Textile Inventory System for KTS Textile Co., Ltd.

by

Ms. Tanaporn Santisatitkul

A Final Report of the Six-Credit Course
CS 6998 - CS 6999 System Development Project

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

November 2002

eport

155362
MS (CIS)
St. Gabriel's Library, Au

Textile Inventory System for KTS Textile Co., Ltd.

by
Ms. Tanaporn Santisatitkul

A Final Report of the Six-Credit Course
CS 6998-CS 6999 System Development Project

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

November 2002

Project Title	Textile Inventory System for KTS Textile Co., Ltd.
Name	Ms. Tanaporn Santisatitkul
Project Advisor	Air Marshal Dr. Chulit Meesajjee
Academic Year	November 10, 2002

The Graduate School of Assumption University has approved this final report of the six-credit course, CS 6998 – CS 6999 System Development Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

Approval Committee:

(Air Marshal Dr. Chulit Meesajjee)
Dean and Advisor

(Prof.Dr. Srisakdi Charmonman)
Chairman

(Asst.Prof.Dr. Vichit Avatchanakorn)
Member

(Assoc.Prof. Somchai Thayarnyong)
MUA Representative

November 10, 2002

ABSTRACT

This project presents the development of the inventory system for KTS Textile Co., Ltd. This existing inventory system was largely manual using just one standalone computer to print letters and forms. Therefore we introduce the application of database management to company. When the computerized system is implemented, the company can work more effectively and accurately. The application we use is Microsoft Access XP.

In addition to the database management, the system is able to generate cost reports for the manager to consider the cost movement and determine the price that is profitable and competitive. Besides, the system can extract data from the database and generate many forms and useful reports.

The Textile inventory system development is divided into many phases: the analysis of the existing system, user requirements discovery, process model, data model, hardware and software requirement, and implementation phase.

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

ACKNOWLEDGEMENTS

This system development project is completed thanks to the support of many people. First of all, I would like to give special thanks to my project advisor, Air Marshal Dr. Chulit Meesajjee, for his valuable suggestion and support. Also, I would like to thank all project committee members. I sincerely thank all the lecturers in the MS(CIS) program for instructing me in all the subjects and helping me in the completion of this project.

Lastly, I am forever grateful to my parents, family and friends for their priceless support.

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

St. Gabriel's Library, Au

TABLE OF CONTENTS

ASSUMPTION UNIVERSITY OF THAILAND
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

LIST OF FIGURES

Figure		Page

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

LIST OF TABLES

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

Table		Page

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

I. INTRODUCTION

1.1 Background of the Project

KTS Textile Co., Ltd. is the distributor of a variety of types and styles of textiles. The product lines cover various types of material such as cotton, linen, polyester, denim with several series of styles to choose from. The company buys textiles from many sources of big and small manufacturers. Then we sell the products to garment companies, wholesalers, and retailers.

The company faces several problems in dealing with the operational data because we still mostly operate manually. Therefore errors often happen in specifying the correct quantity balance of inventory. This problem would cause confusion and awkwardness in operational process, and mistakes can cause serious problems to the company, since it has many types and items of product to handle, searching data or tracing document could be very time consuming, besides it is difficult to create a summary report.

These are the reasons for this project inventory system. The system is designed to smooth the operation process. The system will manage a large amount of data in order to make it easily accessible. The computerized system will eliminate about all errors and keep the data up-to-date. The new system can create ad hoc reports to the manager as well.

The textile inventory system is developed based on user requirements. This system will provide the effective and efficient information system for an inventory management.

1.2 Objectives of the Project

The objectives of this project are as follows:

(1) To analyze the existing system in order to specify problems.

(2) To study and identify the user requirement for the new system.

(3) To implement the computer-based system in place of the manual system.

(4) To have a system that provides accurate and up-to-date inventory data.

(5) To reduce the redundancy of data entry.

(6) To enhance efficiency of the inventory system.

(7) To accelerate the company's work process.

(8) To provide management with meaningful information which should support the better decision-makings.

(9) To reduce the use of paper and the cost of personnel resource.

1.3 Scope of the Project

This project is concerned with the inventory control system, which may be specified as followed:

(1) Master file

To record the main reference data, we have four master files, which are customer, supplier, product, and salespersons. Each record in master files is assigned the code as its primary key.

(2) Inventory management

The system will be used to track and determine correct product balance.

(3) Orders

The system can track and keep record of customer order and supplier order.

(4) Cost control

The manager will receive the cost report from the system, then he or she will determine the unit price of each product in order to have the competitive advantage in the market of fluctuating price.

(5) Report Generation

The inventory and sales reports are generated by the system in response to the users' request. In addition, these reports are useful for management decision-making. These reports are obtained by extracting data from daily operation and historical data.

1.4 Deliverables

(1) Data Flow Diagram

(2) Entity Relationship Diagram

(3) Database Design

(4) Network Design

(5) Cost and Benefit Analysis

(6) User Interface Design

(7) Report Design

(8) Process Specification

(9) Data Dictionary

(10) Structure Chart

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

II. THE EXISTING SYSTEM

2.1 Background of the Organization

KTS Co., Ltd. was founded in 1994. We are a business-to-business company supplying textile products to garment firms, wholesalers, and retailers. Our product mix includes a variety of woven fabrics and synthetic fiber such ad cotton, wool, polyester, linen, etc. We obtain the products from various sources of manufacturers.

KTS Textile Co., Ltd. consists of the following departments:

(1) Sales and Marketing Department

This department can be considered as the heart of the company. The main duty is taking orders and executing the orders. The department needs to find new customers and retaining existing customers.

(2) Inventory Department

The responsibility is to control the in-coming and out-going of the products. Also it needs to take care and maintain the quality of the product, checks the availability of stock and is in charge of reordering the depleting items.

(3) Accounting Department

This department is responsible for controlling the flow of all the money and payments in the company; and to set the standard of payroll, account payable/receivable, and so on.

(4) Human Resource Department

This department is responsible for recruitment of all the staff for all departments. It filters all applicants in order to try to get the effective and enthusiastic people.

The organization chart is illustrated in Figure 2.1.

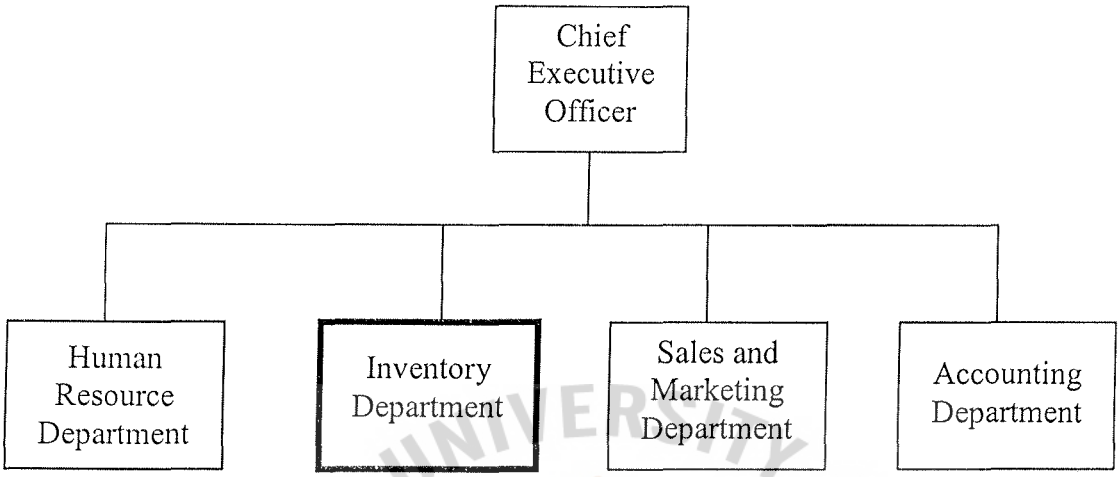

Figure 2.1. Organization Chart of the KTS Textile Co., Ltd.

2.2 Existing Business Functions

The existing business of Textile Inventory System is mostly based on a manual system. The company manages inventory by using stock cards. The product is checked for the balance daily. The inventory staff would record the sold products and the number available for each product.

When the customer places an order, the sales staff would check the product availability form the stock cards. The record of customer order is kept in the sales books. And the information of supplier, customer, and product are on paper collected in files. Some document forms and letter are printed out from a computer.

The company uses only some simple Microsoft Office applications, which are Microsoft Word, and Microsoft Excel for printing forms of letters. The database application is not yet introduced in the company's operation. The Context Diagram for the existing system is illustrated in Figure 2.2.

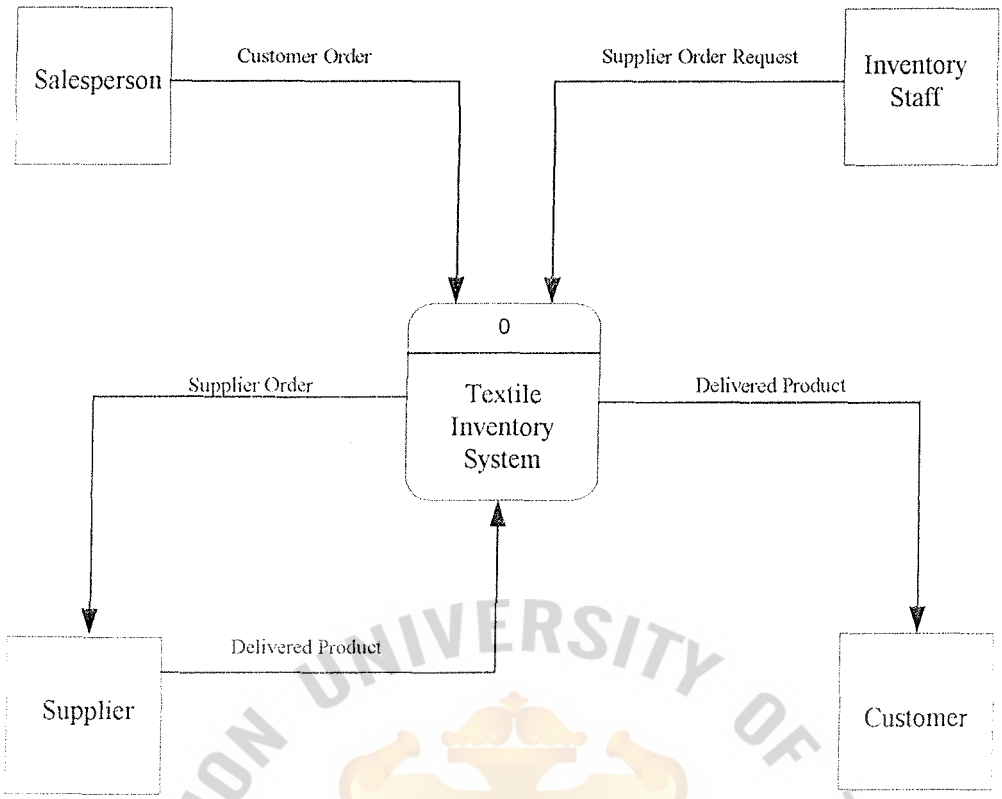

Figure 2.2. The Context Diagram of the Existing Textile Inventory System.

2.3 Current Problems and Areas for Improvement

(1) The information of inventory balance is not recorded correctly. As a result, when the customer orders a product, the demanded product is out of stock because of the inaccurate inventory record.

(2) The searching for customer information, supplier information, and product information is slow and awkward because it is kept on the paper collected in files.

(3) Data are less secure because everyone can access and review the information. Besides it could be easily distorted and destroy because it is on the paper.

(4) Creating a report is very time-consuming because the information is dissipated and not computerized

2.4 The Existing Computer System

At the present time, our inventory section has one stand alone computer. The application used is the simple Microsoft Office, which are Microsoft Word and Microsoft Excel for printing forms and letter. The database application is not yet introduced to the company's operation.

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

III. THE PROPOSED SYSTEM

The proposed textile inventory system will be a better way to handle the company's routine operations and help in manager's decision making. This proposed computerized system will control information of inventory system to help interact with the involved parties. In order to design the proposed system, we first have to identify the system requirements and user requirements.

3.1 User's Requirements

(1) The record of suppliers, customers, and products are computerized and well managed.

(2) The information of orders are automated and efficiently handled.

(3) The system can provide the current quantity of each product in inventory accurately.

(4) The system can calculate the unit cost of each product purchased at a certain time.

(5) The system allows the manager to redetermine the price of each product item at any point of time, in order to respond to the fluctuating market price of textiles.

(6) The system can tell how much can a salesperson sells by tracking from the customer orders.

(7) The system yields effectiveness to the company's operations.

(8) The interface of the new system is easily understandable.

(9) The system can generate reports that are useful for managerial decision.

3.2 Candidate Systems

In order to satisfy the user requirements and to solve the problem of the existing system, we need to identify and analyze all the alternative solutions. We will assess both qualitative and quantitative characteristics of each candidate. The three candidate systems we are considering are:

(1) Commercial off-the-Shelf (COTS)

(2) Outsourcing system development

(3) In-house development

The description and specification of each candidate is described in the table below.

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

Table 3.1. Candidate Systems Matrix.

Characteristic	Candidate 1	Candidate 2	Candidate 3
Portion of System Computerized	COTS will be purchased and customized to satisfy inventory division requirements	We will outsource the system development to outside company	We use our own developers to analyze and build the system
Benefit	It is easy to implement this solution. And it takes less time to implement	This solution can satisfy our requirement but may be costly and difficult to maintain.	Our requirements are fully met by this solution. It is less costly easier to maintain.
Servers and Workstations	MS Window XP	MS Window XP	MS Window XP
Hardware Device	Pentium 4 1.5 GHz, 512 MB RAM.	Pentium 4 1.5 GHz, 512 MB RAM.	Pentium 4 1.5 GHz, 512 MB RAM.
Software tools Needed	Cybase	MS Visual Basic	MS Access XP
Application Software	Package Solution	Custom Solution	Custom Solution
Method of Data Processing	Client/Server	Client/Server	Client/Server
Storage Devices and Implications	Cybase with hard disk 40 GB	MS SQL Server 2000 with hard disk 80 GB	MS Access with hard disk 40 GB

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

MS (CIS)
St. Gabriel's Library, Au
2135 c.1

3.3 Candidate Systems Cost Comparison

3.3.1 Breakeven Analysis

Breakeven is obtained by comparing the cost between the existing system and the candidate system. In general, any system has the two types of costs which are development cost and operating cost. At the beginning period after using the new system, the cost of computerized system tends to be high. However, in the long run, the cumulated cost of computerized system will be lower than that of manual system. The breakeven point is where the cost of the two systems is equal before the cost of computerized system will go lower than the other.

The cost of the existing system and the candidate system are shown in detail below. Then the cumulative costs are expressed in form of graph as shown in the figures that follow.

3.3.2 Benefit Analysis

The computerized system provides both tangible and intangible benefits. The tangible benefit is the reduction in monetary value in salary expense, bonus, and paper cost.

The intangible benefit is even much greater. The computerized system yields more accuracy in the work operation. It allows the company to work more efficiency. It significantly accelerates the work process in the inventory system. Especially, it provides the better managerial control for the inventory system.

3.3.3 Payback Analysis

Payback analysis will tell when the investment in the new computerized system will be paid off. The benefit is yielded from the increasing efficiency in operation and from the monetary saving. The tables of payback analysis and the corresponding graphs are depicted below.

St. Gabriel's Library, Au

Table 3.2. Existing System Cost, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Stand Alone Machine (15,000)	3,000	3,000	3,000	3,000	3,000
Inkjet Printer (3,500)	700	700	700	700	700
Total Fixed Cost	3,700	3,700	3,700	3,700	3,700
Operating Cost					
Salary Cost:					
Manager (1 person @ 20,000)	240,000	264,000	290,400	319,440	351,384
Salesperson (2 persons @ 12,000)	288,000	316,800	348,480	383,328	421,661
Inventory Staff (3 persons @ 10,000)	360,000	396,000	435,600	479,160	527,076
Bonus	60,000	66,000	72,600	79,860	87,846
Total Annual Salary Cost	708,000	778,800	856,680	942,348	1,036,583
Office Supply & Miscellaneous Cost:					
Stationary	4,000	4,400	4,840	5,324	5,856
Paper	8,300	9,130	10,043	11,047	12,152
Utility	108,000	110,000	112,000	114,000	116,000
Miscellaneous	12,000	15,000	18,000	21,000	24,000
Total annual Office Supplies cost	132,300	138,530	144,883	151,371	158,008
Total Operating Cost	840,300	917,330	1,001,563	1,093,719	1,194,591
Total Manual System Cost	844,000	921,030	1,005,263	1,097,419	1,198,291
Total Manual Cumulative System Cost	844,000	1,765,030	2,770,293	3,867,712	5,066,004

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

St. Gabriel's Library, Au

Table 3.3. The First Candidate System Cost, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost :					
Hardware Cost:					
Computer Server Cost (35,000)	7,000	7,000	7,000	7,000	7,000
Computer Client Cost (3 sets @ 15,000)	9,000	9,000	9,000	9,000	9,000
Laser Printer (20,000)	4,000	4,000	4,000	4,000	4,000
Scanner (10,000)	2,000	2,000	2,000	2,000	2,000
UPS 1000 VA (3,000)	600	600	600	600	600
Hub (4,000)	800	800	800	800	800
Unshielded Twisted Pair (1,000)	200	200	200	200	200
Total Hardware Cost	23,600	23,600	23,600	23,600	23,600
Software Cost:					
Microsoft Window XP (4 units @ 17,000)	13,600	13,600	13,600	13,600	13,600
Cybase (4 units @ 20,000)	16,000	16,000	16,000	16,000	16,000
Norton Antivirus (4 units @ 2,500)	2,000	2,000	2,000	2,000	2,000
Total Software Cost	31,600	31,600	31,600	31,600	31,600
Maintenance Cost:	0	38,000	41,800	45,980	50,578
Implementation Cost:					
Training cost	60,000	0	0	0	0
System Development Cost	180,000	0	0	0	0
Total Implementation Cost	240,000	0	0	0	0
Total Fixed Cost	295,200	93,200	97,000	101,180	105,778
Operating Cost					
Salary Cost:					
Manager (1 person @ 20,000)	240,000	264,000	290,400	319,440	351,384
Salesperson (2 persons @ 12,000)	288,000	316,800	348,480	383,328	421,661
Inventory Staff (2 persons @ 10,000)	240,000	264,000	290,400	319,440	351,384
Bonus	50,000	55,000	60,500	66,550	73,205
Total Annual Salary Cost	578,000	635,800	699,380	769,318	846,250
Office Supply & Miscellaneous Cost:					
Stationary	4,000	4,400	4,840	5,324	5,856
Paper	8,000	8,800	9,680	10,648	11,713
Utility	120,000	121,500	123,000	124,500	126,000
Miscellaneous	15,000	17,500	20,000	22,500	25,000
Total annual Office Supplies cost	147,000	152,200	157,520	162,972	168,569
Total Operating Cost	725,000	788,000	856,900	932,290	1,014,819
Total Computerized System Cost	1,020,200	881,200	953,900	1,033,470	1,120,597
Total Computerized Cumulative System Cost	1,020,200	1,901,400	2,855,300	3,888,770	5,009,367

