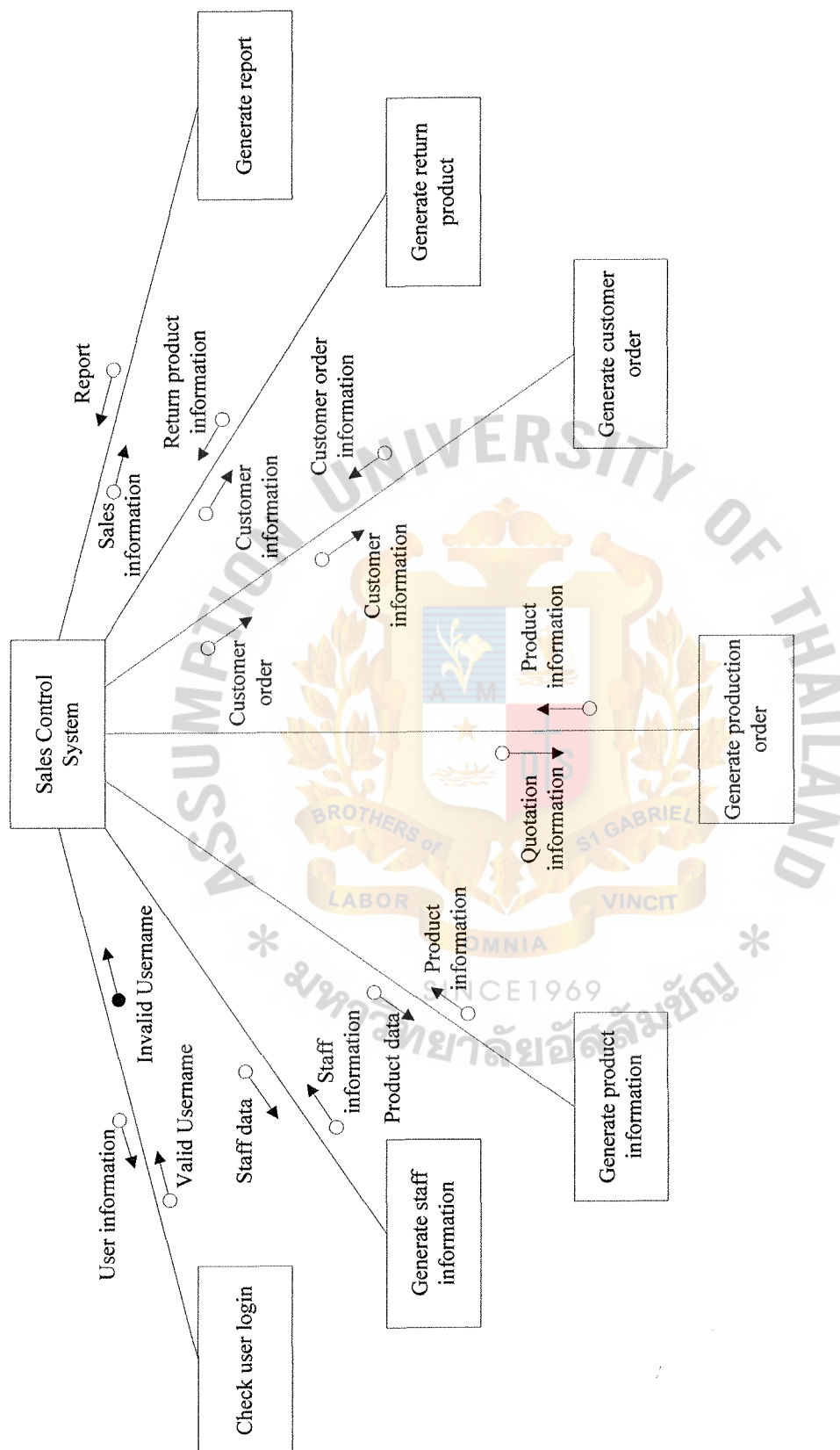
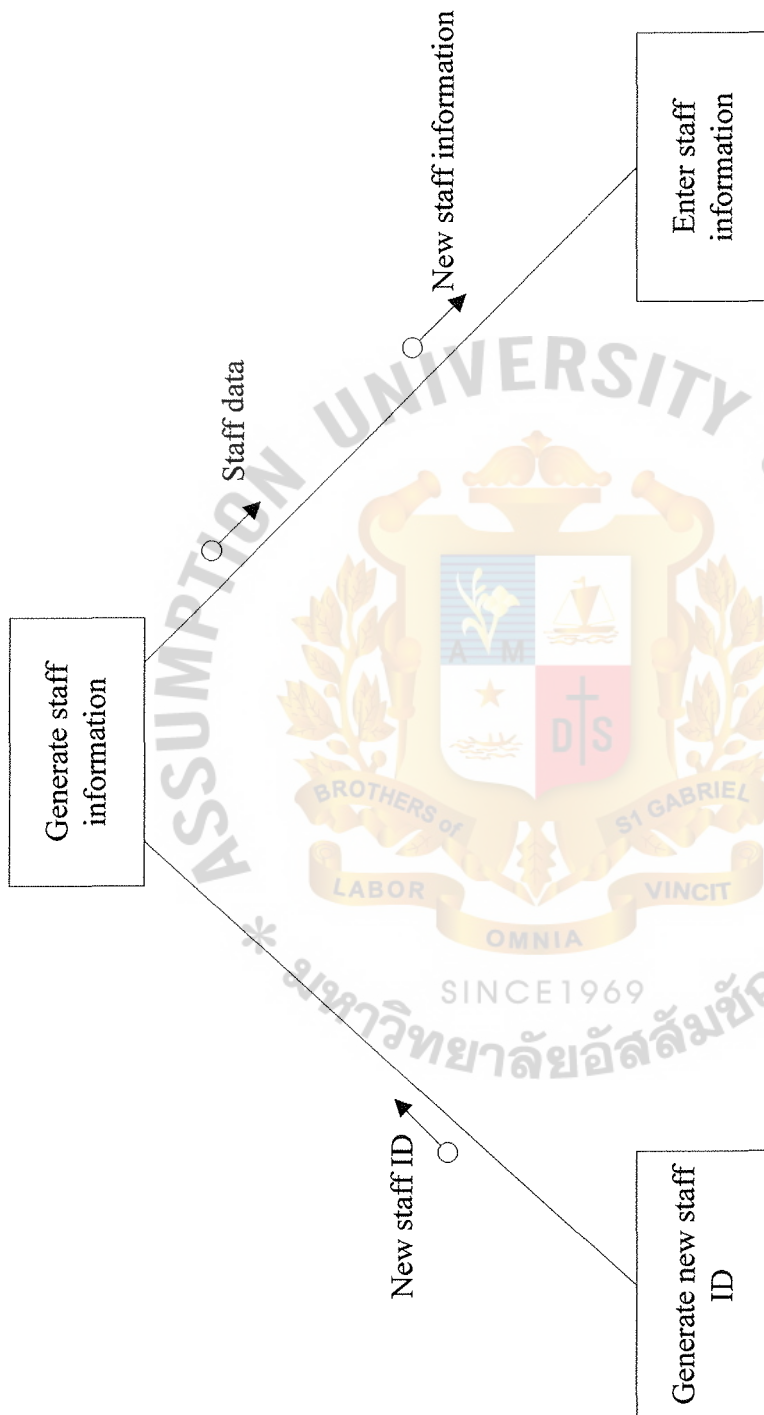Figure B.1. Structure Chart of Sales Control System.

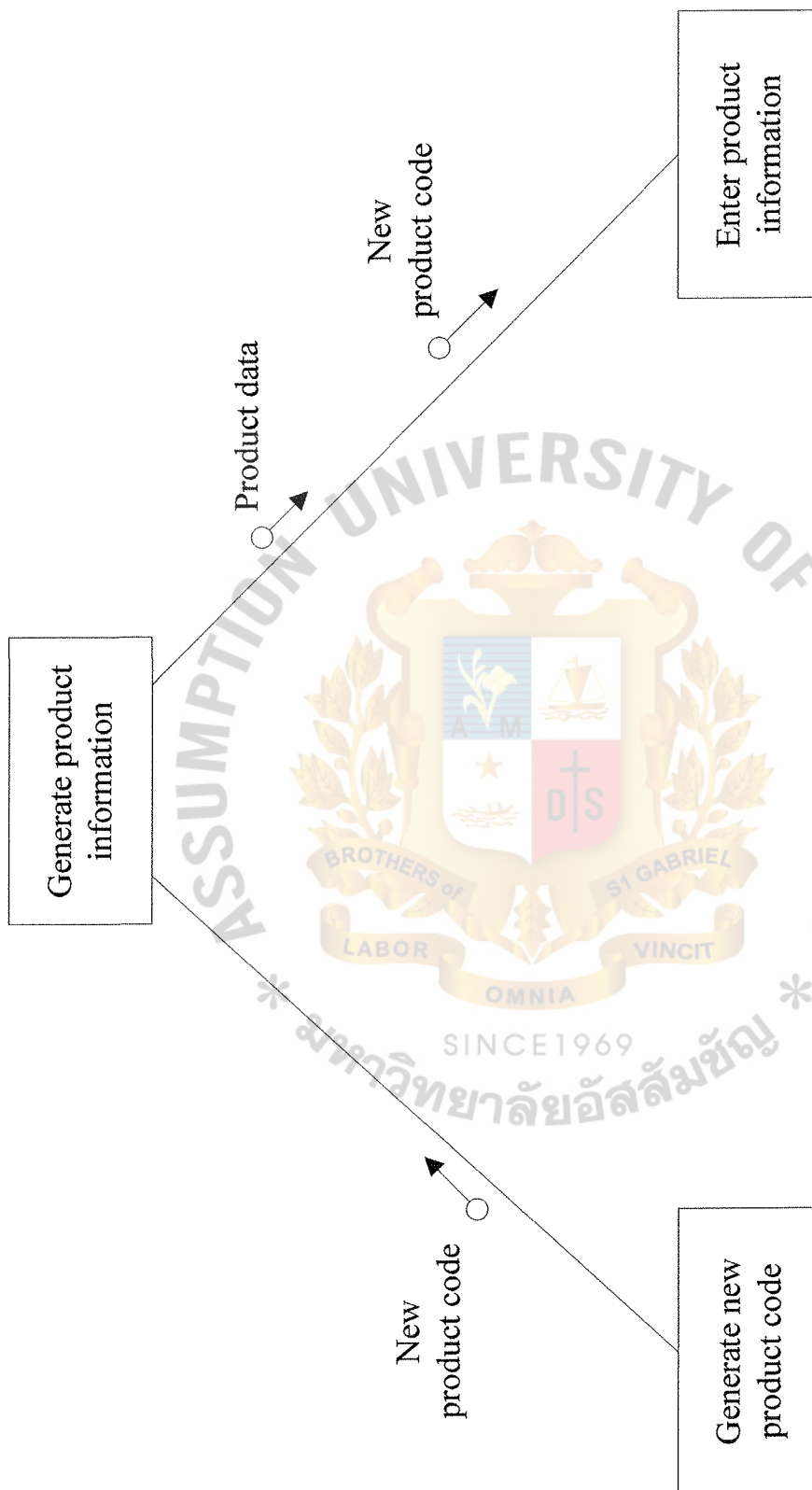Figure B.2. Structure Chart of Generate Staff Information Process.

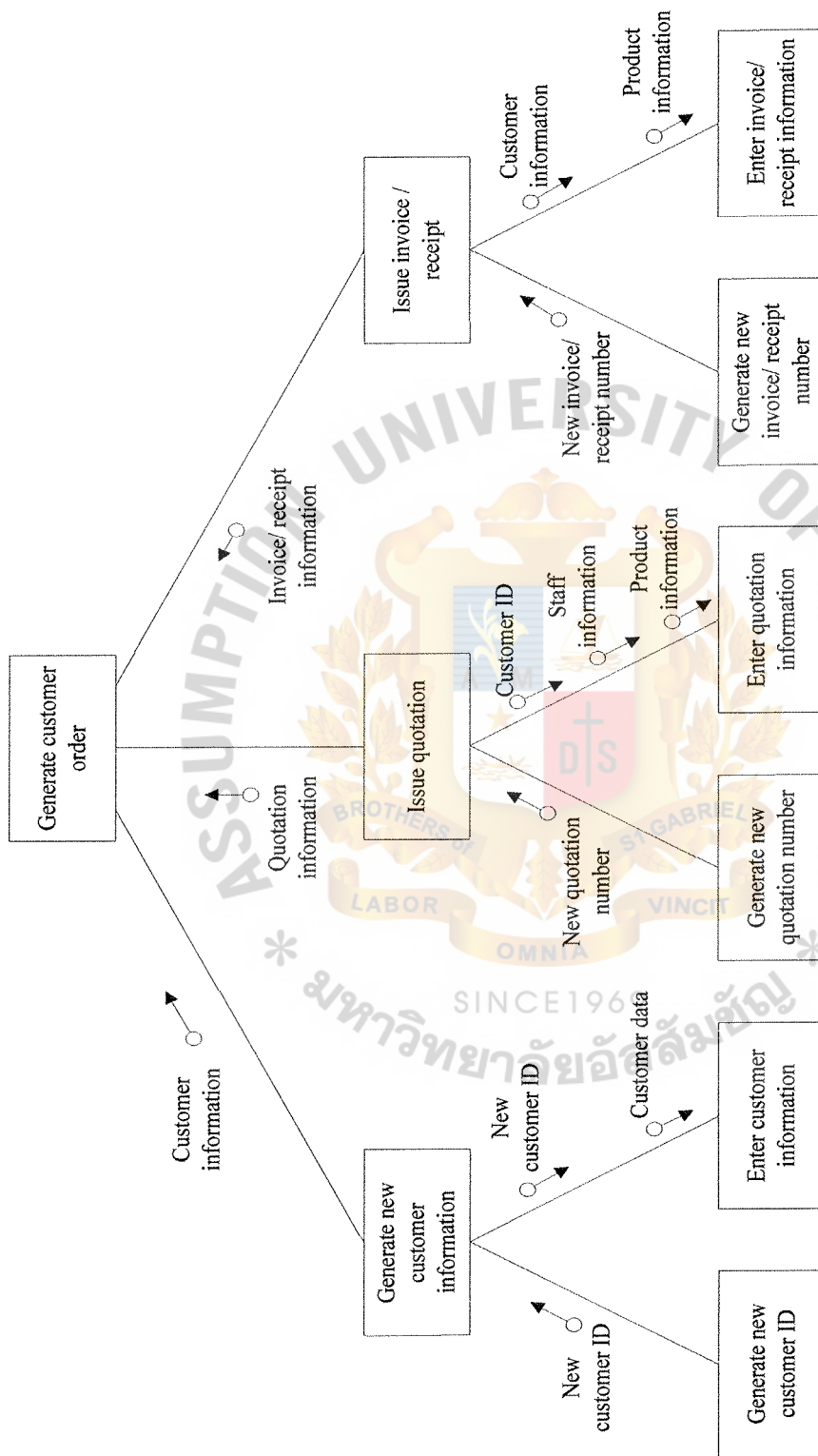Figure B.3.   Structure chart of Generate Product Information Process.