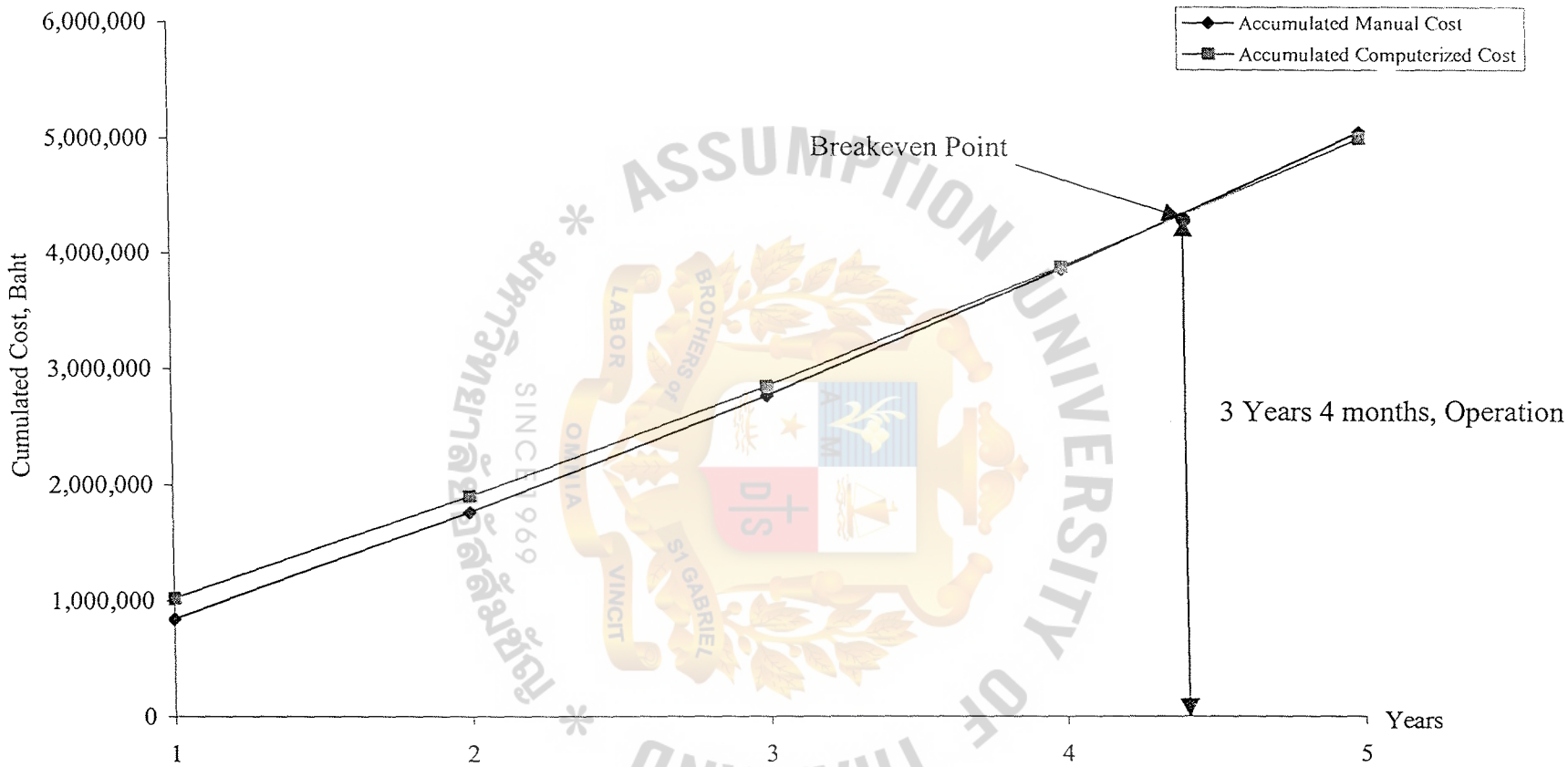

Figure 3.1. Cost Comparison between the Existing System and the First Candidate System.

St. Gabriel

Table 3.4. Payback analysis for the First Candidate System, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development cost:	-295,200					
Operation and maintenance cost:	0	0	-38,000	-41,800	-45,980	-50,578
Discount factors for 12%	1	0.893	0.797	0.712	0.636	0.567
Time-adjusted costs	-295,200	0	-30,286	-29,762	-29,243	-28,678
Cumulative time-adjusted cost:	-295,200	-295,200	-325,486	-355,248	-384,491	-413,169
Benefit from operating new system:	0	118,000	129,800	142,780	157,058	172,764
Discount Factor for 12%	1	0.893	0.797	0.712	0.636	0.567
Time-adjusted benefits	0	105,374	103,451	101,659	99,889	97,957
Cumulative time-adjusted benefit	0	105,374	208,825	310,484	410,373	508,330
Cumulative lifetime time-adjusted costs+benefits	-295,200	-189,826	-116,661	-44,764	25,882	95,161

ASSUMPTION UNIVERSITY OF THAILAND
Library, Au

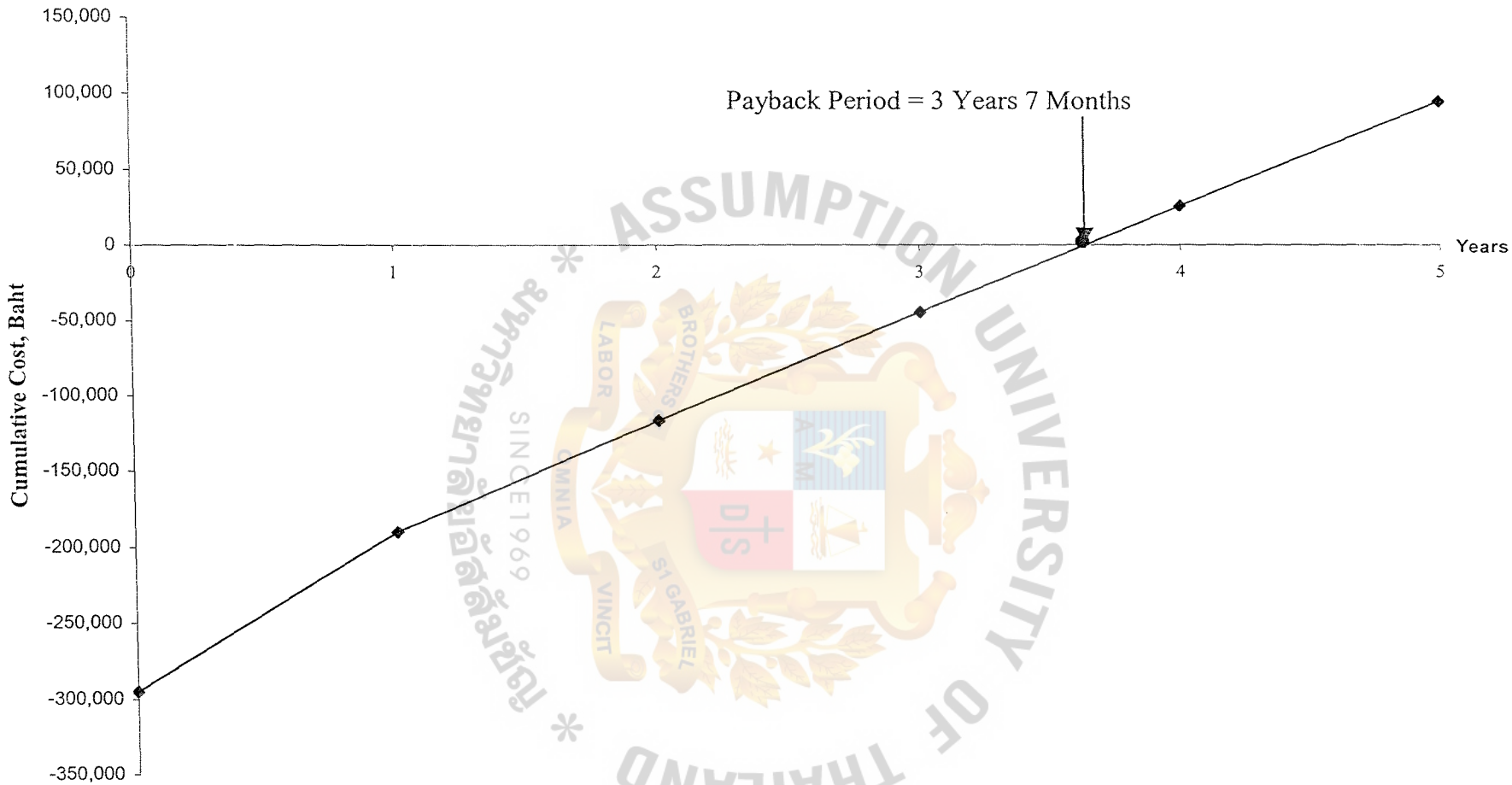

Figure 3.2. Payback Analysis for the First Candidate System.

Table 3.5. The Second Candidate System Cost, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Hardware Cost:					
Computer Server Cost (35,000)	7,000	7,000	7,000	7,000	7,000
Computer Client Cost (3 sets @ 15,000)	9,000	9,000	9,000	9,000	9,000
Laser Printer (20,000)	4,000	4,000	4,000	4,000	4,000
Scanner (10,000)	2,000	2,000	2,000	2,000	2,000
UPS 1000 VA (3,000)	600	600	600	600	600
Hub (4,000)	800	800	800	800	800
Unshielded Twisted Pair (1,000)	200	200	200	200	200
Total Hardware Cost	23,600	23,600	23,600	23,600	23,600
Software Cost:					
Microsoft Window XP (4 units @ 17,000)	13,600	13,600	13,600	13,600	13,600
MS Visual Basic (4 units @ 30,000)	24,000	24,000	24,000	24,000	24,000
Norton Antivirus (4 units @ 2,500)	2,000	2,000	2,000	2,000	2,000
Total Software Cost	39,600	39,600	39,600	39,600	39,600
Maintenance Cost:	0	38,000	41,800	45,980	50,578
Implementation Cost:					
Training cost	50,000	0	0	0	0
System Development Cost	120,000	0	0	0	0
Total Implementation Cost	170,000	0	0	0	0
Total Fixed Cost	233,200	101,200	105,000	109,180	113,778
Operating Cost					
Salary Cost:					
Manager (1 person @ 20,000)	240,000	264,000	290,400	319,440	351,384
Salesperson (2 persons @ 12,000)	288,000	316,800	348,480	383,328	421,661
Inventory Staff (2 persons @ 10,000)	240,000	264,000	290,400	319,440	351,384
Bonus	50,000	55,000	60,500	66,550	73,205
Total Annual Salary Cost	578,000	635,800	699,380	769,318	846,250
Office Supply & Miscellaneous Cost:					
Stationary	4,000	4,400	4,840	5,324	5,856
Paper	8,000	8,800	9,680	10,648	11,713
Utility	120,000	121,500	123,000	124,500	126,000
Miscellaneous	15,000	17,500	20,000	22,500	25,000
Total annual Office Supplies cost	147,000	152,200	157,520	162,972	168,569
Total Operating Cost	725,000	788,000	856,900	932,290	1,014,819
Total Computerized System Cost	958,200	889,200	961,900	1,041,470	1,128,597
Total Computerized Cumulative System Cost	958,200	1,847,400	2,809,300	3,850,770	4,979,367

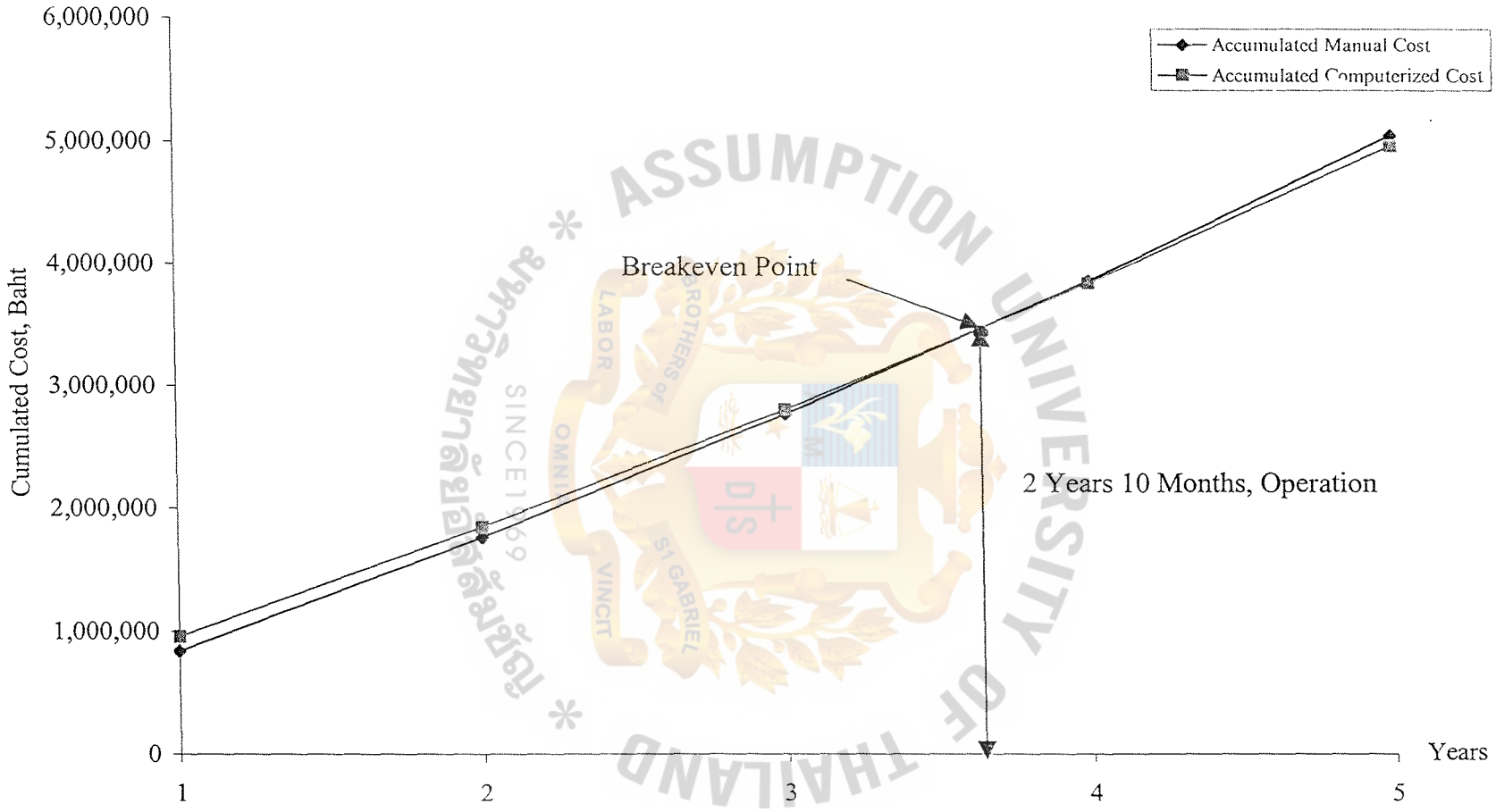

Figure 3.3. Cost Comparison between the Existing System and the Second Candidate System.

Table 3.6. Payback analysis for the Second Candidate System, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development cost:	-233,200					
Operation and maintenance cost:	0	0	-38,000	-41,800	-45,980	-50,578
Discount factors for 12%	1	0.893	0.797	0.712	0.636	0.567
Time-adjusted costs	-233,200	0	-30,286	-29,762	-29,243	-28,678
Cumulative time-adjusted cost:	-233,200	-233,200	-263,486	-293,248	-322,491	-351,169
Benefit from operating new system:	0	120,000	132,000	145,200	159,720	175,692
Discount Factor for 12%	1	0.893	0.797	0.712	0.636	0.567
Time-adjusted benefits	0	107,160	105,204	103,382	101,582	99,617
Cumulative time-adjusted benefit	0	107,160	212,364	315,746	417,328	516,946
Cumulative lifetime time-adjusted costs+benefits	-233,200	-126,040	-51,122	22,499	94,837	165,777

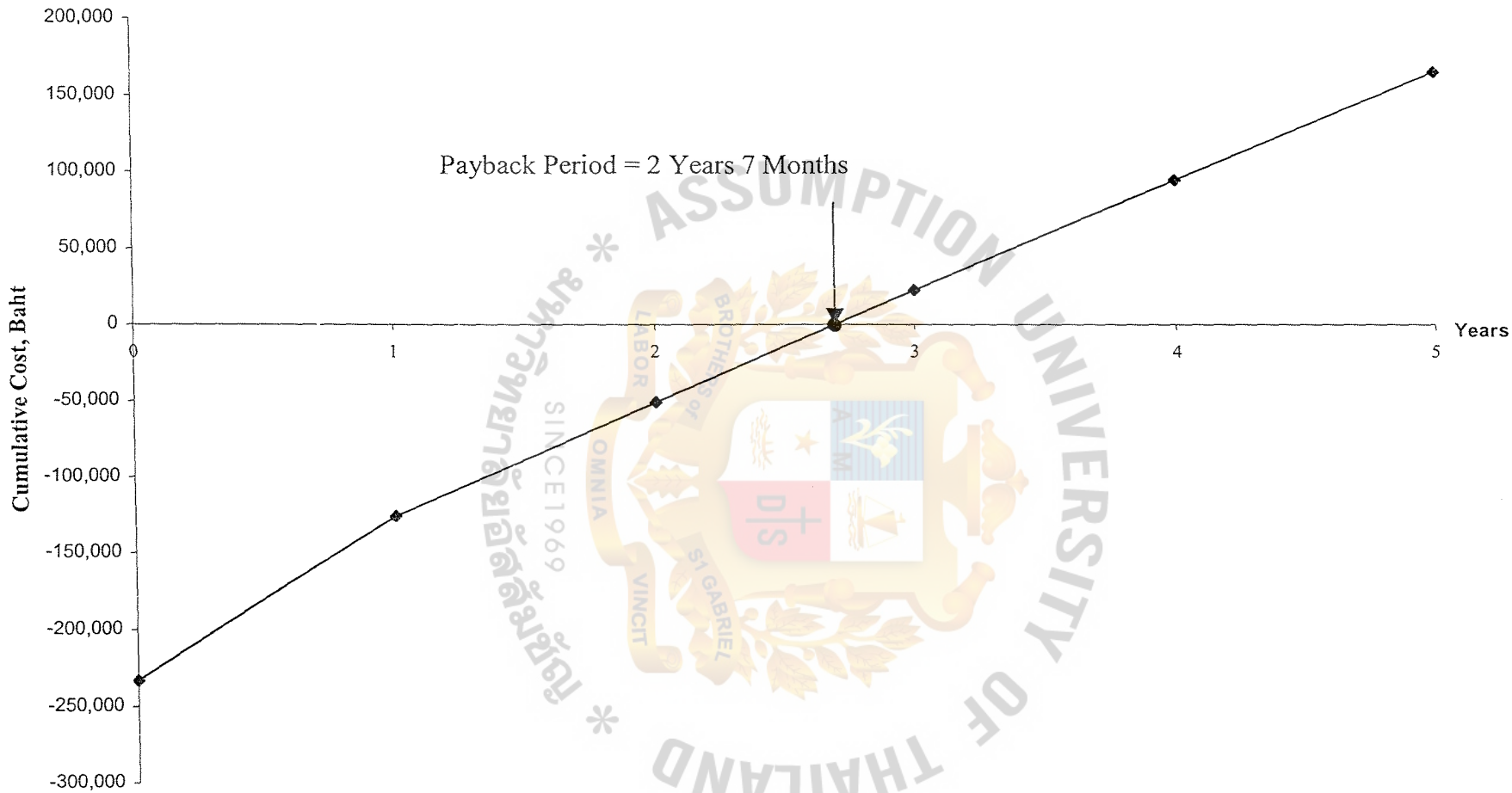

Figure 3.4. Payback Analysis for the Second Candidate System.

St. Gabriel's Library, Au

Table 3.7. The Third Candidate System Cost, Baht.