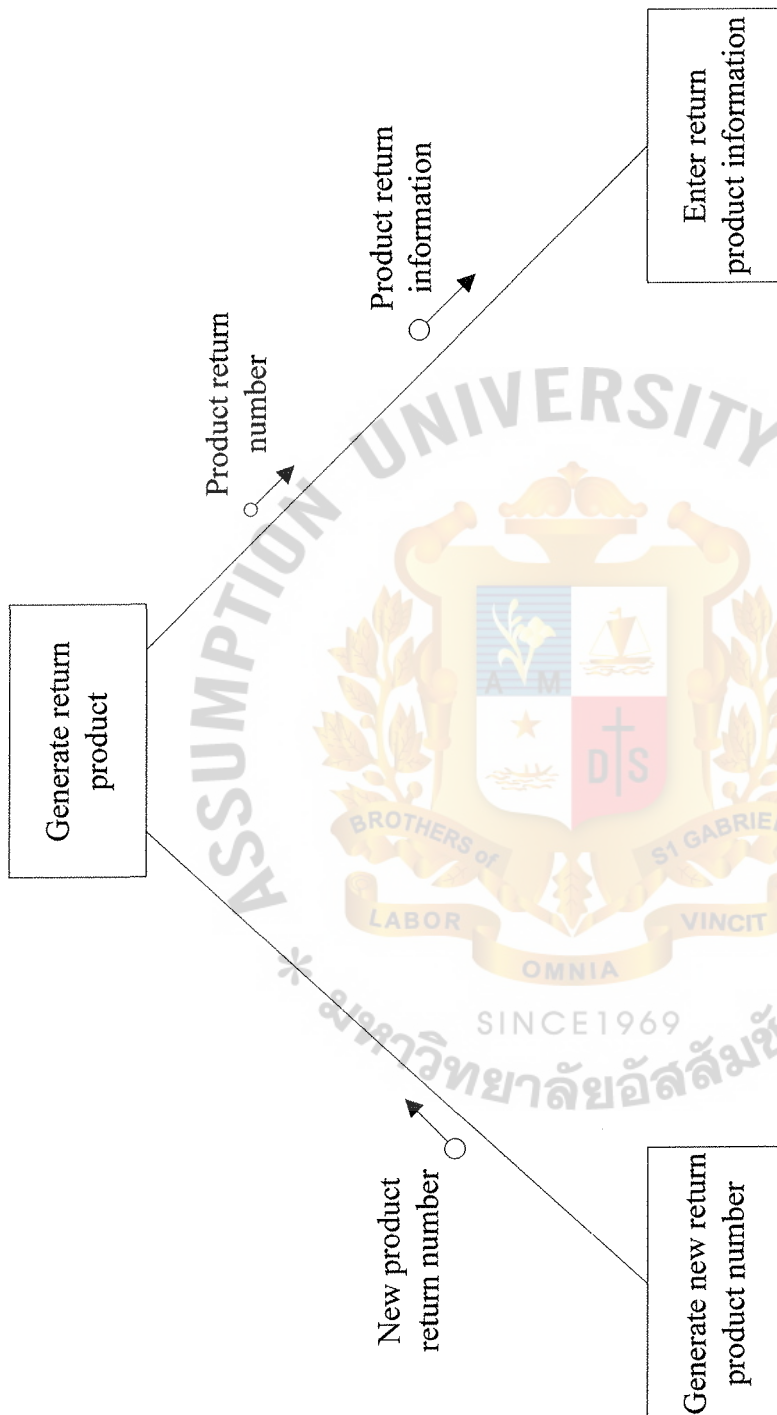Figure B.4. Structure chart of Generate Customer Order Process.

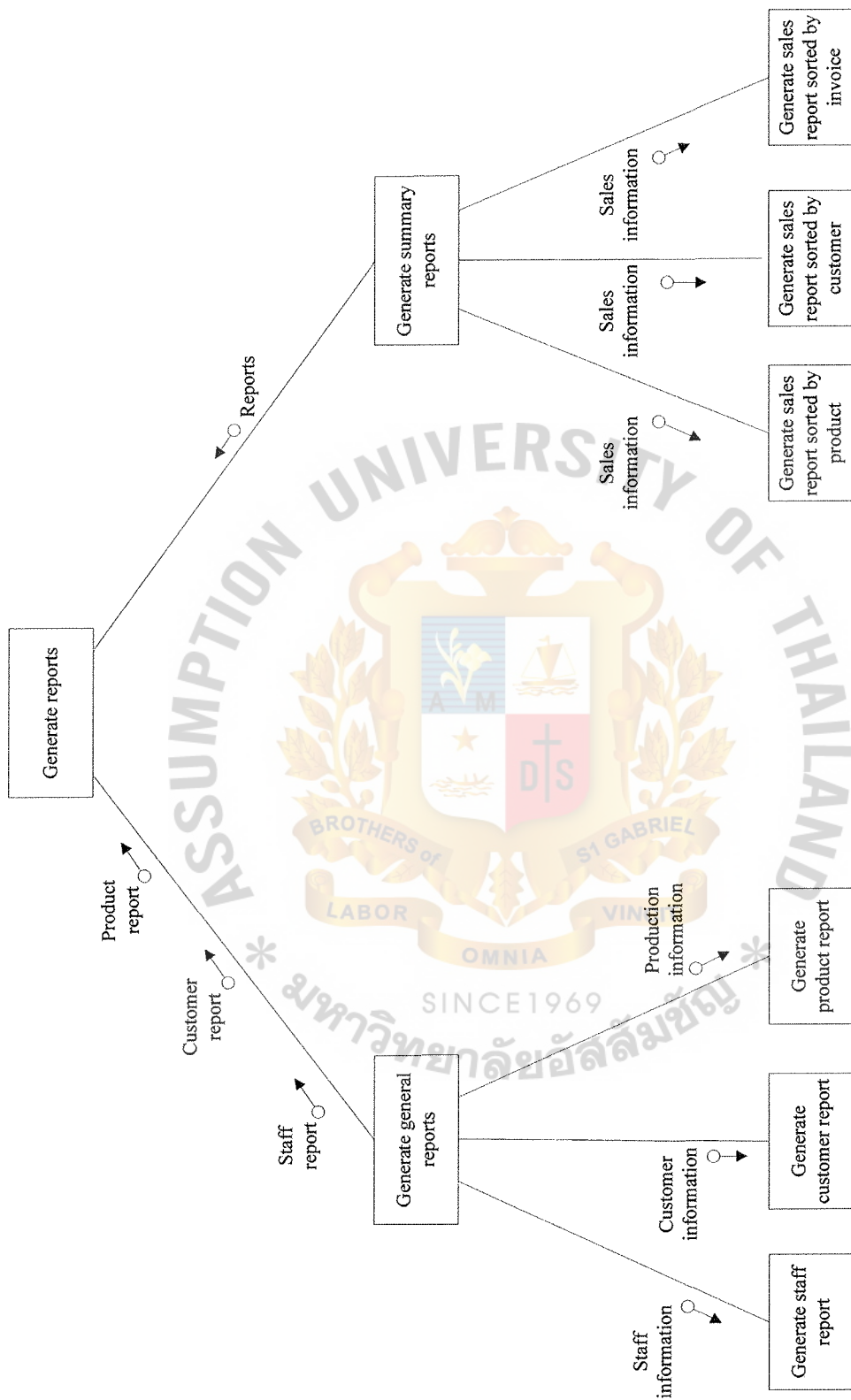Figure B.5.   Structure chart of Generate Return Product Process.

Figure B.6. Structure chart of Generate Report Process.

45

APPENDIX   C

DATA DICTIONARY

Table C.1. Data Dictionary.

Object Name	Type	Description
Address	Data Flow	*Digit number + Character*
Character	Data Flow	[A-Z | a-z | ก-ฮ | 0-9 | / | . | & | % | @ | ฿]
Customer address	Data Flow	*Character*
Customer data	Data Flow	* Customer name + Customer type + Contact person + Customer address + Customer phone + Customer mobile + Customer fax + Customer email + note* Customer name = *Character* Customer type = *Character* Contact person = *Character* Customer phone = *Digit number* Customer mobile = *Digit number* Customer fax = *Digit number* Customer email = *Digit number + Character*
Customer ID	Data Flow	*Character + Digit number*
Customer information	Data Flow	*Customer ID + Customer name + Customer type +Contact person + Customer address + Customer phone + Customer mobile + Customer fax + Customer email + note* Customer ID = *Character + Digit number* Customer name = *Character* Customer type = *Character* Contact person = *Character* Customer phone = *Digit number* Customer mobile = *Digit number* Customer fax = *Digit number* Customer email = *Digit number + Character*
Customer report	Data Flow	*Customer ID + Customer name + Customer type +Contact person + Customer address + Customer phone + Customer mobile + Customer fax + Customer email + note*

46

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
D1 System	Data Store	Customer ID = *Character + Digit number* Customer name = *Character* Customer type = *Character* Contact person = *Character* Customer phone = *Digit number* Customer mobile = *Digit number* Customer fax = *Digit number* Customer email = *Digit number + Character* *Username + Password* Username = *Character + Digit number* Password = *Character + Digit number*
D2 Staff	Data Store	*Staff ID + Staff name + Staff surname +Position + Department + Staff address + Staff phone/mobile + Staff password* Staff ID = *Character + Digit number* Staff name = *Character* Staff surname = *Character* Position = *Character* Department = *Character* Staff address =* Character* Staff phone/mobile = *Digit number* Staff password = *Character + Digit number*
D3 Customer	Data Store	*Customer ID + Customer name + Customer type + Contact person + Customer address + Customer phone + Customer mobile + Customer fax + Customer email + note* Customer ID = *Character + Digit number* Customer name = *Character* Customer type = *Character* Contact person = *Character* Customer phone = *Digit number* Customer mobile = *Digit number* Customer fax = *Digit number* Customer email = *Digit number + Character*

47

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
D4 Quotation	Data Store	*Quotation number + Issue date + Staff name + Customer ID + Customer name + Contact person + Subtotal + Vat + Total + Payment term + Quotation detail + Note* Quotation number = *Digit number* Issue date = *Date* Staff name = Character* Customer ID = *Character + Digit number* Customer name = *Character* Contact person = *Character* Subtotal = *Digit number* Vat = *Digit number* Total = *Digit number* Payment term = *Character + Digit number* Note = *Character*
D5 Quotation detail	Data Store	*Item no. + Product code + Product name + Price + Quantity + Unit + Amount* Item no. = *Digit number* Product code = *Character + Digit number* Product name = *Character* Price = *Digit number* Quantity = *Digit number* Unit = *Character* Amount = *Digit number*
D6 Invoice/ Receipt	Data Store	*Invoice no. + Issue date + Staff name + Customer ID + Customer name + Customer PO no. + Subtotal + Vat + Total + Payment term + Invoice/ Receipt detail + Note* *Invoice no. = *Digit number* Issue date = *Date* Staff name = *Character* Customer ID = *Character + Digit number* Customer name = *Character* Customer PO no. = *Character + Digit number* Subtotal = *Digit number*

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
D7 Product	Data Store	Vat = *Digit number* Total = *Digit number* Payment term = *Character + Digit number* Note = *Character* *Product code + Product name + Product group + Series + Unit + Price + Description* Product code = *Character + Digit number* Product name = *Character* Product group = *Character* Series = *Character* Unit = *Character* Price = *Digit number* Description= *Character*
D8 Invoice/ Receipt detail	Data Store	*Item no. + Product code + Product name + Quantity + Unit + Price + Amount* Item no. = *Digit number* Product code = *Character + Digit number* Product name = *Character* Quantity = *Digit number* Unit = *Character* Price = *Digit number* Amount = *Digit number*
D9 Return Product	Data Store	*CN no. + Issue date + Staff name + Customer ID + Customer name + Invoice no. + Invoice issue date + Total invoice amount + Product code + Product name + Quantity + Price + Unit + Subtotal + Vat + Total + Note* CN no. = *Digit number* Issue date = *Date* Staff name = *Character* Customer ID = *Character + Digit number* Customer name = *Character* *Invoice no. = *Digit number* Invoice issue date = *Date*

49

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
		Staff name = *Character*
		Customer ID = *Character + Digit number*
		Customer name = *Character*
		*Invoice no. = *Digit number*
		Invoice issue date = *Date*
		Total invoice amount = *Digit number*
		Product code = *Character + Digit number*
		Product name = *Character*
		Quantity = *Digit number*
		Price = *Digit number*
		Unit = *Character*
		Subtotal = *Digit number*
		Vat = *Digit number*
		Total = *Digit number*
		Note = *Character*
Department	Data Flow	*Character*
Digit number	Data Flow	*0{number}9*
Invalid password	Data Flow	*Character + Digit number*
Invalid username	Data Flow	*Character + Digit number*
Note	Data Flow	*Character + Digit number*
PO no.	Data Flow	*Character + Digit number*
Password	Data Flow	*Character + Digit number*
Product Code	Data Flow	*Character + Digit number*
Product data	Data Flow	*Product code + Product name + Product group + Series + Unit + Price + Description* Product code = *Character + Digit number* Product name = *Character* Product group = *Character*