Cost Items	Years				
	1	2	3	4	5
Fixed Cost					
Hardware Cost:					
Computer Server Cost (35,000)	7,000	7,000	7,000	7,000	7,000
Computer Client Cost (3 sets @ 15,000)	9,000	9,000	9,000	9,000	9,000
Laser Printer (20,000)	4,000	4,000	4,000	4,000	4,000
Scanner (10,000)	2,000	2,000	2,000	2,000	2,000
UPS 1000 VA (3,000)	600	600	600	600	600
Hub (4,000)	800	800	800	800	800
Unshielded Twisted Pair (1,000)	200	200	200	200	200
Total Hardware Cost	23,600	23,600	23,600	23,600	23,600
Software Cost:					
Microsoft Window XP (4 units @ 17,000)	13,600	13,600	13,600	13,600	13,600
Microsoft Access XP (4 units @ 12,000)	9,600	9,600	9,600	9,600	9,600
Norton Antivirus (4 units @ 2,500)	2,000	2,000	2,000	2,000	2,000
Total Software Cost	25,200	25,200	25,200	25,200	25,200
Maintenance Cost:	0	40,000	44,000	48,400	53,240
Implementation Cost:					
Training cost	75,000	0	0	0	0
System Development Cost	50,000	0	0	0	0
Total Implementation Cost	125,000	0	0	0	0
Total Fixed Cost	173,800	88,800	92,800	97,200	102,040
Operating Cost					
Salary Cost:					
Manager (1 person @ 20,000)	240,000	264,000	290,400	319,440	351,384
Salesperson (2 persons @ 12,000)	288,000	316,800	348,480	383,328	421,661
Inventory Staff (2 persons @ 10,000)	240,000	264,000	290,400	319,440	351,384
Bonus	50,000	55,000	60,500	66,550	73,205
Total Annual Salary Cost	578,000	635,800	699,380	769,318	846,250
Office Supply & Miscellaneous Cost:					
Stationary	4,000	4,400	4,840	5,324	5,856
Paper	8,000	8,800	9,680	10,648	11,713
Utility	120,000	121,500	123,000	124,500	126,000
Miscellaneous	15,000	17,500	20,000	22,500	25,000
Total annual Office Supplies cost	147,000	152,200	157,520	162,972	168,569
Total Operating Cost	725,000	788,000	856,900	932,290	1,014,819
Total Computerized System Cost	898,800	876,800	949,700	1,029,490	1,116,859
Total Computerized Cumulative System Cost	898,800	1,775,600	2,725,300	3,754,790	4,871,649

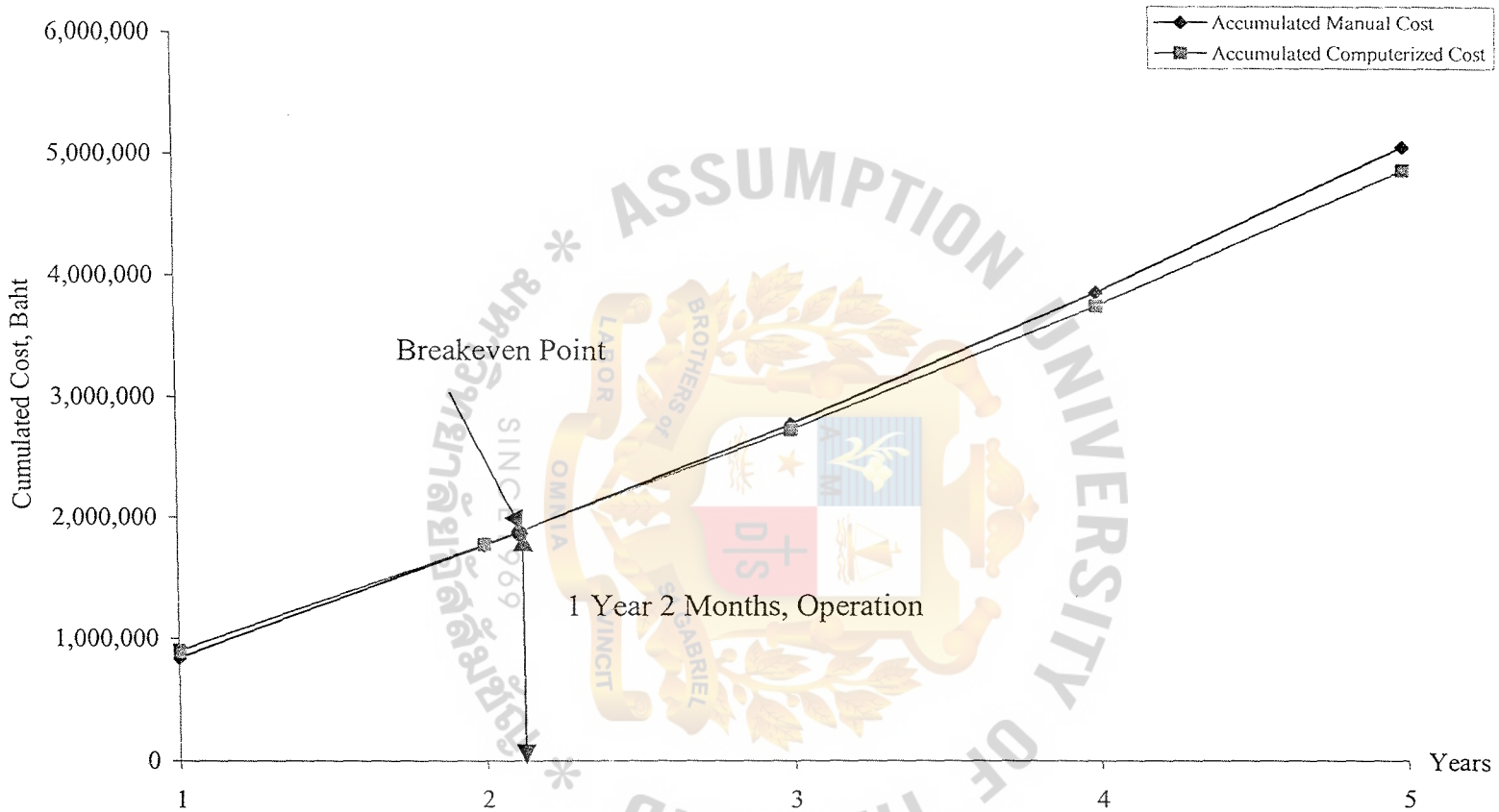

Figure 3.5. Cost Comparison between the Existing System and the Third Candidate System.

Table 3.8. Payback analysis for the Third Candidate System, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development cost:	-173,800					
Operation and maintenance cost:	0	0	-40,000	-44,000	-48,400	-53,240
Discount factors for 12%	1	0.893	0.797	0.712	0.636	0.567
Time-adjusted costs	-173,800	0	-31,880	-31,328	-30,782	-30,187
Cumulative time-adjusted cost:	-173,800	-173,800	-205,680	-237,008	-267,790	-297,977
Benefit from operating new system:	0	120,000	132,000	145,200	159,720	175,692
Discount Factor for 12%	1	0.893	0.797	0.712	0.636	0.567
Time-adjusted benefits	0	107,160	105,204	103,382	101,582	99,617
Cumulative time-adjusted benefit	0	107,160	212,364	315,746	417,328	516,946
Cumulative lifetime time-adjusted costs+benefits	-173,800	-66,640	6,684	78,738	149,538	218,968

St. Gabriel's Library, Au

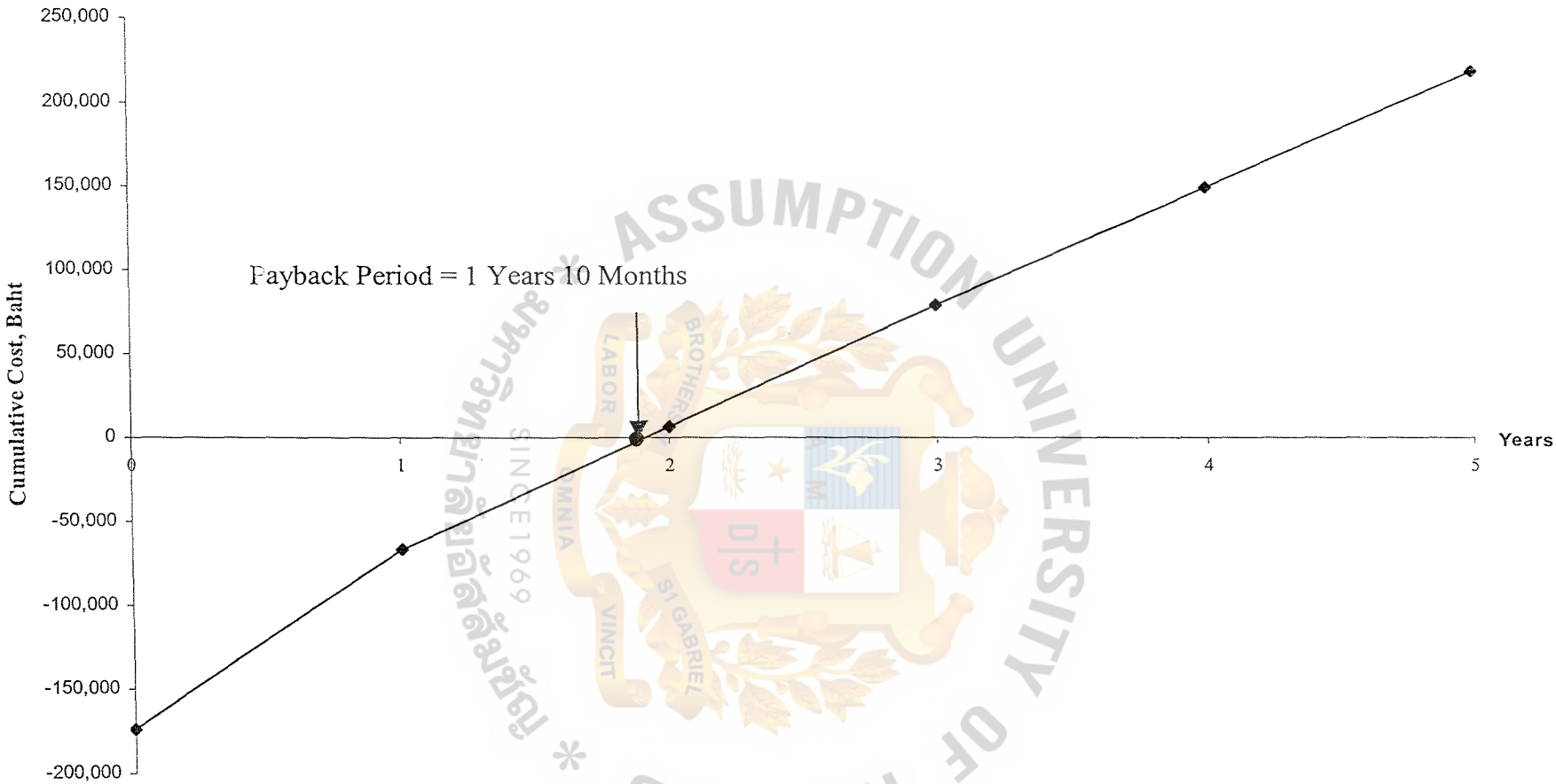

Figure 3.6. Payback Analysis for the Third Candidate System.

Table 3.9. Feasibility Analysis Matrix.

Feasibility Criteria	Weight	Candidate 1	Candidate 2	Candidate 3
Operational Feasibility	20%	Support almost all of the user requirements.	Fully supports the user requirements	Same as candidate 2
		Score: 95	Score: 100	Score: 100
Economic Feasibility	60%			
Cost to develop:		Approximately 295,200	Approximately 233,200	Approximately 173,800
Payback period:		Approximately 3 Years 7 Months	Approximately 2 Years 7 Months	Approximately 1 Year 10 Months
Net present value:		Approximately 95,161	Approximately 165,777	Approximately 218,968
		Score: 60	Score: 80	Score: 98
Schedule Feasibility	20%	2.5 months	6 months	4 months
		Score: 92	Score: 70	Score: 88
Ranking	100%	73.4	85.6	96.4

The feasibility matrix evaluates the weak and strong points of each candidate systems. We use three criteria for assessing each candidate. We mostly stress on the economic feasibility.

From the weight and score of each candidate, therefore we choose the third candidate, in-house development, as our solution system.

3.4 System Design

In order to improve and solve the problem of the operation in the inventory system, we use Microsoft Access program to perform the tasks in the system. The user will use Microsoft Access for daily transaction through the friendly user interface we have designed.

3.4.1 Data Flow Diagram

First, the design of data flow is necessary. The Data Flow Diagram shows all the logical workflow and process performed in the inventory system. The context diagram demonstrates the bug picture telling what is the input and output of the system and who are the external parties involved in the system.

Our inventory system is divided into five processes. All the processes are expressed as the data flow diagram level 0 and 1 as depicted in Appendix A. Also the detailed process specification is shown in Appendix D.

The five processes of KTS Textile Co., Ltd.'s inventory system is described as follow:

Process 1.0: Receive order

The salesperson receives an order from the customer. In this process, the salesperson needs to check customer status, create customer order, and check product availability.

Process 2.0: Order supply

When the inventory has a shortage of some certain items, the inventory staff are responsible for issuing supplier order and receiving products from the suppliers.

Process 3.0: Specify price

The cost report will contain the unit cost of each product item purchased at a certain time. The cost report is provided to the manager for determining the selling

price. The selling price is subject to the manager's judgment. He or she would consider from the fluctuating market price of textile, demand, and competition.

Process 4.0: Deliver product

The product id physically delivered to the customer. Then the customer order information will be updated.

Process 5.0: Generate report

By extracting data from the database, the program can yield the summary and useful report about the history of operation. The reports can be very useful for making a better decision in the company.

3.4.2 Entity Relationship Diagram

The Entity Relationship Diagram would represent the entity and data involved in our inventory system. The context data model shows the scope of the system. The key-based model tells what is the primary key in each entity. The fully attributed data model depicts the descriptive attribute of each entity and the relationship among these entities. Theses Entity Relationship Diagrams are illustrated in Appendix C.

After designing the Data Flow Diagram, and Entity Relationship Diagram, the next step is to design database, user interface, report, and database which are illustrated in Appendix E, F, G, and H.

3.5 Hardware and Software Requirement

3.5.1 Hardware Requirements

(1) Server Computer 1 Unit

(a) Pentium 4 1.5 GHz

(b) RAM 512 MB

(c) Hard Disk 40 GB

(d) CD-RW 24 x 10 x 40

(e) Floppy Drive 1.44 MB

(f) LAN Card 10/100

(g) Monitor 15"

(2) Client Computer 3 Units

(a) Celeron 950 MHz

(b) RAM 256 MB

(c) Hard Disk 20 GB

(d) CD ROM 52X

(e) Floppy Drive 1.44 MB

(f) LAN Card 10/100

(g) Monitor 15"

(3) Hub 8 Ports 1 Unit

(4) Uninterruptible Power Supply (UPS) 1000 VA 1 Unit

(5) Unshielded Twisted Pair

(6) Laser Printer 1 Unit

(7) Scanner 1 Unit

3.5.2 Software Requirements

(1) Microsoft Window XP 4 Units

(2) Microsoft Access XP 4 Units

(3) Norton Antivirus 4 Units

The Hardware and network configuration is shown in Figure 3.7.

ASSUMPTION UNIVERSITY OF THAILAND
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

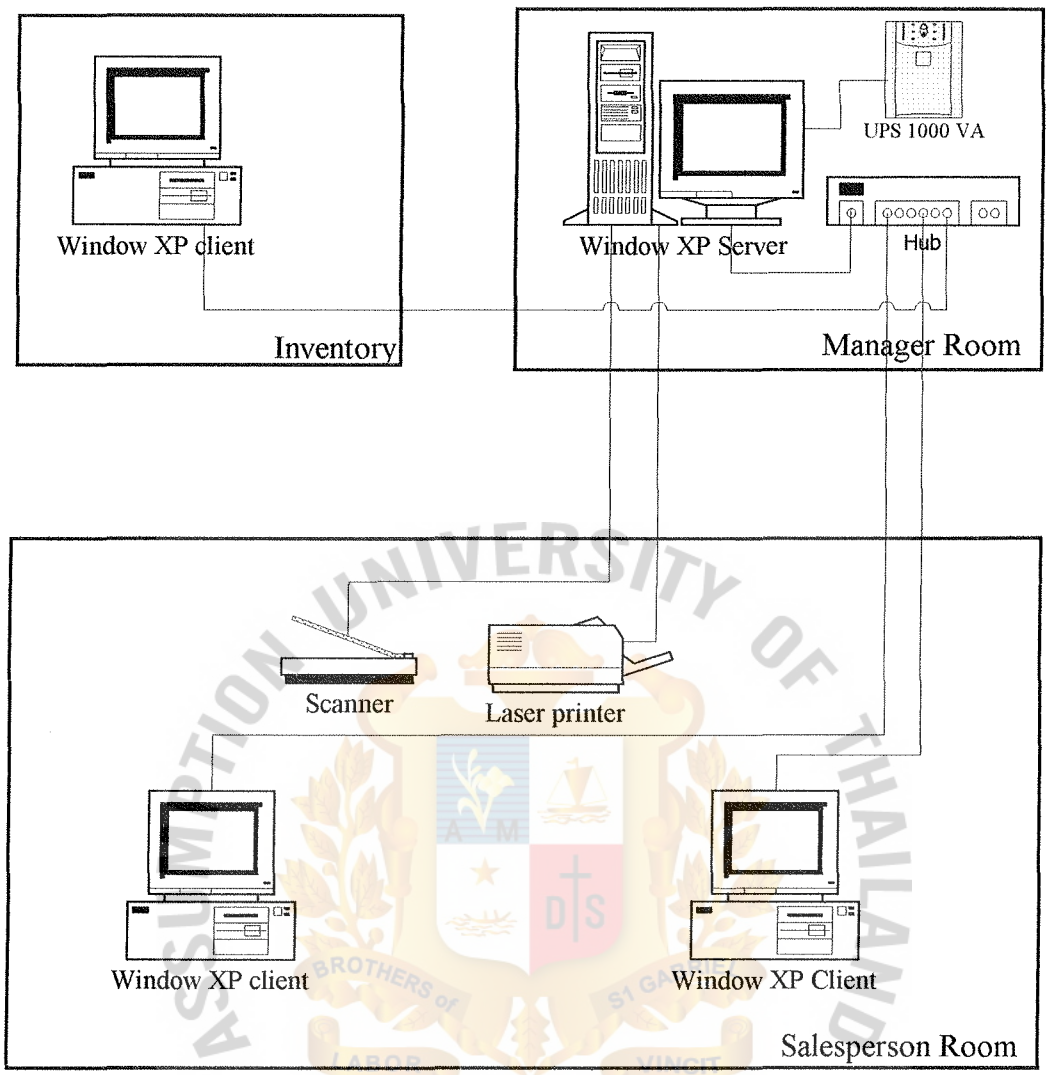

Figure 3.7. The Hardware Configuration of the Proposed System.

3.6 Security and Control

The inventory section is very important to the operation of the company and its data is a valuable asset of the organization, therefore the measurement for security and control must be established.

(1) User ID and password are assigned to every user of the system, and only authorized users can access the system to prevent the system from being harmed. Passwords are required to be changed every six months.

(2) Data integrity is important. The system will check the validity of input data before saving it into the database.

(3) Backup of data is necessary. All data must have a back up. For the transaction file, the back up should be done at the end of the day everyday. The back up needs to be kept in a separate and secure place.

(4) Antivirus program will be installed in every computer client.

(5) Eating, drinking, or smoking while operating the computer is prohibited.

(6) An UPS is used to protect the computer from electricity failure.

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

St. Gabriel's Library, Au

IV. PROJECT IMPLEMENTATION

4.1 Project Implementation Process

We have done the system analysis and design from which we derive the user requirements, data model, process model, hardware and software requirements, and cost/benefit analysis. Then we are now ready to implement the system, which includes the construction of the system, programming, the system testing, training, documentation, and conversion. Each stage are describe as follow.