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
Product Information	Data Flow	Series = *Character* Unit = *Character* Price = *Digit number* Description= *Character* *Product code + Product name + Product group + Series + Unit + Price + Description* Product code = *Character + Digit number* Product name = *Character* Product group = *Character* Series = *Character* Unit = *Character* Price = *Digit number* Description= *Character*
Product report	Data Flow	*Product code + Product name + Product group + Series + Unit + Price + Description* Product code = *Character + Digit number* Product name = *Character* Product group = *Character* Series = *Character* Unit = *Character* Price = *Digit number* Description= *Character*
Quotation	Data Flow	*Quotation information + Quotation detail Information*
Quotation detail information	Data Flow	*Item no. + Product code + Product name + Price + Quantity + Unit + Amount* Item no. = *Digit number* Product code = *Character + Digit number* Product name = *Character* Price = *Digit number* Quantity = *Digit number* Unit = *Character* Amount = *Digit number*

51

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
Quotation information	Data Flow	*Quotation number + Issue date + Staff name + Customer ID + Customer name + Contact person + Subtotal + Vat + Total + Payment term + Quotation detail + Note* Quotation number = *Digit number* Issue date = *Date* Staff name = Character* Customer ID = *Character + Digit number* Customer name = *Character* Contact person = *Character* Subtotal = *Digit number* Vat = *Digit number* Total = *Digit number* Payment term = *Character + Digit number* Note = *Character*
Quotation number	Data Flow	*Digit number*
Request for quotation	Data Flow	*Character + Digit number*
Request for report	Data Flow	*Character + Digit number*
Return product information	Data Flow	*CN no. + Issue date + Staff name + Customer ID + Customer name + Invoice no. + Invoice issue date + Total invoice amount + Product code + Product name + Quantity + Price + Unit + Subtotal + Vat + Total + Note* CN no. = *Digit number* Issue date = *Date* Staff name = *Character* Customer ID = *Character + Digit number* Customer name = *Character* Invoice no. = *Digit number* Invoice issue date = *Date* Total invoice amount = *Digit number* Product code = *Character + Digit number* Product name = *Character*

52

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
		Quantity = *Digit number* Price = *Digit number* Unit = *Character* Subtotal = *Digit number* Vat = *Digit number* Total = *Digit number* Note = *Character*
Sales report	Data Flow	[Sales report sorted by invoice | Sales report sorted by customer | Sales report sorted by product]
Sales report sorted by customer	Data Flow	*Report date + Sales range + Customer ID + Customer name + Invoice issue date + Invoice no. + Product code + Product name + Quantity +Unit + Price + Total + Grand total* Report date = *Date* Sales range = *DD+MM+YYYY* Customer ID = *Character + Digit number* Customer name = *Character* Invoice issue date = *Date* Invoice no. = *Date* Product code = *Character + Digit number* Product name = *Character* Quantity = *Digit number*
Sales report sorted by invoice	Data Flow	*Report date + Sales range + Invoice issue date + Invoice no. + Product code + Product name Quantity +Unit + Price + Total + Grand total* Report date = *Date* Sales range = *DD+MM+YYYY* Invoice issue date = *Date* Invoice no. = *Date* Product code = *Character + Digit number* Product name = *Character* Quantity = *Digit number* Unit = *Character* Price = *Digit number*

53

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
Sales report sorted by product	Data Flow	Total = *Digit number* Grand total = *Digit number* *Report date + Sales range + Product code + Product name + Invoice issue date + Customer name + Quantity +Unit + Price + Total + Grand total* Report date = *Date* Sales range = *DD+MM+YYYY* Product code = *Character + Digit number* Product name = *Character* Invoice issue date = *Date* Customer name = *Character* Quantity = *Digit number* Unit = *Character* Price = *Digit number* Total = *Digit number* Grand total = *Digit number*
Staff data	Data Flow	*Staff ID + Staff name + Staff surname + Position + Department + Staff address + Staff phone/mobile + Staff password* Staff ID = *Character + Digit number* Staff name = *Character* Staff surname = *Character* Position = *Character* Department = *Character* Staff address =* Character* Staff phone/mobile = *Digit number* Staff password = *Character + Digit number*
Staff ID	Data Flow	*Character + Digit number*
Staff information	Data Flow	*Staff ID + Staff name + Staff surname + Position + Department + Staff address + Staff phone/mobile + Staff password* Staff ID = *Character + Digit number*

54

Table C.1. Data Dictionary. (continued)

Object Name	Type	Description
Staff report	Data Flow	Staff name = *Character* Staff surname = *Character* Position = *Character* Department = *Character* Staff address =* Character* Staff phone/mobile = *Digit number* Staff password = *Character + Digit number* *Staff ID + Staff name + Staff surname + Position + Department + Staff address + Staff phone/mobile + Staff password* Staff ID = *Character + Digit number* Staff name = *Character* Staff surname = *Character* Position = *Character* Department = *Character* Staff address =* Character* Staff phone/mobile = *Digit number* Staff password = *Character + Digit number*
Username	Data Flow	*Character + Digit number*
Valid password	Data Flow	*Character + Digit number*
Valid username	Data Flow	*Character + Digit number*

APPENDIX   D

SCREEN DESIGN AND REPORT

Figure D.1. Check Username and Password.
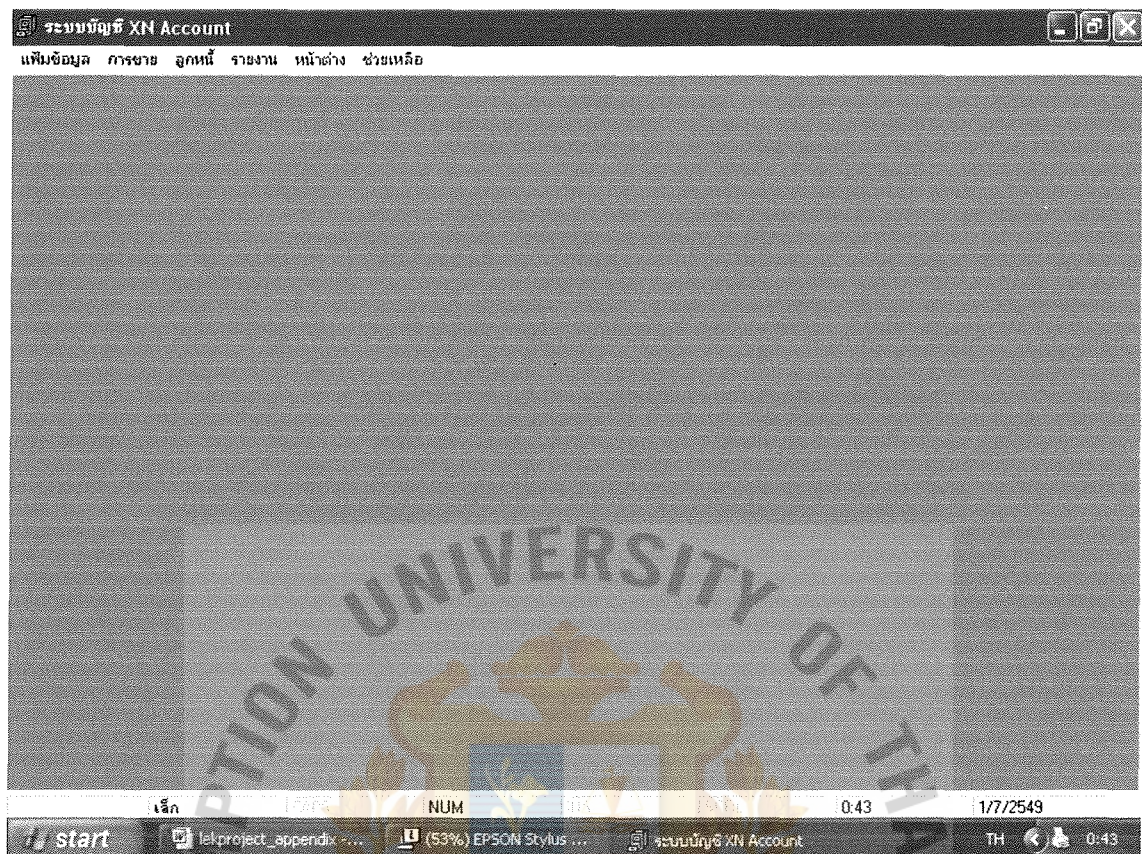
Figure D.2. Main Menu.