4.1.1 Programming

The software we choose for the application of the new system is Microsoft Access. Microsoft Access is also the suitable program to deal with all the database of our inventory system. We also use Microsoft Access to develop the user interface with the system. From the database maintained in the program, we, then, extract some information to generate several useful reports.

4.1.2 Testing

After programming all the application, database, and the interface, the system test is necessary. The testing is performed in order to find any errors occurred during executing the program. User should participate in the system testing, hence they can check whether the system really operate in accordance with their requirements. If there is anything unsatisfied, the collection must be done before actually putting the system into work.

4.2 Conversion

When we convert the old system to the computerized one, during the first period of time, we will parallelly run both the new system along with the old system. We will mainly run the new system, while having the manual system as the backup if anything

goes wrong. Problems or errors may occur after the conversion, therefore we willstill parallel run the manual process. Then every problem which arises from the new system must be solved. However, we expect the parallel run should not be for more than one month, after one month, the company will fully implement on the computerized system.

Every user must participate in the training session in order to get familiar and know how to use the new automated system. The training session will be held for one day. The system analyst will explain step by step how to use every screens and functions of the program. The user manual is a very important document, which will contain detail instruction and explain all functions of the system. The user manual is created as a reference to the users.

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

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The old system had many operational problems. First it is slower to search through the product files which is physically in paper, as so is the problem for customer and supplier files. Second, depending on the human data entry can easily cause error. With the computerized system, the system can check the integrity and correctness of input data.

The summary of the time-saving of each process is demonstrated in detail as followed:

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

Process	Existing System	Proposed System
Searching for information	10 mins	2 mins
Checking product quantity balance	12 mins	1 min
Update stock	8 mins	1 min
Customer order processing	20 mins	5 mins
Supplier order processing	20 mins	5 mins
Creating report	2 hrs	3 mins

In specifying price, in the manual system, the sales person needs to search throughout the price book written by the manager. This shore can be replaced by this fast computerized system, In the new system, the user can swiftly key in the product code and get the price matched with the product item and date.

Additionally, in the old system, making reports would be very time-consuming, because the history order or data is in the manual system. When using the digitized system, the users can get all the useful reports in a matter of minutes.

In the manual system, the process of issuing supplier order and customer order took a long time, because the salesperson had to search for the specific information from many manual and paper source. The computerized system can dramatically reduce the time used in issuing the supplier order and customer order.

5.2 Recommendations

The computerization of the inventory system has significantly improved the efficiency and accuracy in the inventory and sales operation. In order to support the expected future growth of the company, the computerized system should expand in other functions of the company such as accounting.

Unavoidably, the trend of Internet and electronic commerce will invade and increasingly dominate the market in the near future. The company should use the Internet to communicate with customers and vendors for business transaction. The company should have its own website to promote the company and to do some transactions.

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

APPENDIX A

DATA FLOW DIAGRAM

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

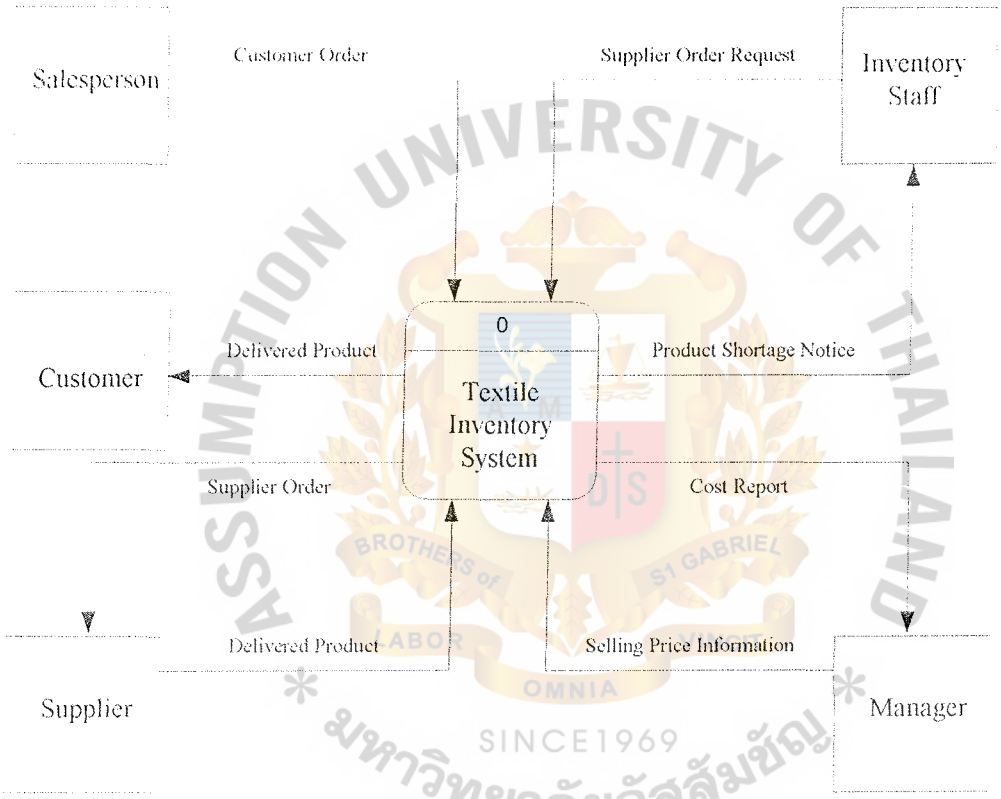

Figure A.1. Context Level Data Flow Diagram.

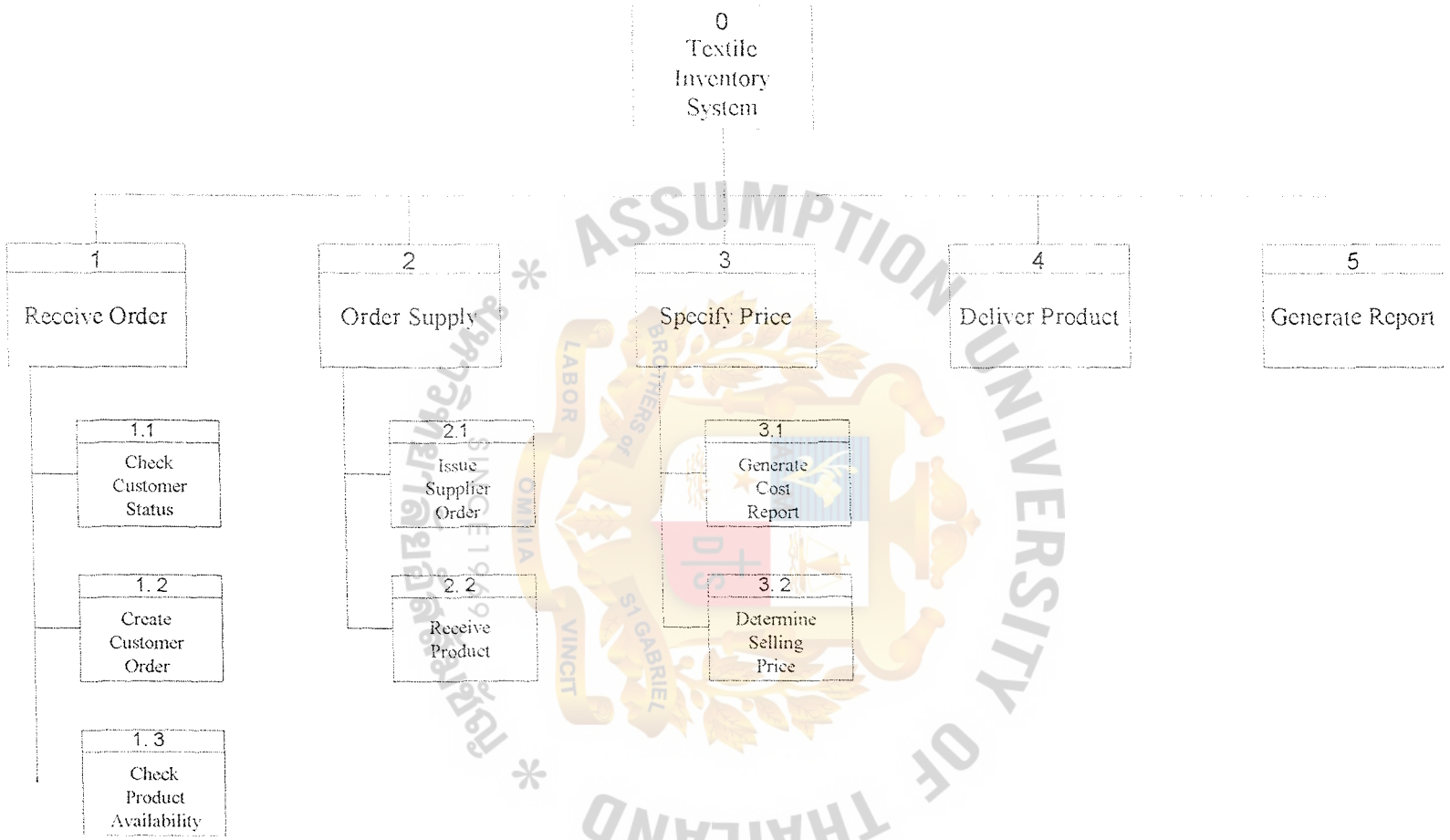

Figure A.2. Decomposition Diagram of Textile Inventory System.

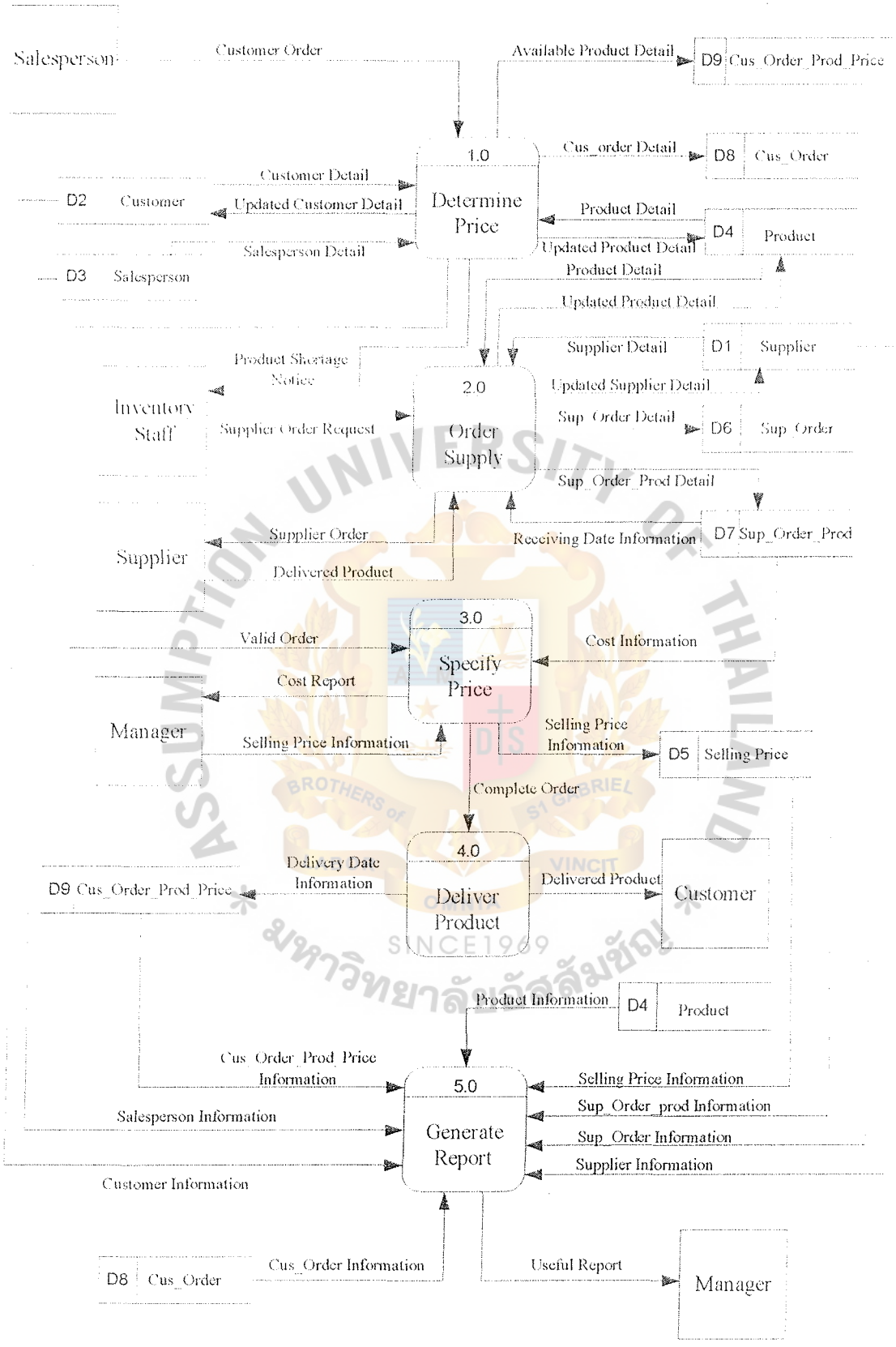

Figure A.3. Level 0 Data Flow Diagram of Textile Inventory System.

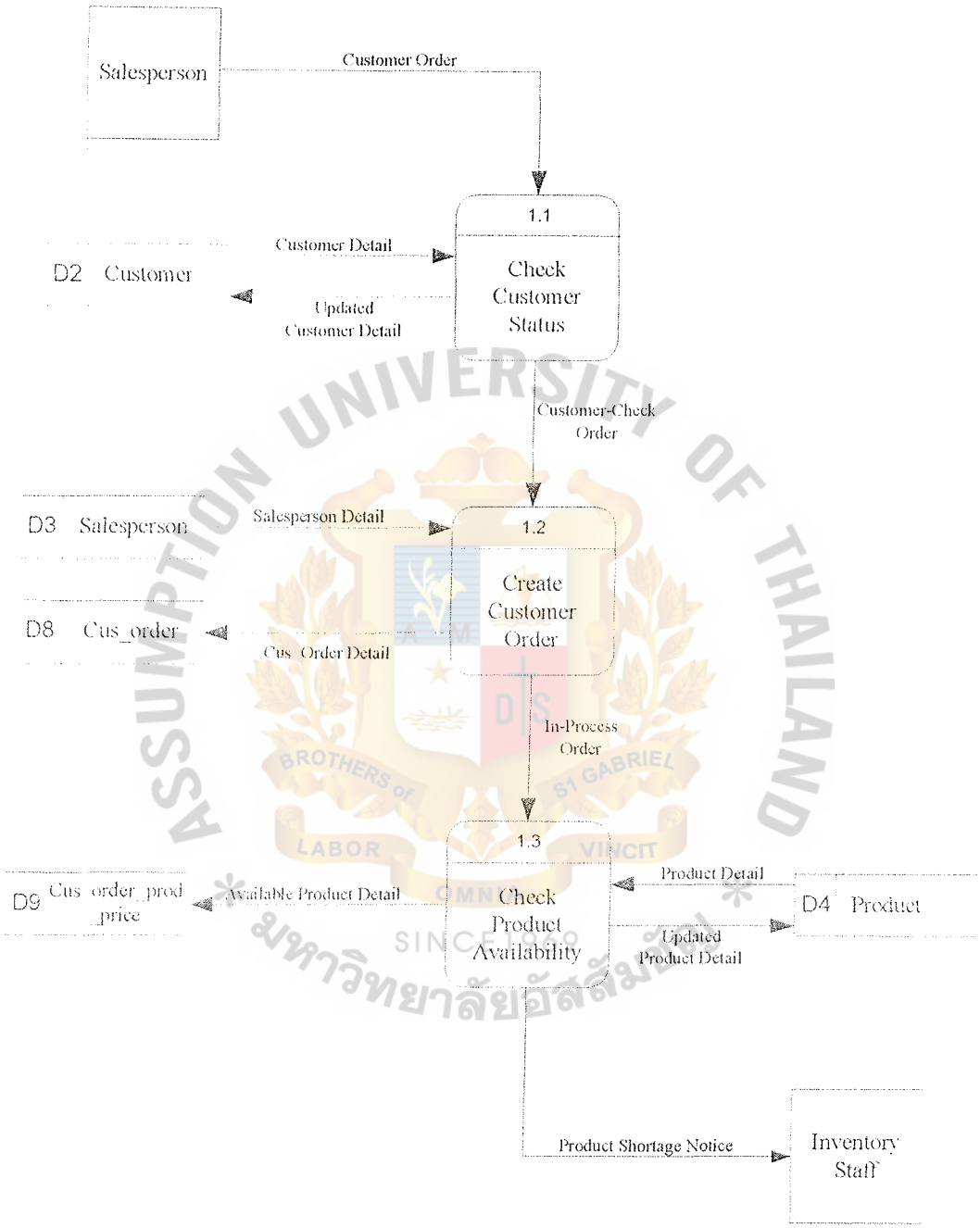

Figure A.4. Level 1 Data Flow Diagram of Receive Order.

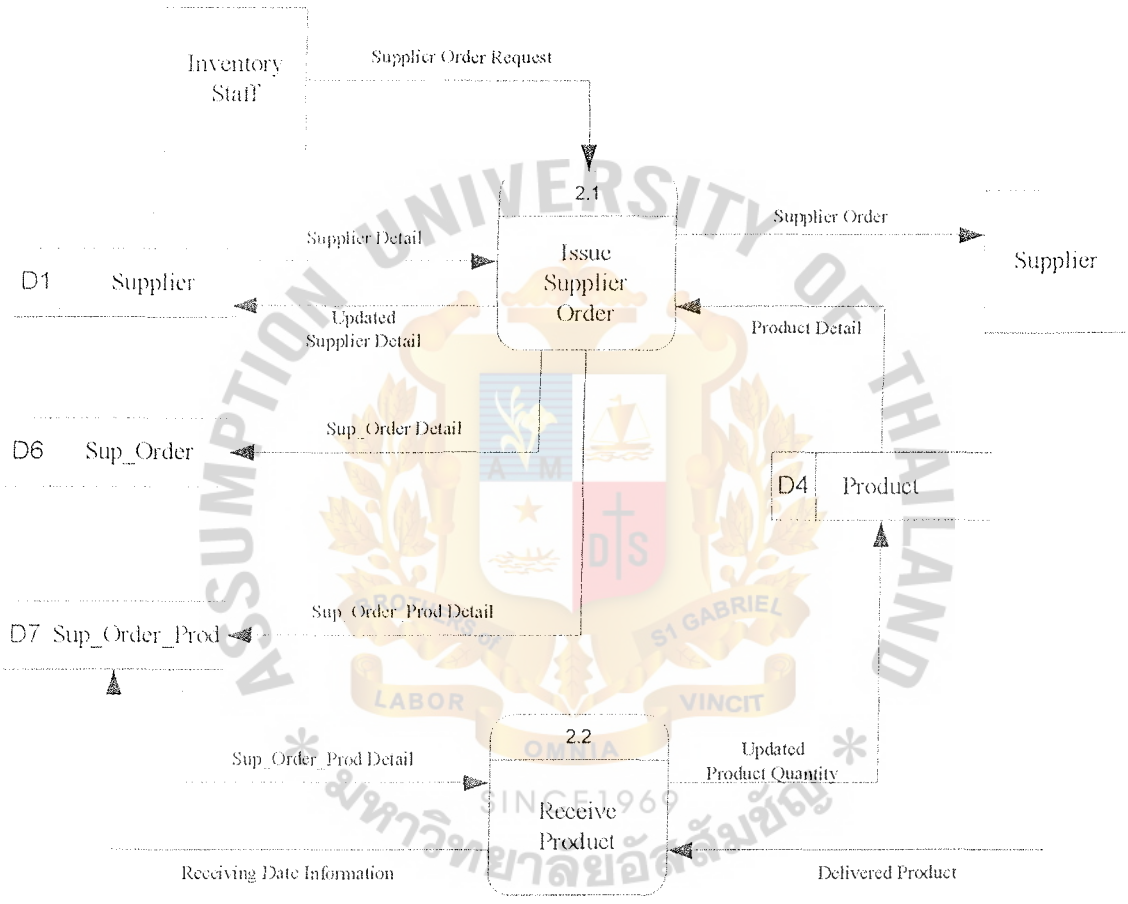

Figure A.5. Level 1 Data Flow Diagram of Order Supply.

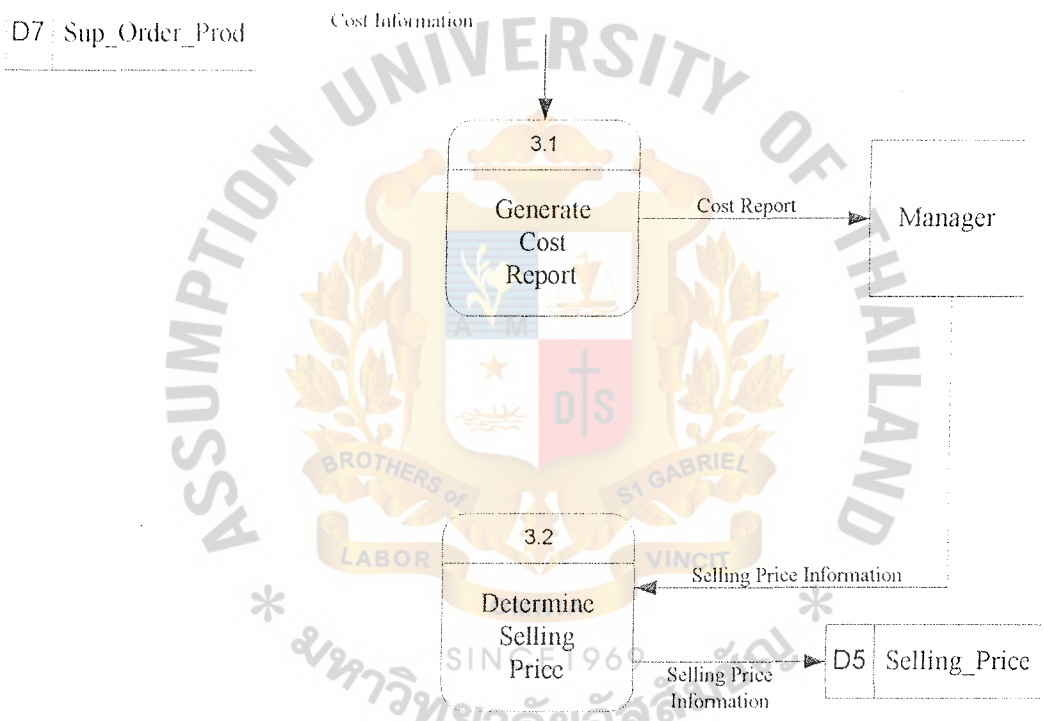

Figure A.6. Level 1 Data Flow Diagram of Specify Price.

APPENDIX B

STRUCTURE CHART

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

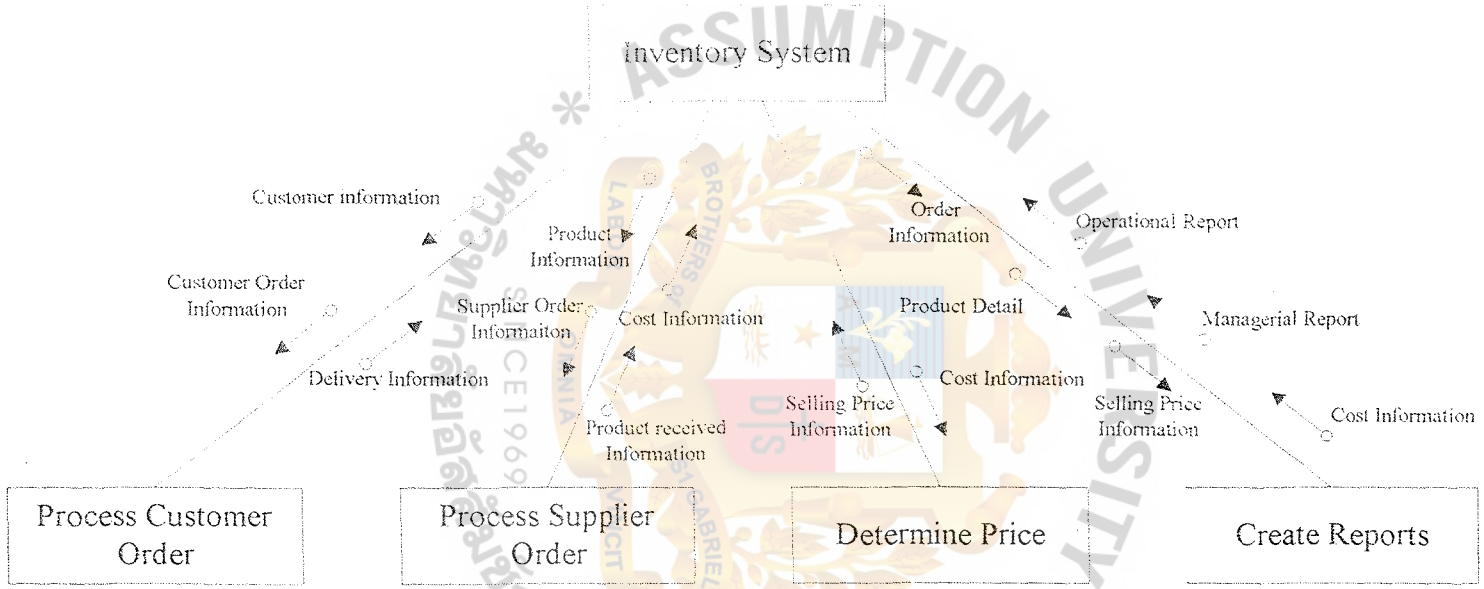

Figure B.1. Textile Inventory System Structure Chart.

St. Gabriel's Library, Au

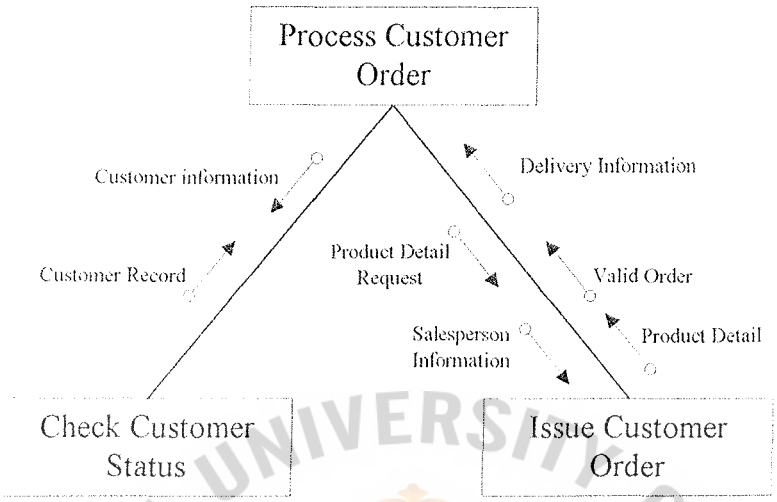

Figure B.2. Process Customer Order Structure Chart.

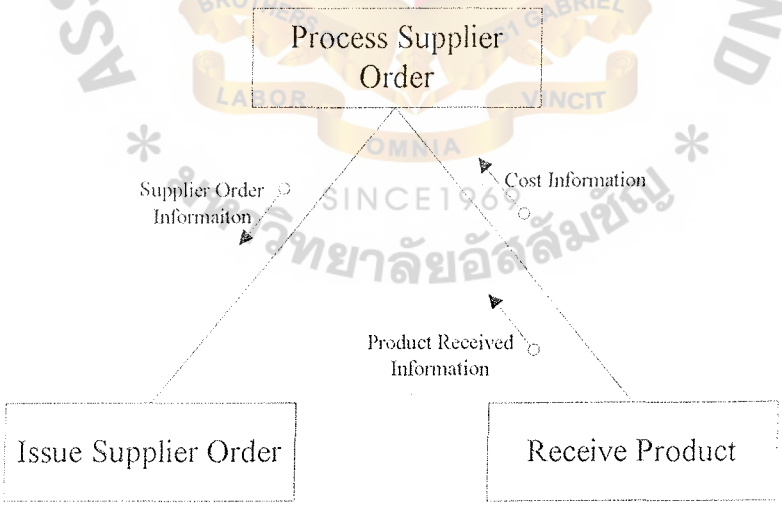

Figure B.3. Process Supplier Order Structure Chart.

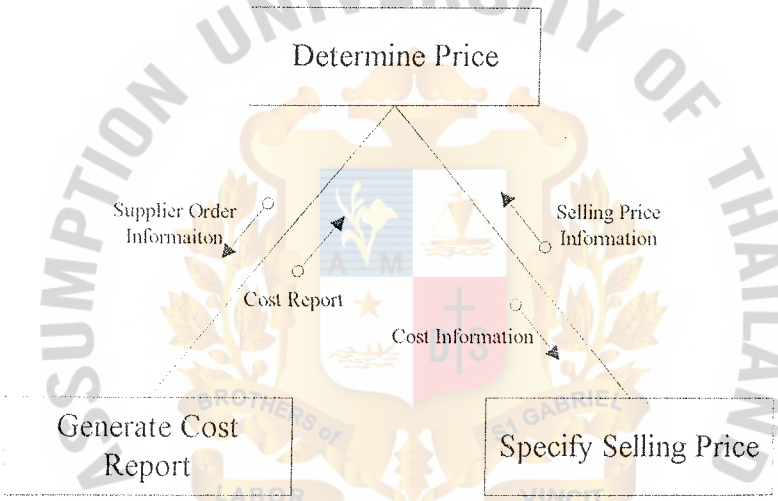

Figure B.4. Determine Price Structure Chart.

SINCE1969

APPENDIX C

ENTITY RELATIONSHIP DIAGRAM

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

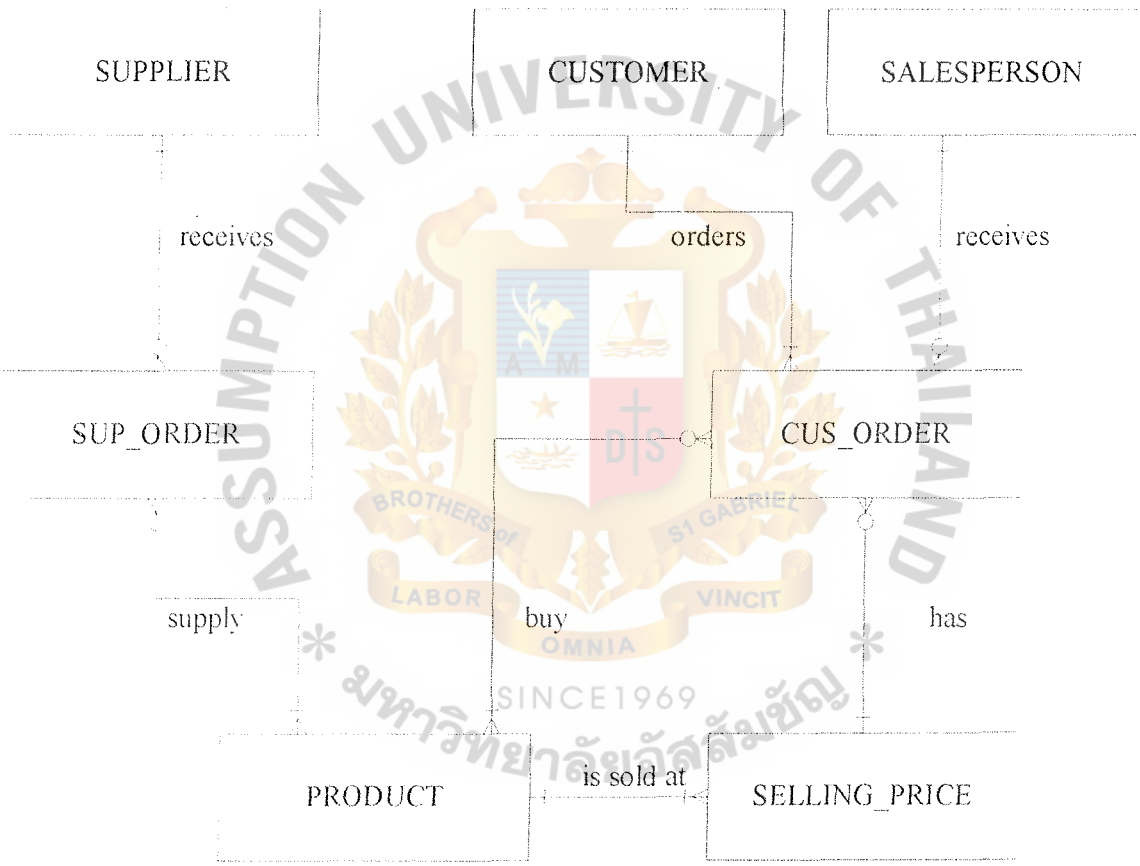

Figure C.1. Context Data Model.

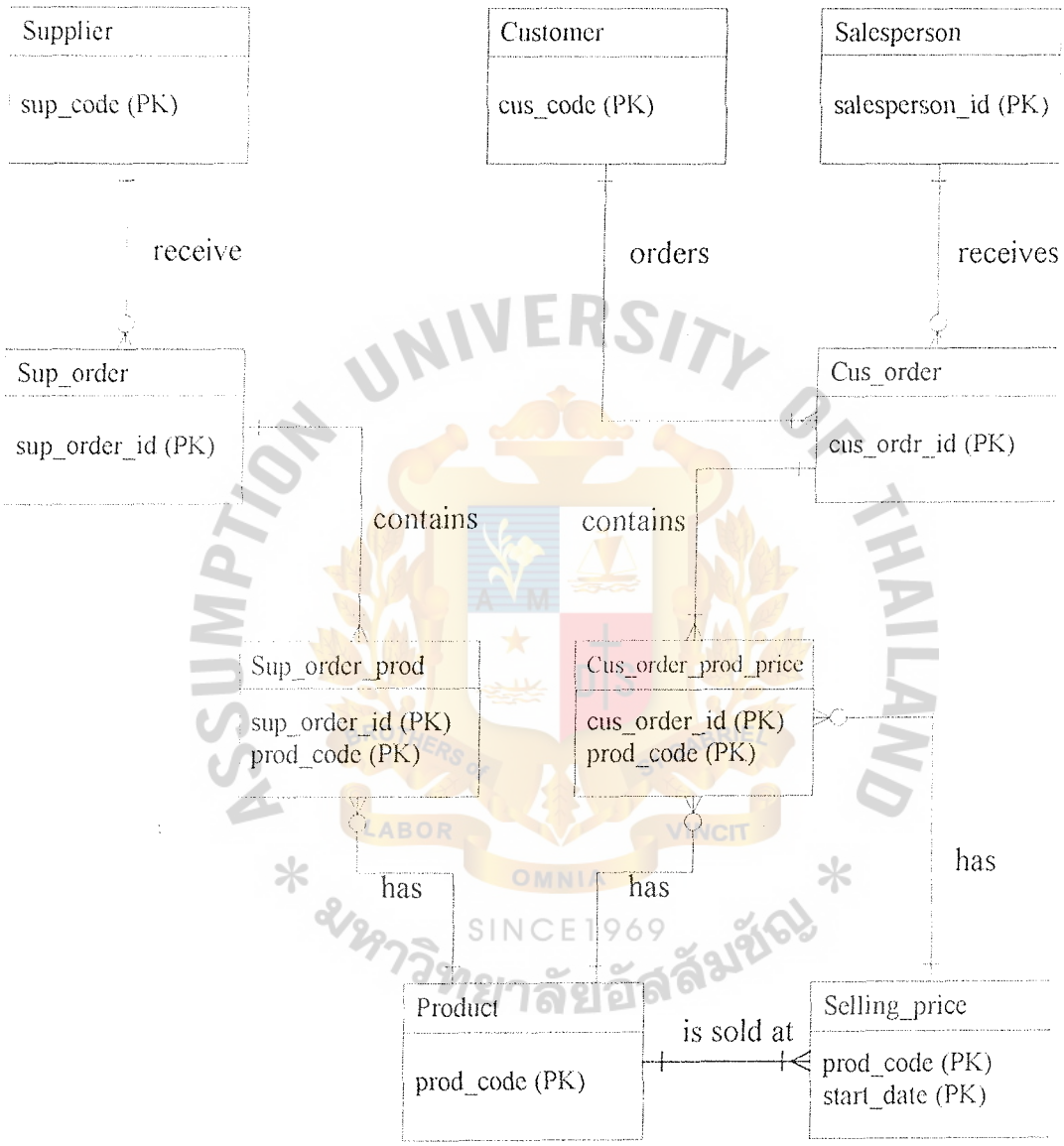

Figure C.2. Key-based Data Model.

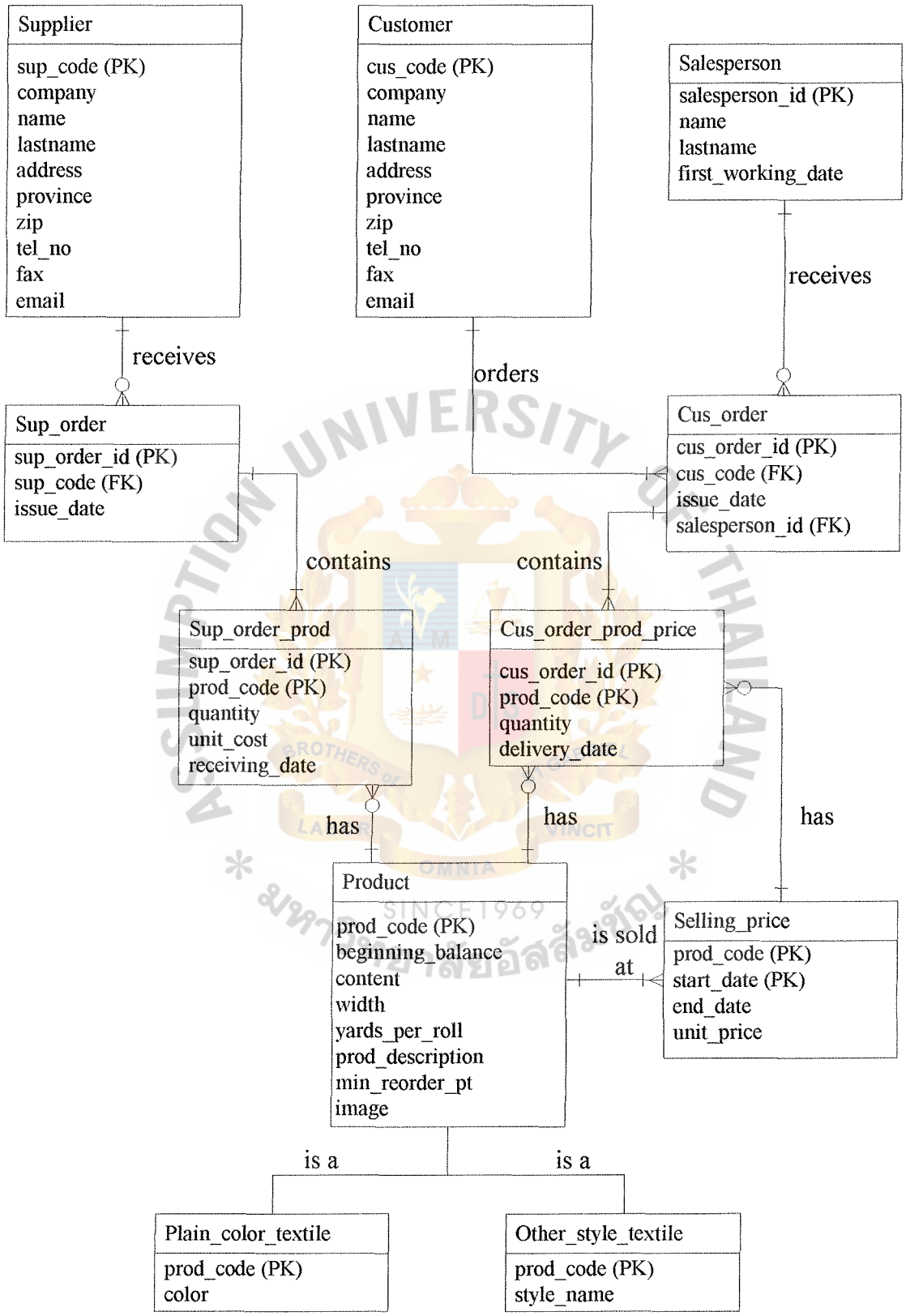

Figure C.3. Fully Attributed Data Model.