57

Figure D.3. Customer Information.

Figure D.4. Staff Information.

Figure D.5. Product Information.

Figure D.6. Quotation Information.

61

Figure D.7. Invoice/ Receipt Information.

Figure D.8. Report Menu.

Figure D.9. Invoice Summary Report.

รายงานสรุปการขายตามรายสินค้า

1/7/2549

วันที่ขาย	ชื่อลูกค้า		จำนวน	หน่วยขาย	ราคาต่อหน่วย	รวม
0001	ขี้เลื่อยอลูมิเนียม	ไม่ชุบ				
21/4/2549	โรงหล่อวิรัช (คุณ วีระนันท์)		745.00	กก.	54.00	40,230.00
26/4/2549	โรงหล่อวิรัช (คุณ วีระนันท์)		646.00	กก.	56.00	36,176.00
					รวม	76,406.00
0004	อลูมิเนียมขาโหลด	ไม่ชุบ				
3/4/2549	โรงชุบเฮียลิ้ม		49.00	กก.	120.00	5,880.00
					รวม	5,880.00
A0001	กล่อง 1/2" x 1/2"	ขาว				
1/4/2549	พูนกิจ อลูมินั่ม		400.00	เส้น	60.00	24,000.00
28/4/2549	สูมธนเฟอร์นิจอร์		100.00	เส้น	60.00	6,000.00
					รวม	30,000.00
A0001	กล่อง 1/2" x 1/2"	ไม่ชุบ				
1/4/2549	พูนกิจ อลูมินั่ม		500.00	เส้น	55.00	27,500.00
8/4/2549	ณเรศเฟอร์นิจอร์		100.00	เส้น	57.00	5,700.00
					รวม	33,200.00

Figure D.10. Sales Report Sorted by Product.

65

รายงานสรุปการขายตามลูกค้า

1/7/2549

วันที่ขาย	เลขที่	รหัสสินค้า	ชื่อสินค้า	จำนวน	หน่วยขาย	ราคาต่อหน่วย	รวม
Z000		จ่ายเงินสด					
19/4/2549	18277	O0u001	ถุงพลาสติก	458.00	กก.	11.00	5,038.00
26/4/2549	18361	O0u001	ถุงพลาสติก	108.00	กก.	12.00	1,296.00
26/4/2549	18361	PB 001	เชือกฟาง	101.00	กก.	5.00	505.00
						รวม	6,839.00
Z003		เค เอ็น ซี					
6/4/2549	18203	E0001	กรอบเงาลายไม่มีริม	1,400.00	เส้น	81.00	113,400.00
6/4/2549	18203	E0002	กรอบเงาลายมีริม	380.00	เส้น	91.00	34,580.00
6/4/2549	18203	G0007-L	ฉากเสริมลาย 1/2 " x 11/4"	2,500.00	เส้น	50.00	125,000.00
8/4/2549	18236	A0004	กล่อง 1/2" x 1"	100.00	เส้น	74.00	7,400.00
8/4/2549	18236	D0009-1	ขาอ่างซิงค์ 6.00 ม	200.00	เส้น	130.00	26,000.00
8/4/2549	18236	F0007	ยูลาย 1/2" x 1"	600.00	เส้น	50.00	30,000.00
8/4/2549	18236	G0007-L	ฉากเสริมลาย 1/2 " x 11/4"	1,500.00	เส้น	50.00	75,000.00
8/4/2549	18236	G0007-L	ฉากเสริมลาย 1/2 " x 11/4"	250.00	เส้น	46.00	11,500.00
8/4/2549	18236	S0023	ลูกฟูกลอนใหญ่	16.00	เส้น	240.00	3,840.00
8/4/2549	18236	S0023	ลูกฟูกลอนใหญ่	28.00	เส้น	220.00	6,160.00

Figure D.11. Sales Report Sorted by Customer.

66

รายงานสรุปการขายตามใบส่งของ

1/7/2549

รหัสสินค้า	ชื่อสินค้า	จำนวนรวม	จำนวนขาย	หน่วยขาย	ราคาต่อหน่วย	รวม
วันที่	1/4/2549					
เลขที่	18140					
H0010	กรอบมุ้งบานเลื่อน	100.00	116.00	กก.	132.00	15,338.40
H0011-S	เสาเกี่ยว บาง	60.00	124.00	กก.	142.00	17,636.40
S0001-1	กล่องเรียบ 0.80 มิล	80.00	216.00	กก.	140.00	30,240.00
S0008	ตบร่อง	60.00	83.00	กก.	140.00	11,550.00
S0012	ฝาปิด	30.00	36.00	กก.	140.00	4,970.00
S0018	กล่องแจ็คสัน	16.00	51.00	กก.	140.00	7,098.00
S0024	รางแขวน	48.00	151.00	กก.	140.00	21,196.00
				เลขที่ 18140		108,028.80
เลขที่	18141					
E0001	กรอบเงาลายไม่มีริม	340.00	340.00	เส้น	88.00	29,920.00
E0001	กรอบเงาลายไม่มีริม	500.00	500.00	เส้น	90.00	45,000.00
E0002	กรอบเงาลายมีริม	100.00	100.00	เส้น	101.00	10,100.00
E0002	กรอบเงาลายมีริม	300.00	300.00	เส้น	91.00	27,300.00
G0003	ฉาก 5/8" x 5/8"	150.00	150.00	เส้น	27.50	4,125.00

Figure D.12. Sales Report Sorted by Invoice.