St. Gabriel's Library, Au

APPENDIX D

PROCESS SPECIFICATION

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

PROCESS SPECIFICATION

Table D.1. Process Specification of Process 1.

Items	Description
Process Name:	Receive Order
Data In:	Customer Order
Data Out:	Valid Order Product Shortage Notice
Process:	(1) Get customer order. (2) Validate the customer data. (3) Check the product availability.

Table D.2. Process Specification of Process 2.

Items	Description
Process Name:	Order Supply
Data In:	Supplier Order Request Delivered Product
Data Out:	Cost Information Updated Product Balance &Detail
Process:	(1) Issue supplier order (2) Receive product.

Table D.3. Process Specification of Process 3.

Items	Description
Process Name:	Specify Price
Data In:	Cost Information Selling Price Information Valid Order
Data Out:	Cost Report Complete Order
Process:	(1) The cost report is generated and given to the manager. (2) The manager determine selling price.

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

Table D.4. Process Specification of Process 4.

Items	Description
Process Name:	Deliver Product
Data In:	Complete Order
Data Out:	Ordered Product Delivery Date Information
Process:	(1) The product is physically delivered to the customer. (2) The delivery date information is updated in the data store.

Table D.5. Process Specification of Process 5.

Items	Description
Process Name:	Generate Report
Data In:	Customer Information Supplier Information Product Information Salesperson Information Cus_Order Information Sup_Order Information Cus_Order_Prod_Price Information Sup_Order_Prod Information Selling_Price Information
Data Out:	Useful Report
Process:	(1) Extract information from several data stores. (2) Classify and form reports.

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

Table D.6. Process Specification of Process 1.1.

Items	Description
Process Name:	Check Customer Status
Data In:	Customer Order Customer Detail
Data Out:	Updated Customer Detail Customer-Checked Order
Process:	(1) The salesperson check whether the customer already exists in the data store and whether the customer detail is correct. (2) If the customer is not yet in the file, add the record so. (3) If the any of the customer's detail is incorrect, collect so.

Table D.7. Process Specification of Process 1.2.

Items	Description
Process Name:	Create Customer Order
Data In:	Customer-Checked Order Salesperson Detail
Data Out:	Cus_Order Detail In-Process Order
Process:	(1) Create a new customer order (2) The salesperson attaches his ID to the order to indicate that he is the person taking care of the order.

Table D.8. Process Specification of Process 1.3.

Items	Description
Process Name:	Check Product Availability
Data In:	In-Process Order Product Detail
Data Out:	Available Product Detail Updated Product Detail Product Shortage Notice
Process:	(1) The salesperson retrieves the product detail to check the quantity balance. (2) If the product is available, update the quantity balance in the inventory to indicate that the product is sold. And adding the order detail, product items and quantity, to the cus_order_prod_price data store. (3) If the product is inadequate, issue the product shortage notice to the inventory staff.

Table D.9. Process Specification of Process 2.1.

Items	Description
Process Name:	Issue Supplier Order
Data In:	Supplier Order Request Supplier Detail
	Product Detail
Data Out:	Updated Supplier Detail Sup_Order Detail Sup_Order_Prod Detail Supplier Order
Process:	(1) The inventory staff is resposible for issuing the supplier order. (2) Retrieve product information to see who is the supplier. (3) Retrieve supplier information from the data store (4) Create the new supplier order and save it in the data store. (5) Record the product code and quantiy within the order and add the record to the sup_order_prod data store. (6) Submit the supplier order to the supplier.

ASSUMPTION UNIVERSITY OF THAILAND
BROTHERS OF ST GABRIEL
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Table D.10. Process Specification of Process 2.2.

Items	Description
Process Name:	Receive Product
Data In:	Delivered Product Sup_Order_Prod Detail
Data Out:	Receiving Date Information Updated Product Quantity
Process:	(1) Receive the product from the supplier. (2) Match the product with the supplier order. (3) Record the receiving date information. (4) Update the quantity balance of the product.

Table D.11. Process Specification of Process 3.1.

Items	Description
Process Name:	Generate Cost Report
Data In:	Sup_Order_Product Detail
Data Out:	Cost Report
Process:	(1) Retriver the cost information from the data store in order to see how much is the cost for each product at a certain time. (2) Create the cost report and give it to the manager

ASSUMPTION UNIVERSITY OF THAILAND
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Table D.12. Process Specification of Process 3.2.

Items	Description
Process Name:	Determine Selling Price
Data In:	Selling Price Information
Data Out:	Selling Price Information
Process:	(1) The manager determine the desired selling price (2) Input the price into the data store.

APPENDIX E

DATA DICTIONARY

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

DATA DICTIONARY

Table E.1. Data Dictionary of Textile Inventory System.

Field Name	Meaning
supplier	DATA STORE: D1
sup_code	Code of the supplier
company	Name of the company
name	Name of the contact person
lastname	Last name of the contact person
address	Number + road +district
province	Province
zip	Zip code
tel_no	Telephone number
fax	Fax number
email	Email address
customer	DATA STORE: D2
cus_code	Code of the customer
company	Name of the company
name	Name of the contact person
lastname	Last name of the contact person
address	Number + road +district
province	Province
zip	Zip code
tel_no	Telephone number
fax	Fax number
email	Email address
salesperson	DATA STORE: D3
salesperson_id	ID number of the salesperson
name	Name of the salesperson
lastname	Last name of the salesperson
first_working_date	The first day the salesperson start working for the company

ASSUMPTION UNIVERSITY OF THAILAND
LABOR OMNIA VINCIT
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Table E.1. Data Dictionary of Textile Inventory System (Continued).

Field Name	Meaning
product	DATA STORE: D4
prod_code	Code of the product
beginning_balance	The beginning balance of the product in the inventory
content	The material the product is made of
width	The width the of textile in a roll
yards_per_roll	The number of yards contained in a roll
prod_discription	Description of the product
image	The image path of the picture of the textile
color	Color of plain-color textile
style_name	Style name of other-style textile
selling_price	DATA STORE: D5
prod_code	Product code
start_date	The first day that the unit_price is used
end_date	The last day that the unit_price is used
unit_price	The unit selling price of the product to be used at the corresponding date
sup_order	DATA STORE: D6
sup_order_id	The ID number of the supplier order
sup_code	The supplier to whom the order is belong
issue_date	The date the supplier order is issued
sup_order_prod	DATA STORE: D7
sup_order_id	The supplier order ID
prod_code	The product code the belong to this supplier order
quantity	The quantity corresponding the order and the product.
unit_cost	The unit cost of the product
receiving_date	The date the product is received
cus_order	DATA STORE: D8
cus_order_id	The customer order ID
cus_code	The customer to whom this order is belong
issue_date	The date the customer order is issued
salesperson_id	The salesperson who is taking care of this order

ASSUMPTION UNIVERSITY OF THAILAND
SINCE1969
มหาวิทยาลัยอัสสัมชัญ

Table E.1. Data Dictionary of Textile Inventory System (Continued).

Field Name	Meaning
cus_order_prod_price	DATA STORE: D9
cus_order_id	The customer order ID
prod_code	The product code that belongs to the order
quantity	The quantity corresponding to the product and the order
delivery_date	The date the product is delivered to the customer

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

APPENDIX F

DATA STRUCTURE

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

Table F.1. Data Structure of Supplier.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	sup_code	integer (4)	Y	Y			Primary Key
2	company	varchar (70)	Y				Attribute
3	name	varchar (15)					Attribute
4	lastname	varchar (30)					Attribute
5	address	varchar (100)					Attribute
6	province	varchar (20)					Attribute
7	zip	integer (5)					Attribute
8	tel_no	integer (50)					Attribute
9	fax	integer (25)			Y		Attribute
10	email	varchar (40)			Y		Attribute

St. Gabriel's Library, Au

Table F.2. Data Structure of Customer.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	cus_code	integer (4)	Y	Y			Primary Key
2	company	varchar (70)	Y				Attribute
3	name	varchar (15)					Attribute
4	lastname	varchar (30)					Attribute
5	address	varchar (100)					Attribute
6	province	varchar (20)					Attribute
7	zip	integer (5)					Attribute
8	tel_no	integer (50)					Attribute
9	fax	integer (25)			Y		Attribute
10	email	varchar (40)			Y		Attribute

Table F.3. Data Structure of Salesperson.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	salesperson_id	integer (4)	Y	Y			Primary Key
2	name	varchar (15)	Y				Attribute
3	lastname	varchar (30)	Y				Attribute
4	first_working_date	date					Attribute

Table F.4. Data Structure of Product.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	prod_code	char (6)	Y	Y			Primary Key
2	beginning_balance	integer (6)					Attribute
3	sup_code	integer (4)	Y	Y		supplier	Foreign Key
4	content	varchar (80)	Y				Attribute
5	width	integer (2)					Attribute
6	yards_per_roll	integer (3)					Attribute
7	prod_description	varchar (80)			Y		Attribute
8	image	hyperlink			Y		Attribute
9	color	varchar (15)	Y		Y		Attribute
10	style_name	varchar (25)	Y		Y		Attribute

Table F.5. Data Structure of Selling_price.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	prod_code	char (6)	Y	Y		product	Foreign Key
2	start_date	date	Y	Y			Primary Key
3	end_date	date			Y		Attribute
4	unit_price	integer (6)					Attribute

Table F.6. Data Structure of Sup_order.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	sup_order_id	integer (8)	Y	Y			Primary Key
2	sup_code	integer (4)	Y	Y		supplier	Foreign Key
3	issue_date	date					Attribute

Table F.7. Data Structure of Sup_order_prod.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	sup_order_id	integer (8)	Y	Y		sup_order	Foreign Key
2	prod_code	char (6)	Y	Y		product	Foreign Key
3	quantity	integer (6)					Attribute
4	unit_cost	integer (6)					Attribute
5	receiving_date	date	Y				Attribute

Table F.8. Data Structure of Cus_order.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	cus_order_id	integer (8)	Y	Y			Primary Key
2	cus_code	integer (4)	Y	Y		customer	Foreign Key
3	issue_date	date	Y				Attribute
4	salesperson_id	integer (4)	Y	Y		salesperson	Foreign Key

Table F.9. Data Structure of Cus_order_prod_price.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Key Type
1	cus_order_id	integer (8)	Y	Y		cus_order	Foreign Key
2	prod_code	char (6)	Y	Y		product	Foreign Key
3	quantity	integer (6)					Attribute
4	delivery_date	date	Y				Attribute

St. Gabriel's Library, Au

APPENDIX G

USER INTERFACE DESIGN

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

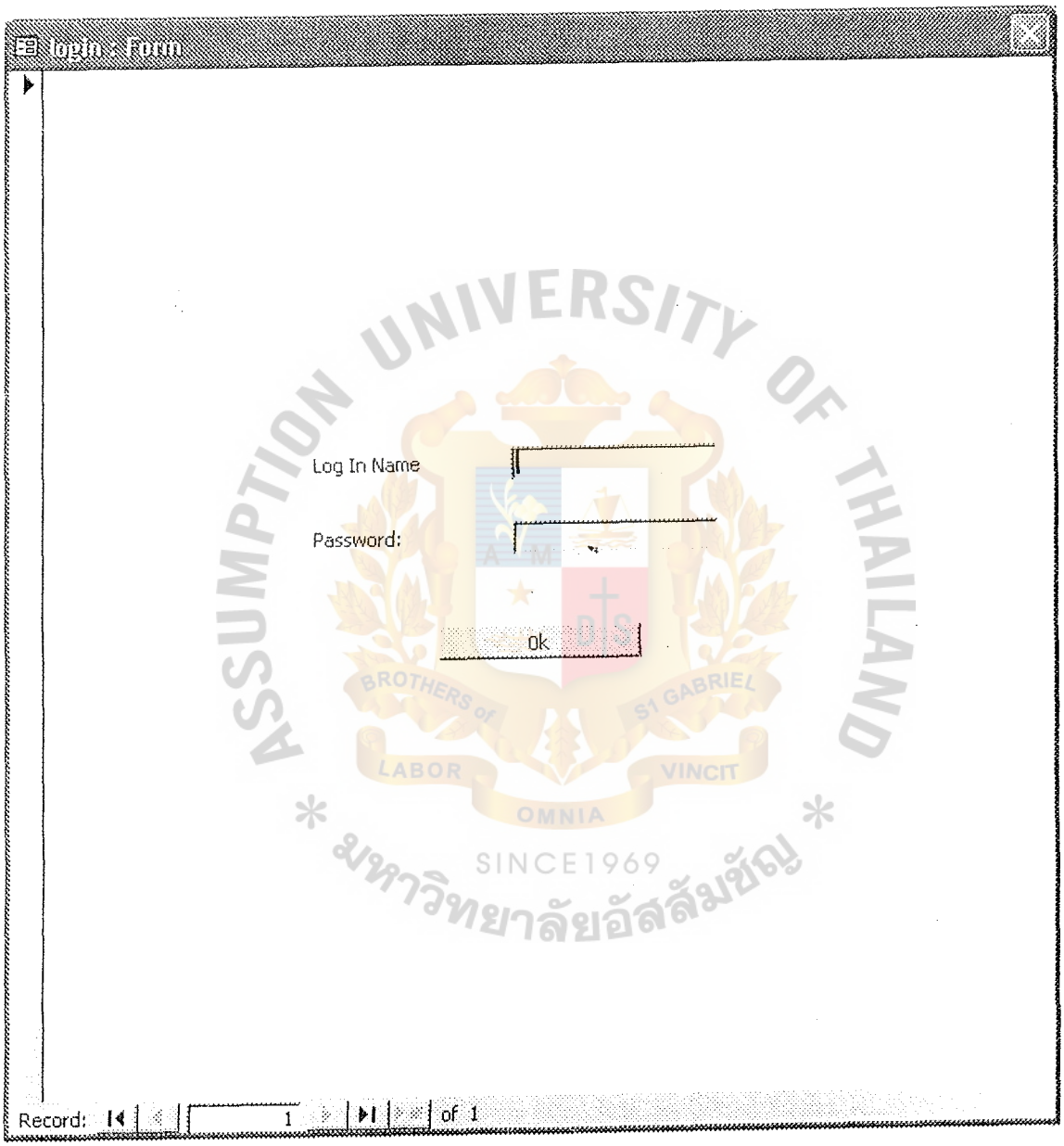

Figure G.1. Log In Screen.

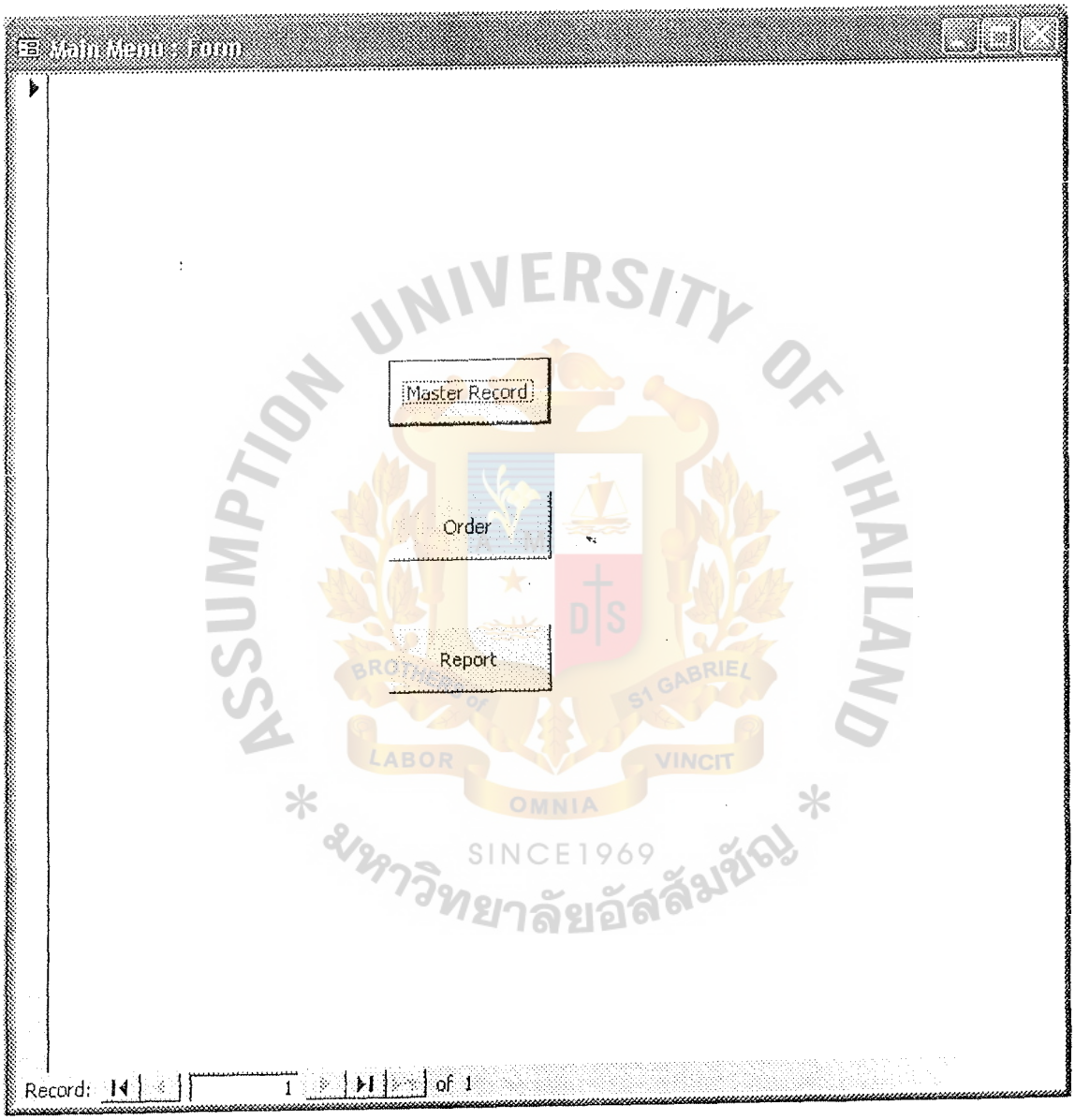

Figure G.2. Main Menu Screen.