67

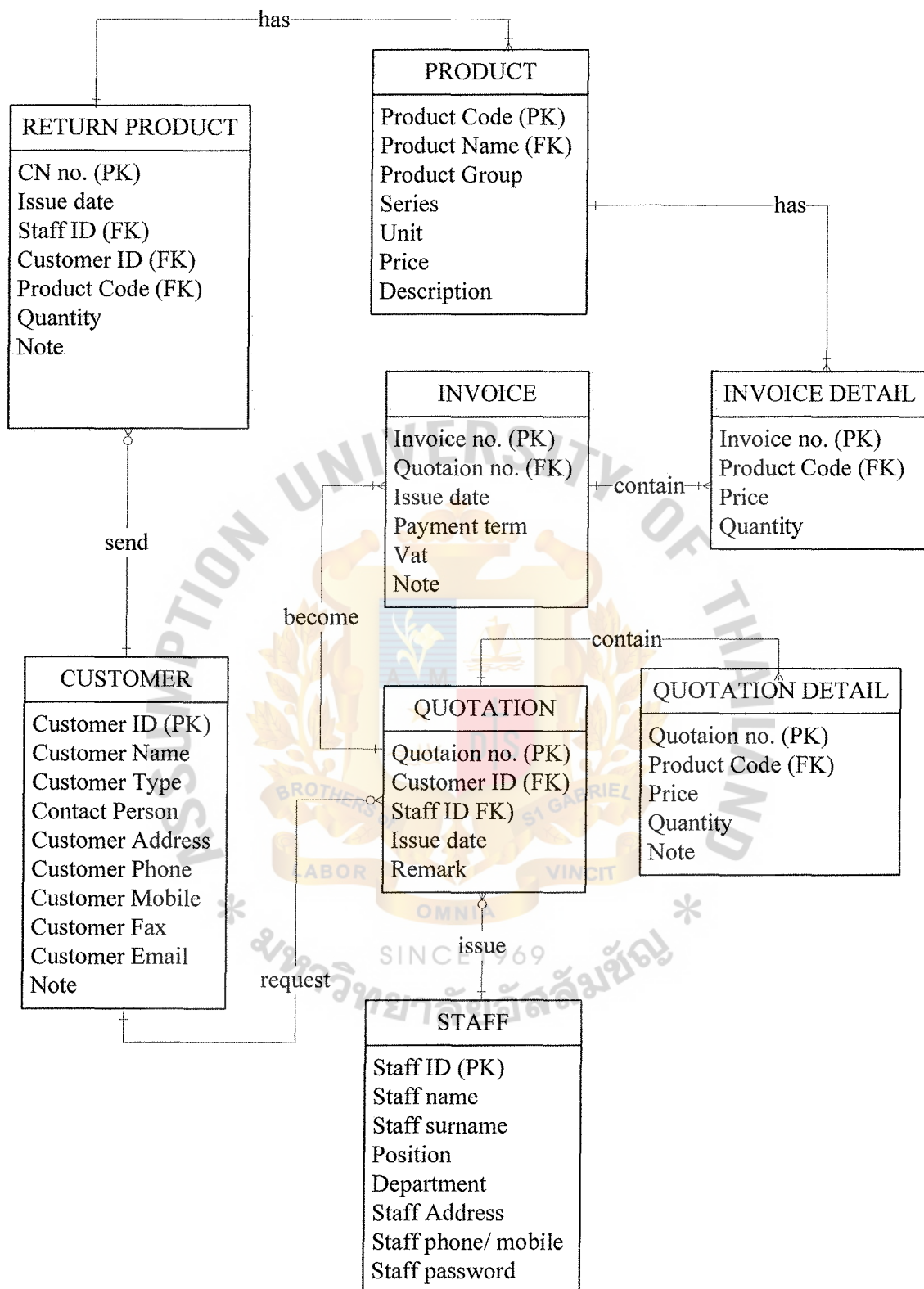**APPENDIX   E**

DATABASE DESIGN

Figure E.1. Entity Relationship Diagram.

68

APPENDIX   F

CANDIDATE SYSTEM ANALYSIS

Table F.1. Feasibility Analysis Matrix of Candidate 1

Feasibility criteria	weight	Candidate 1 : Auction Processing System
Operational Feasibility **Functionality.** A description of to what degree the candidate would benefit the organization and how will the system would work. **Political.** A description of how well received this solution would be from user management, user, and organization perspective.	40%	Fully support to all business functions. Score = 90
Technical Feasibility **Technology.** As assessment of maturity, availability (or ability to acquire) and desirability of computer technology needed to support this candidate. **Expertise.** An assessment of the technical expertise needed to develop, operate, and maintain the candidate system.	30%	This system is used on Microsoft Windows 2000 system environment with Microsoft Visual Basic 6.0 for programming and Microsoft Access 2000 for DBMS. Score = 90
Economic Feasibility Cost to develop Payback period (discounted) Net present value	20%	Approximated := 295,000 Baht. Approximated := 2.5 Years. Approximated := 206,267.55Baht. Score = 95
Schedule feasibility An assessment how long the solution will take to design and implement.	10%	4 months. Score = 85
Ranking	100%	90.50%

Table F.2. Feasibility Analysis Matrix of Candidate 2

Feasibility criteria	weight	Candidate 2 : The Teller Made System
Operational Feasibility **Functionality.** A description of to what degree the candidate would benefit the organization and how will the system would work. **Political.** A description of how well received this solution would be from user management, user, and organization perspective.	40%	Fully support to all business functions.
		Score = 90
Technical Feasibility **Technology.** As assessment of maturity, availability (or ability to acquire) and desirability of computer technology needed to support this candidate. **Expertise.** An assessment of the technical expertise needed to develop, operate, and maintain the candidate system.	30%	This system is used on Microsoft Windows 2000 system environment with Microsoft Access XP Database.
		Score = 90
Economic Feasibility Cost to develop Payback period (discounted) Net present value	20%	Approximated := 350,000 Baht. Approximated := 3 Years. Approximated := 152,246.58 Baht.
		Score = 85
Schedule feasibility An assessment how long the solution will take to design and implement.	10%	4 months.
		Score = 85
Ranking	100%	88.50%

70

Table F.3. Feasibility Analysis Matrix of Candidate 3

Feasibility criteria	weight	Candidate 3 : The Full Package Software
Operational Feasibility **Functionality.** A description of to what degree the candidate would benefit the organization and how will the system would work. **Political.** A description of how well received this solution would be from user management, user, and organization perspective.	40%	Partially compatible to the existing business functions because of the different business logics from the originator's environments.
		Score = 85
Technical Feasibility **Technology.** As assessment of maturity, availability (or ability to acquire) and desirability of computer technology needed to support this candidate. **Expertise.** An assessment of the technical expertise needed to develop, operate, and maintain the candidate system.	30%	This system is used on Microsoft Windows 2000 system environment to work with Microsoft SQL 2000 Server Database which should be the new separately server.
		Score = 80
Economic Feasibility Cost to develop Payback period (discounted) Net present value	20%	Approximated := 400,000 Baht. Approximated := 3.5 Years. Approximated := 121,246.58 Baht.
		Score = 75
Schedule feasibility An assessment how long the solution will take to design and implement.	10%	2 months.
		Score = 95
Ranking	100%	83.75%

71

Table F.1.   Payback analysis of candidate 1 : The Sales Control System.