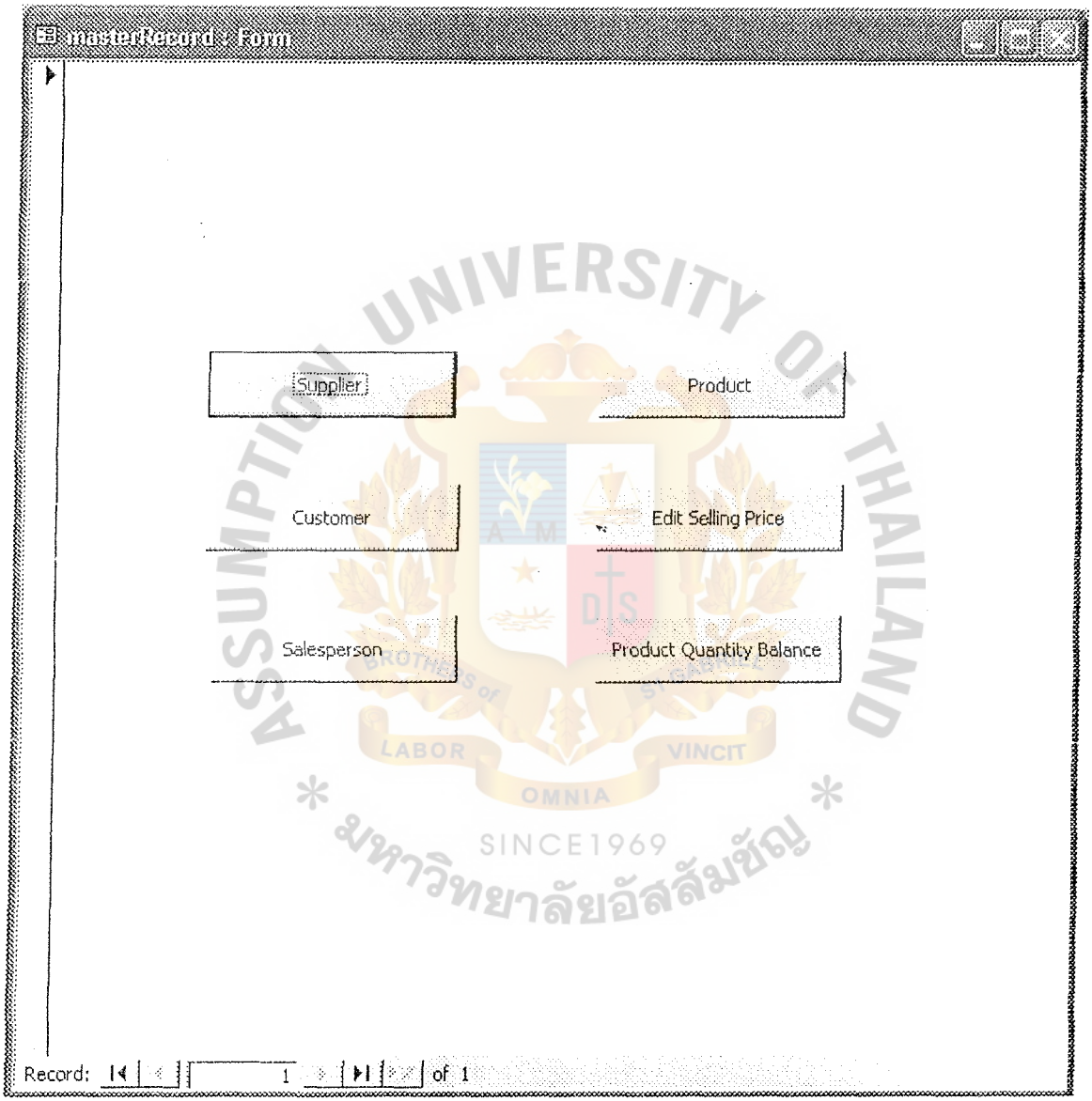

Figure G.3. Master Record Screen.

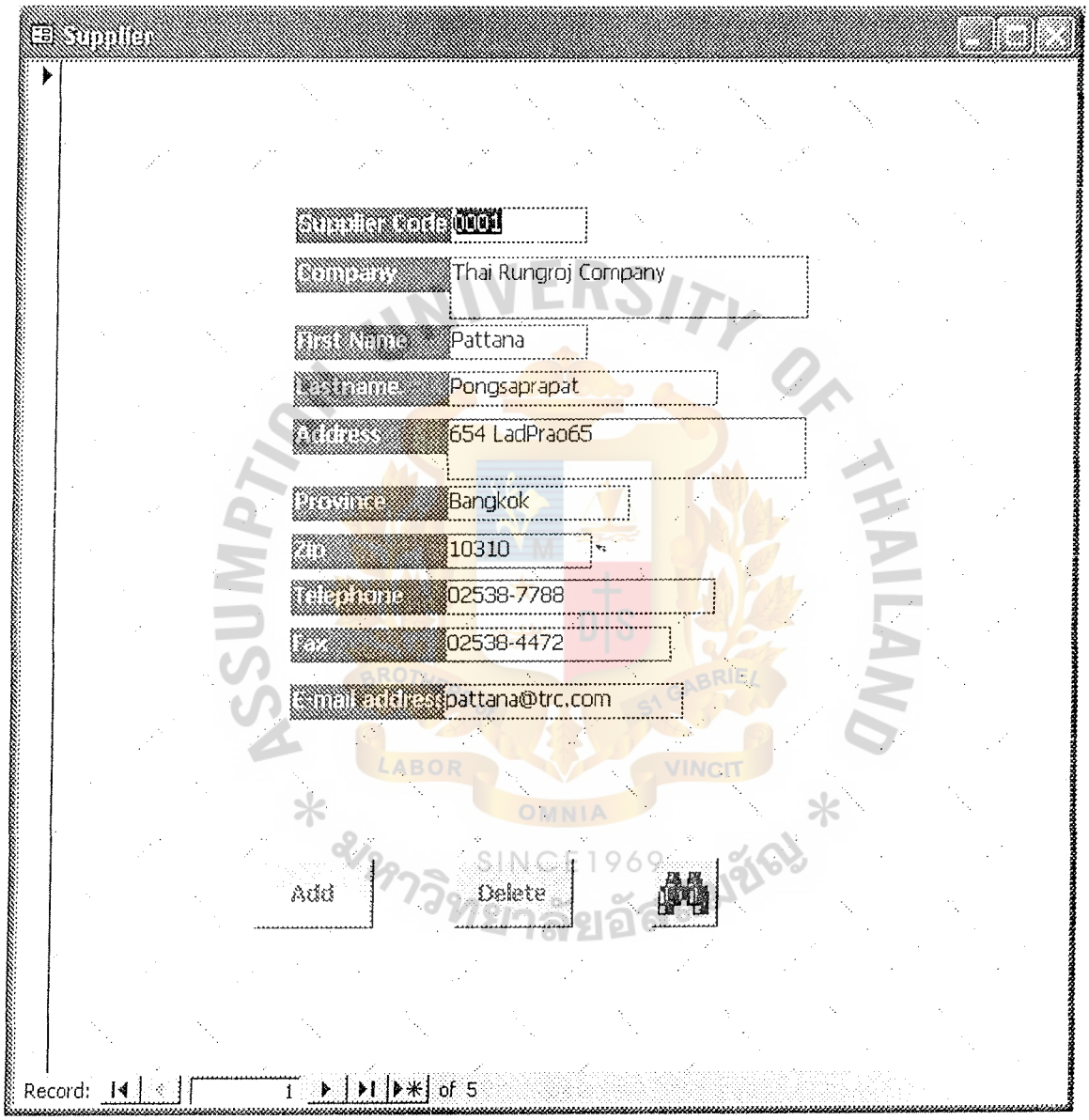

Figure G.4. Supplier Screen.

customer

Customer Code 0001

Company Bangkok Textile company

Name Kamemika

Lastname Thampipitporn

Address 987 Soi soonkarn Sipaya Rd., Bangrak

Province Bangkok

Zip 10500

Telephone 02236-3355

Fax 02236-6753

E-mail address kememika@btc.com

Add Delete

Record: 1 of 7

Figure G.5. Customer Screen.

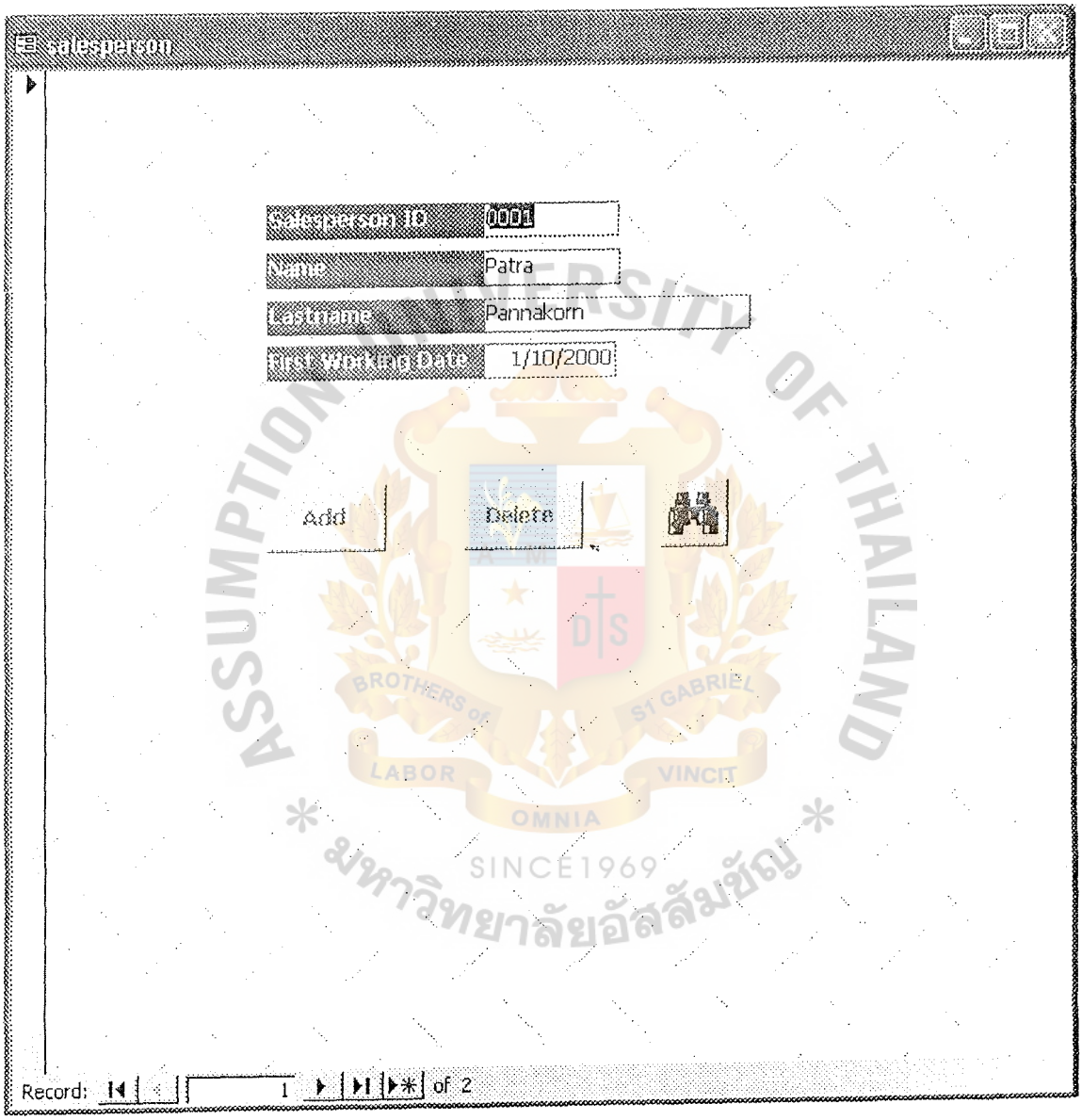

Figure G.6. Salesperson Screen.

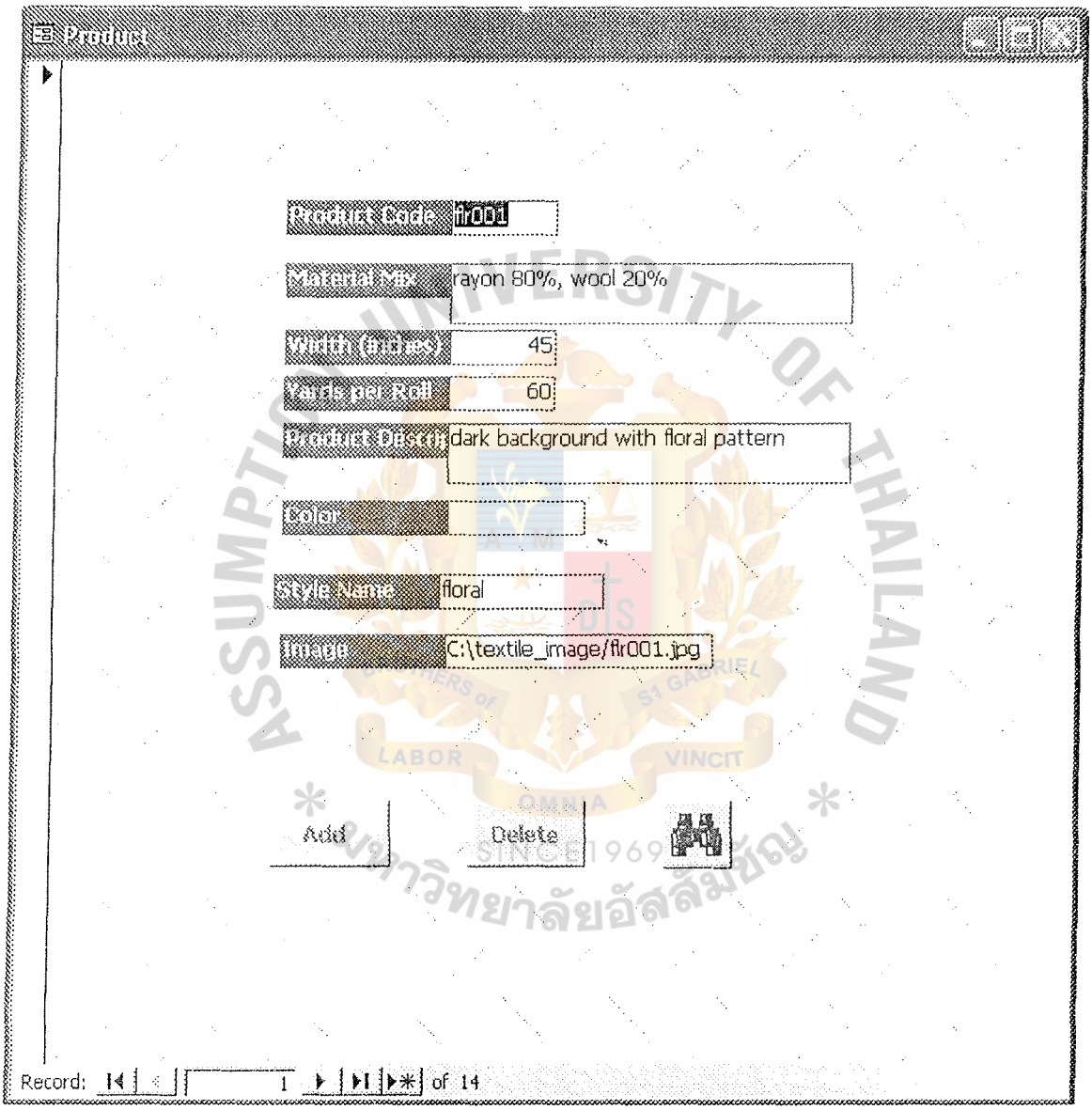

Figure G.7. Product Screen.

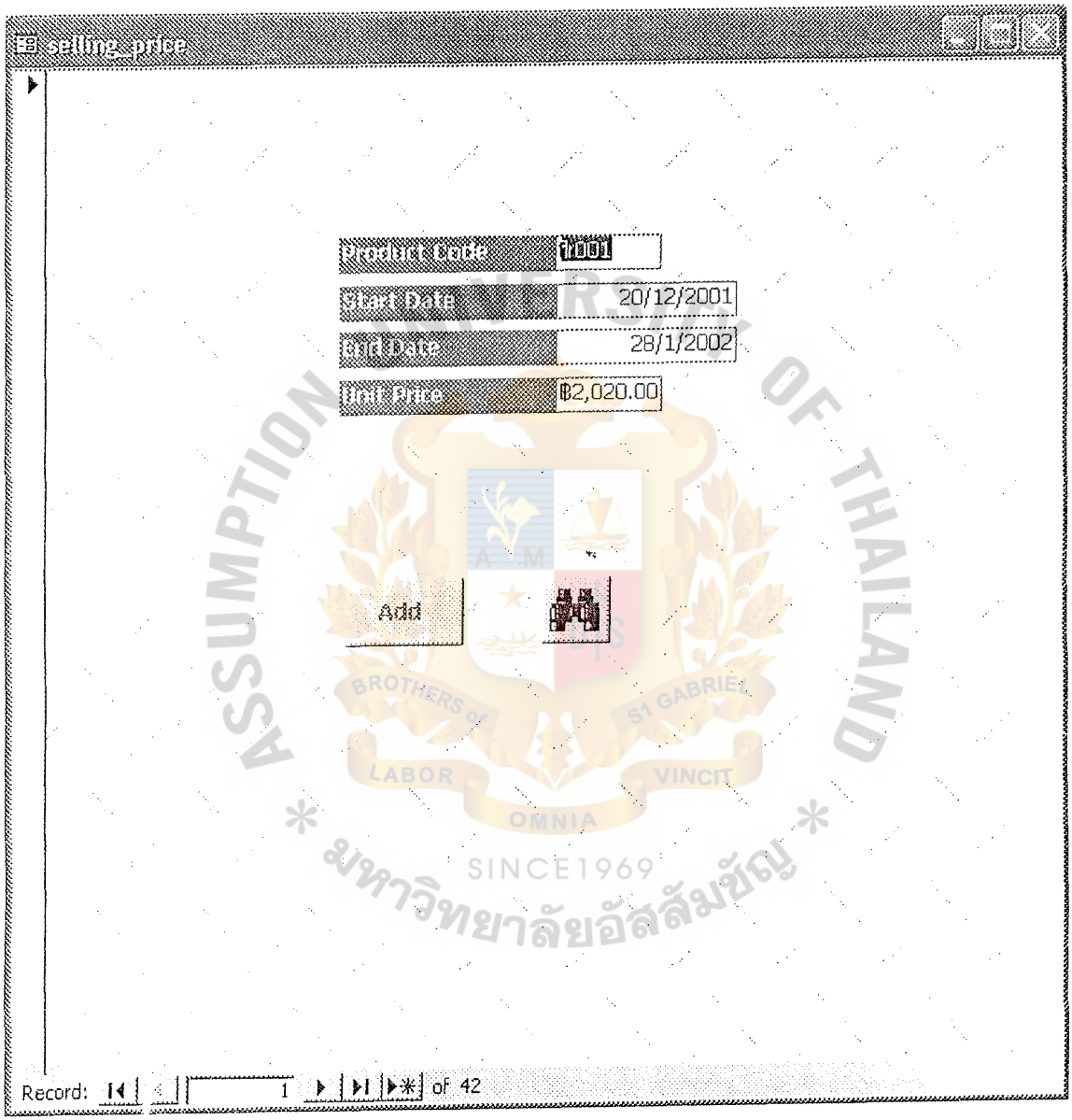

Figure G.8. Edit Selling Price Screen.