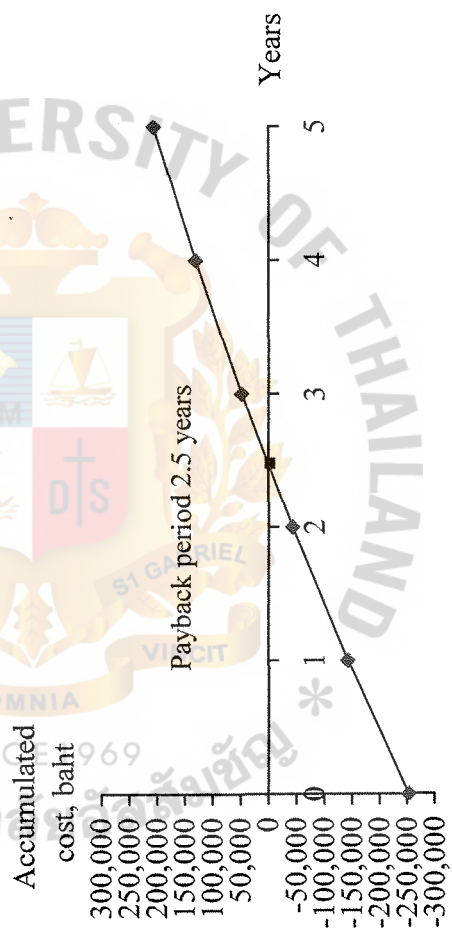| Cost items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Accumulated Existing System Cost	46,100	586,100	1,180,100	1,833,500	2,552,240	3,342,854
Accumulated Proposed System Cost	299,500	743,500	1,231,900	1,769,140	2,360,104	3,010,164.4
Cost Saving	-253,400	-157,400	-51,800	64,360	192,136	332, 689.60
Discount rate 10%	1.00	0.91	0.83	0.75	0.68	0.62
Time-adjusted	-253,400	-143,234	-42,994	48,270	130,652.5	206, 267.55

Figure F.1.   Payback Period of Candidate 1 : The Sales Control System.

Table F.2. Payback Analysis of Candidate 2 : The Teller Made System.

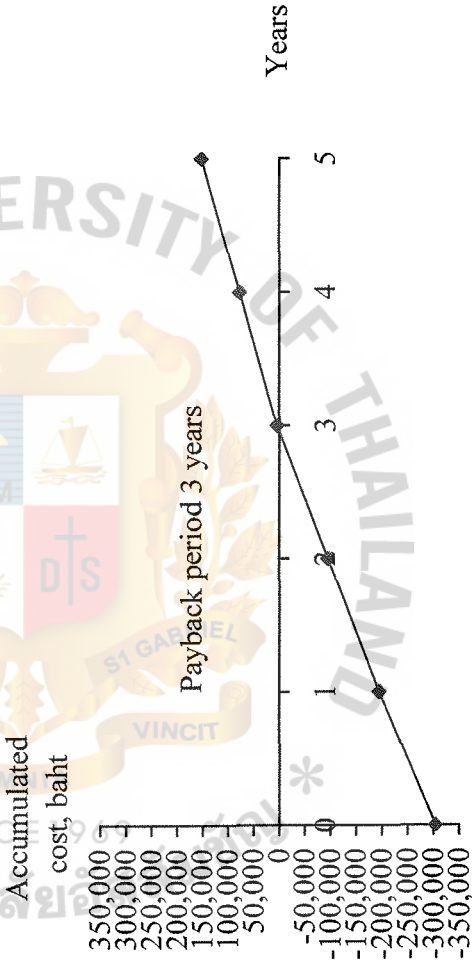| Cost items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Accumulated Existing System Cost	46,100	586,100	1,180,100	1,833,500	2,552,240	3,342,854
Accumulated Proposed System Cost	350,000	800,000	1,295,000	1,839,500	2,438,450	3,097,295
Cost Saving	-303,900	-213,900	-114,900	-6,000	113,790	245,559
Discount rate 10%	1.00	0.91	0.83	0.75	0.68	0.62
Time-adjusted	-303,900	-194,649	-95,367	4,500	77,377.2	152,246.58

Figure F.2. Payback Period of Candidate 2 : The Teller Made System.

73

Table F.3. Payback Analysis of Candidate 3 : The Full Package Software.

| Cost items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Accumulated Existing System Cost	46,100	586,100	1,180,100	1,833,500	2,552,240	3,342,854
Accumulated Proposed System Cost	400,000	850,000	1,345,000	1,889,500	2,488,450	3,147,295
Cost Saving	-353,900	-263,900	-164,900	-56,000	63,790	195,559
Discount rate 10%	1.00	0.91	0.83	0.75	0.68	0.62
Time-adjusted	-353,900	-240,149	-136,867	-42,000	43,377.2	121,246.58
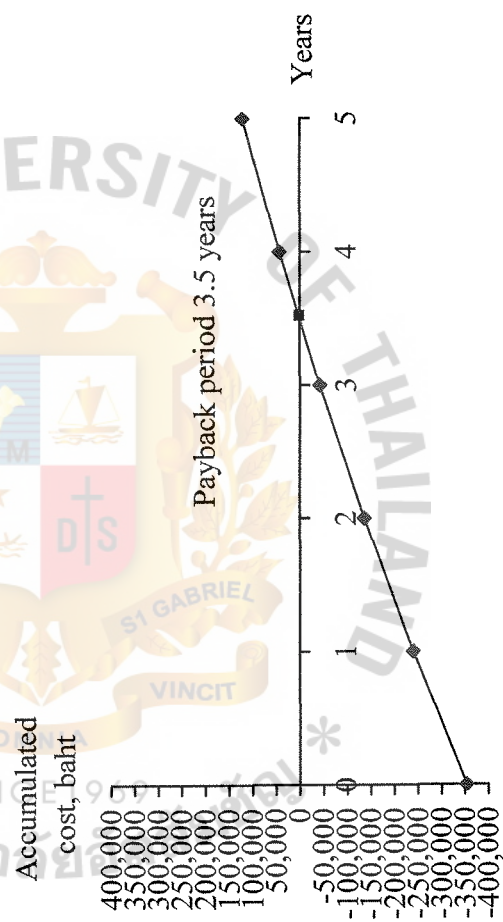
Figure F.3. Payback Period of Candidate 3 : The Full Package Software.

74

BIBLIOGRAPHY

1. Date, C J. An Introduction to Database systems, Volume I. 6th Edition. MA:Addison-Wesley, 1995.

2. FitzGerald, J. and Ardre F. FitzGerald. Fundamentals of system Analysis. New York: John Wiley & Sons. Inc., 1987.

3. Korth, F. Henry and Abraham Slberschatz. Database System Concepts. New York: McGraw-Hill, 1991.

4. Long, Larry. Management Information System. Englewood Cliff, N.J.: Prentice Hall, 1989.

5. Meesajjee, Chulit. The Guidelines for MS(CIS) CS 6998 Project and CS 7000 Thesis. Bangkok: Assumption University.

6. Norman, Ronald J. Object-Oriented Systems Analysis and Design, N.J.: Prentice Hall, 1989.

7. O'Brien, James A. Management Information Systems. Third Edition. McGraw-Hill, 1996.

8. Senn, James A. Analysis & Design of Information Systems, 2nd Edition. NY: McGraw-Hill Publishing company, 1989.

9. Whitten, Jeffery L., Lonnie D. Bentley. Systems Analysis and design Methods, 4th Edition. McGraw-Hill, 1998.

10. Yourdon, Edward. Modern Structured Analysis. Englewood Cliff, N.J.: Prentice Hall, 1989.