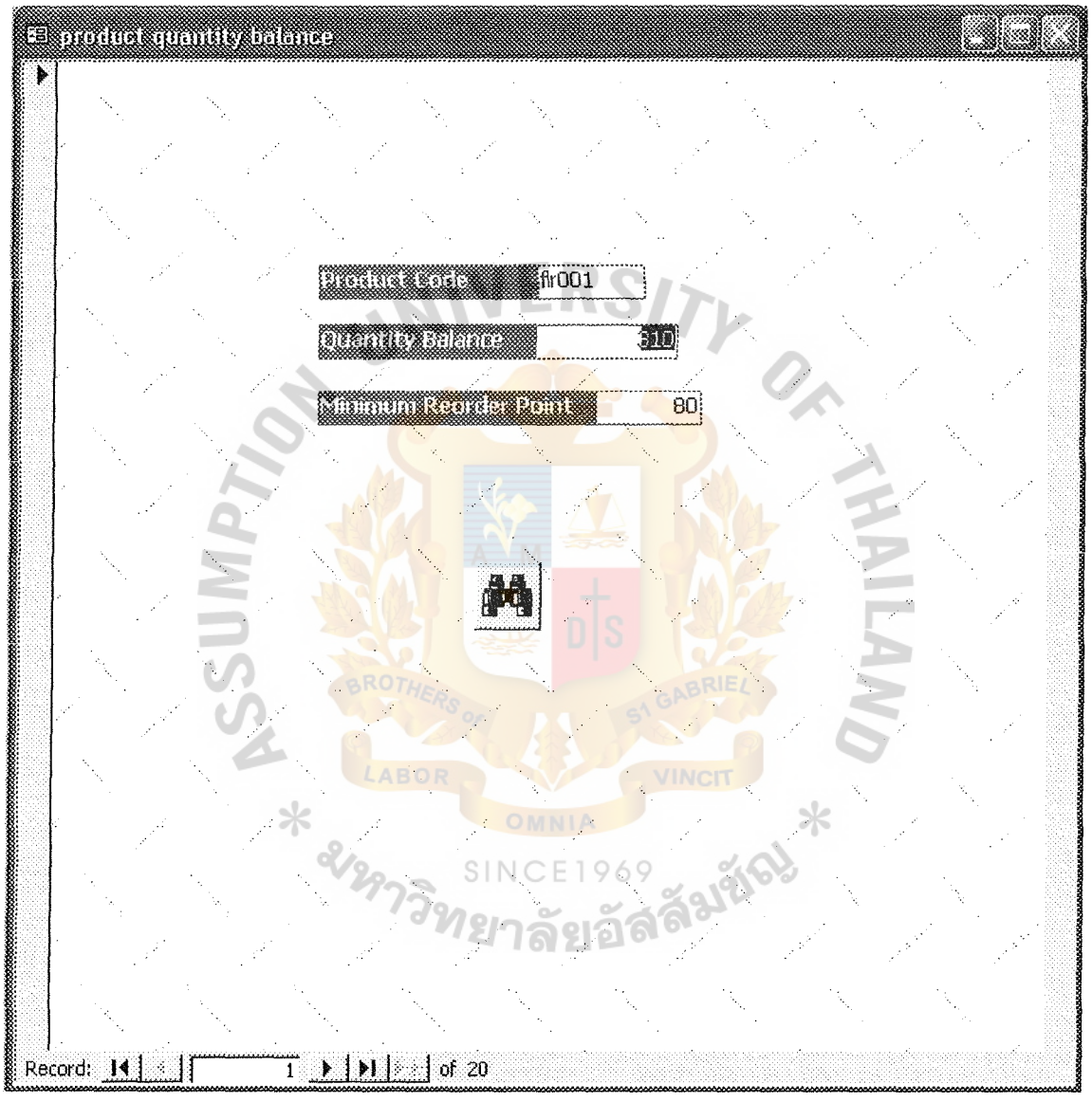

Figure G.9. Product Quantity Balance Screen.

St. Gabriel's Library, Au

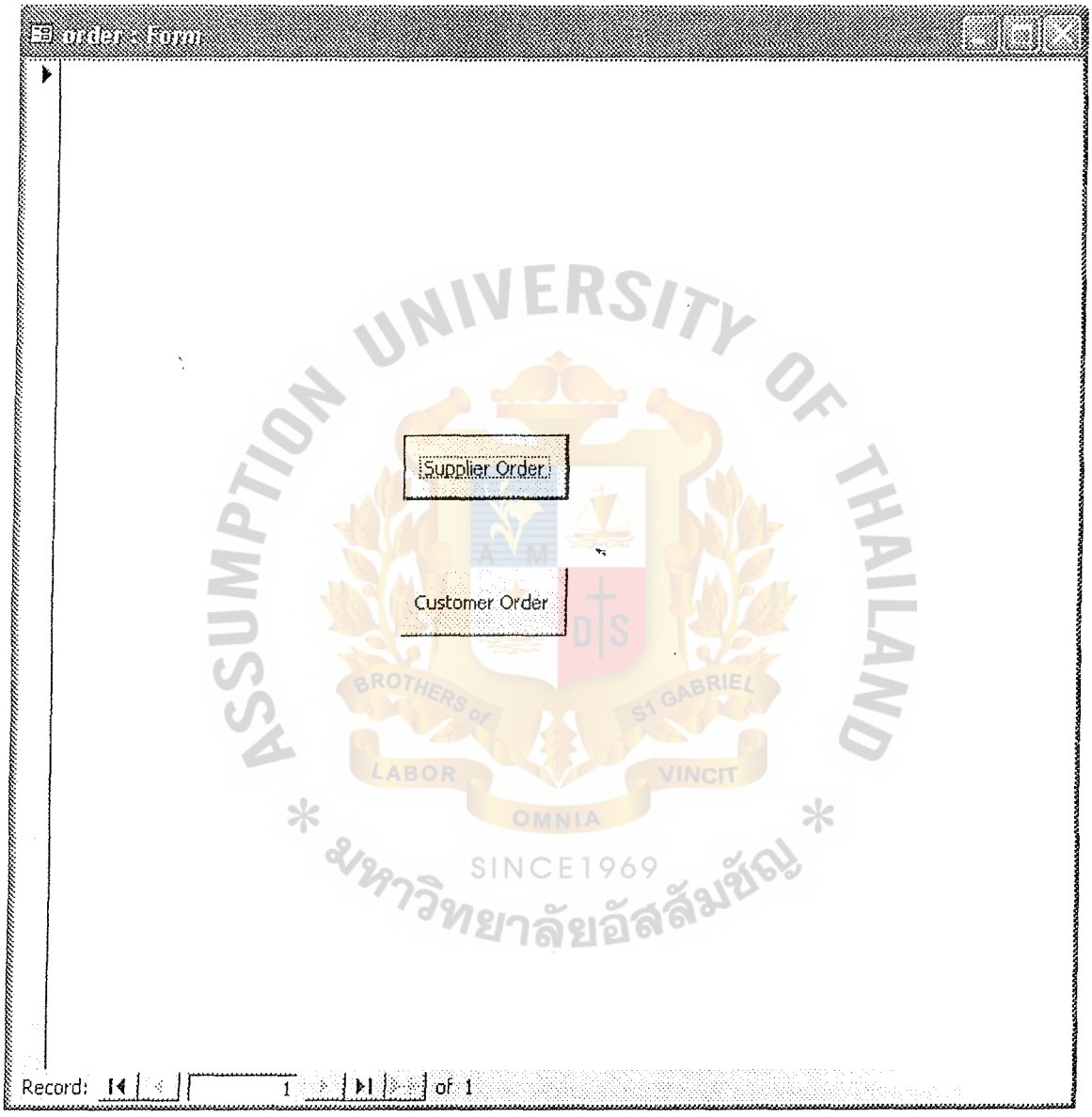

Figure G.10. Order Screen.

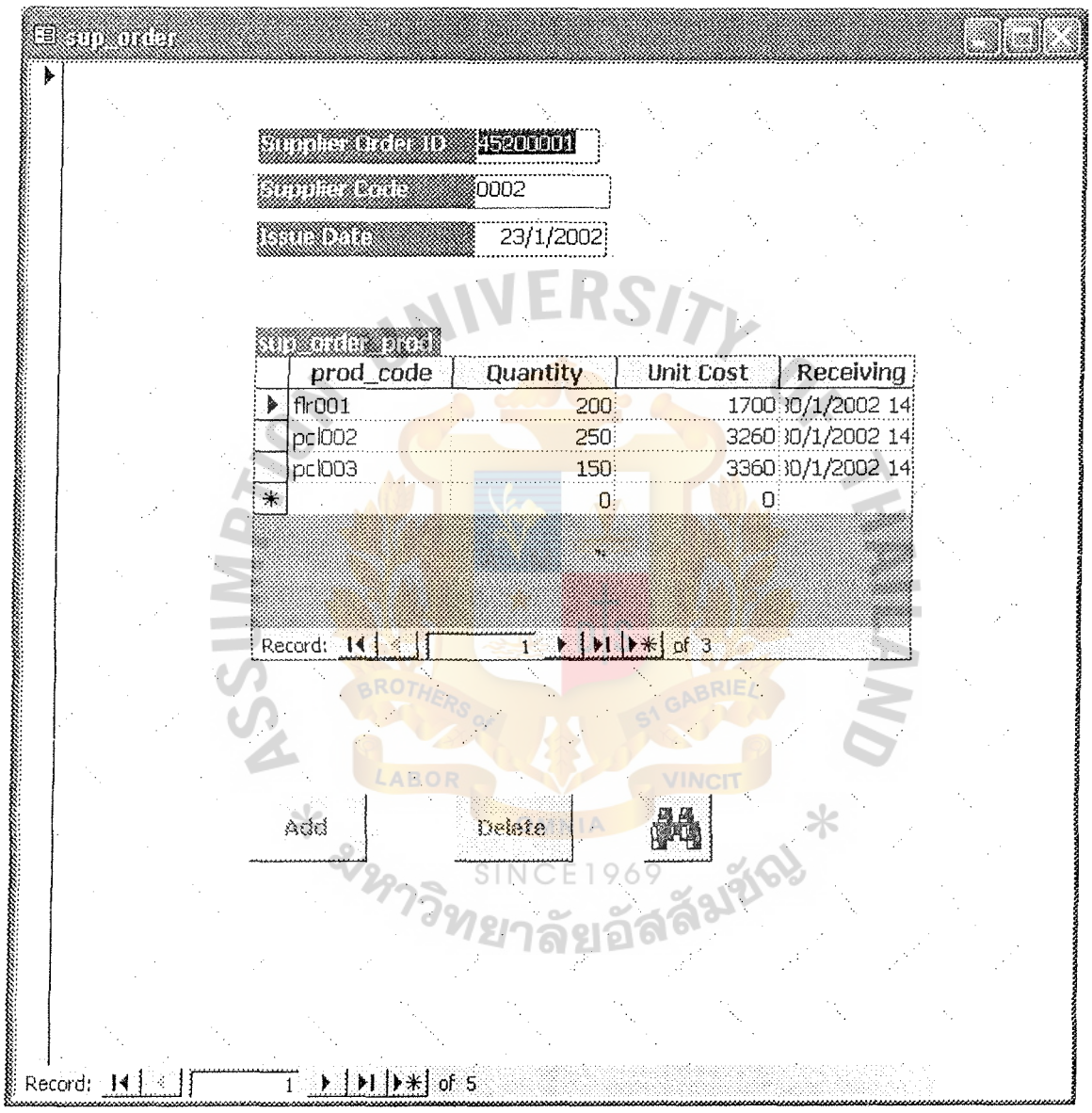

Figure G.11. Supplier Order Screen.

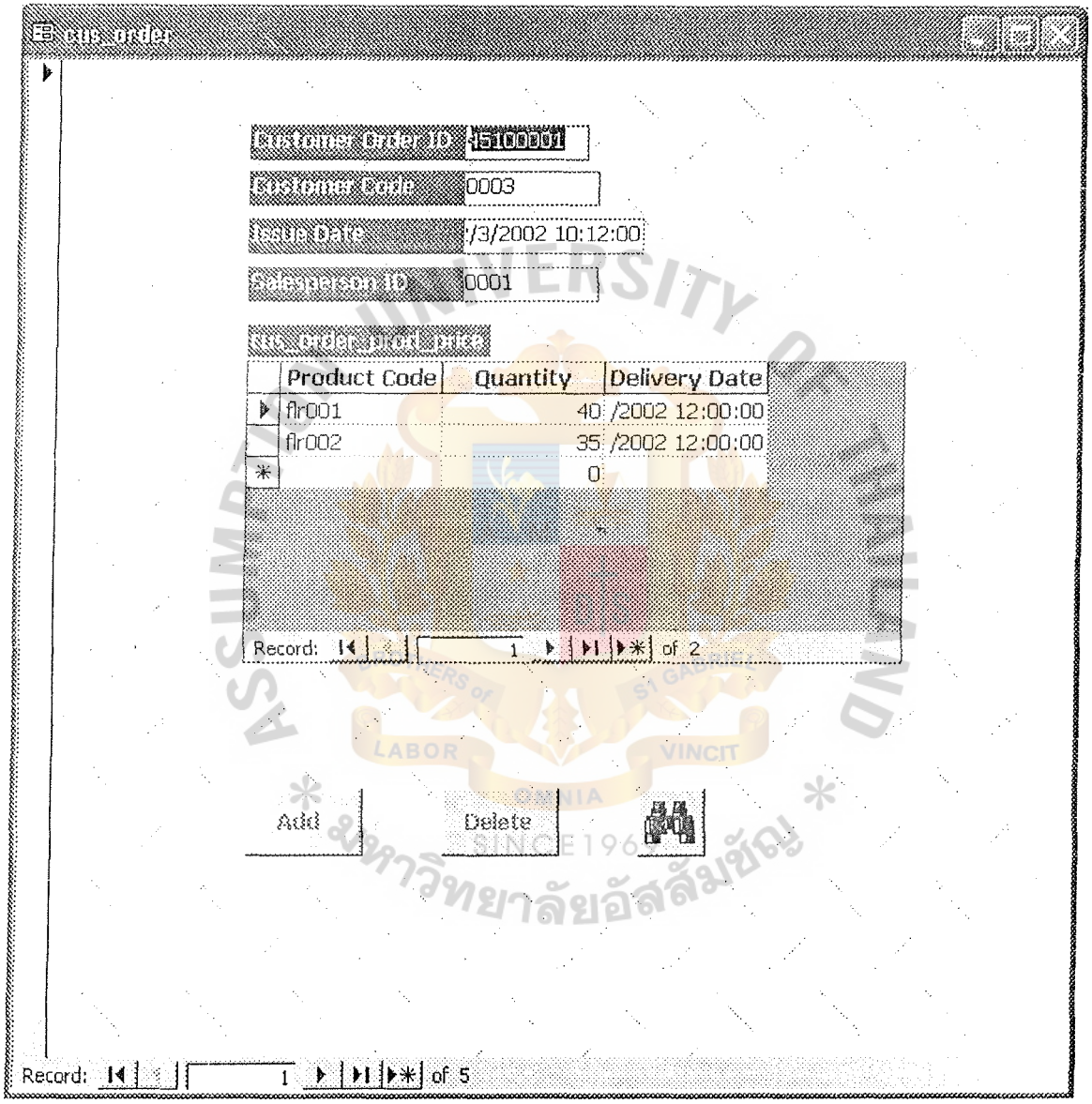

Figure G.12. Customer Order Screen.

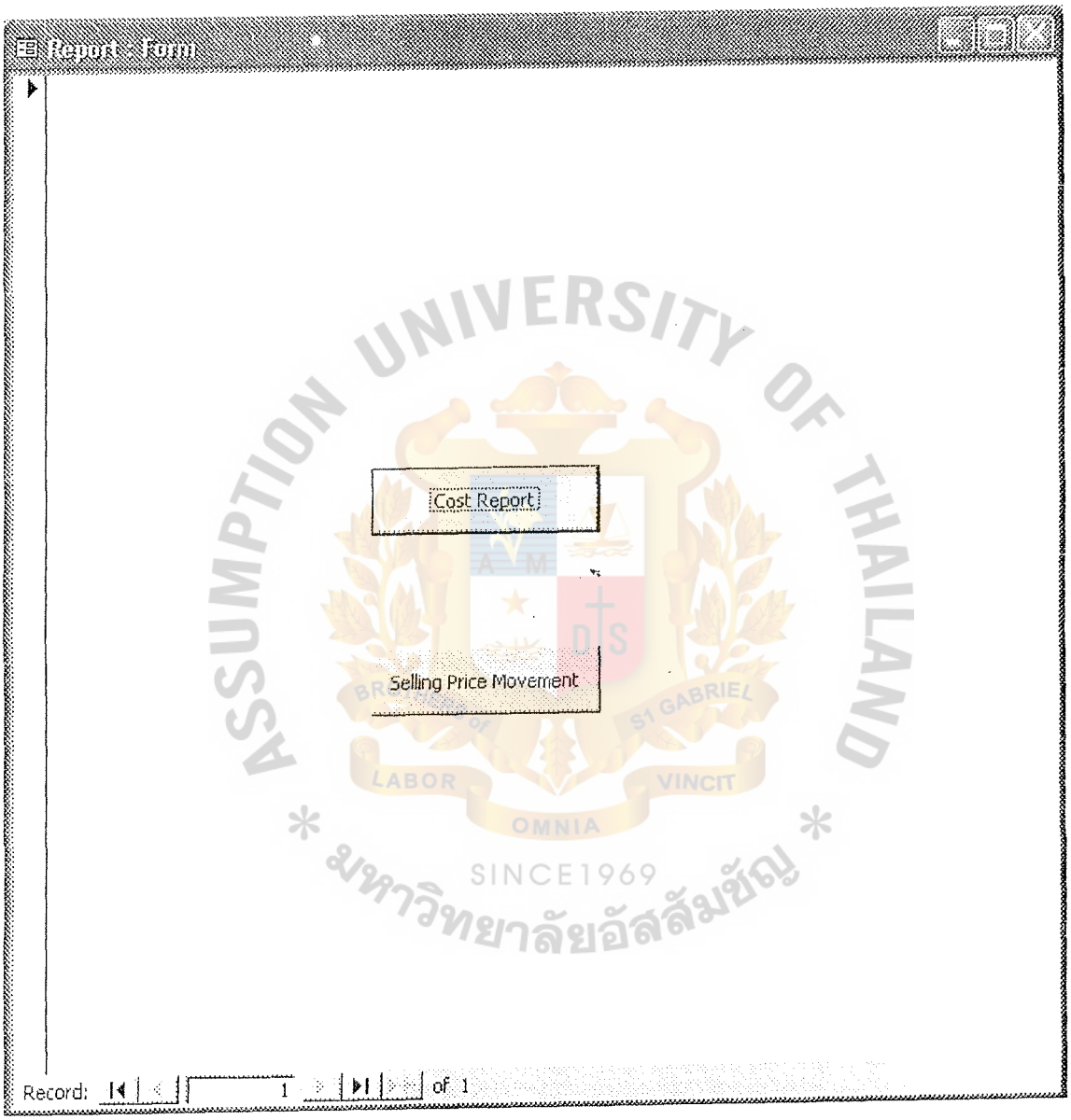

Figure G.13. Report Screen.

APPENDIX H

REPORT DESIGN

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

Cost Report

Product Code	Supplier Order ID	Receiving Date	Quantity (rolls)	Unit Cost
flr001				
	45200005	18/2/2002 15:20:00	70	฿1,700.00
	45200001	30/1/2002 14:55:00	200	฿1,700.00
flr002				
	45200005	18/2/2002 15:20:00	50	฿3,380.00
	45200004	20/2/2002 9:30:00	75	฿3,360.00
	45200003	10/2/2002 15:11:00	50	฿3,360.00
pcl002				
	45200004	20/2/2002 9:30:00	120	฿3,250.00
	45200002	2/2/2002 10:10:00	150	฿3,255.00
	45200001	30/1/2002 14:55:00	250	฿3,260.00
pcl003				
	45200001	30/1/2002 14:55:00	150	฿3,360.00
sct001				
	45200005	18/2/2002 15:20:00	500	฿5,000.00
	45200003	10/2/2002 15:11:00	100	฿4,820.00
sct002				
	45200003	10/2/2002 15:11:00	80	฿4,300.00
str002				
	45200002	2/2/2002 10:10:00	80	฿5,000.00

Figure H.1. Cost Report.

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

Selling Price Movement

Product Code	Start Date	End Date	Unit Price
flr001	20/12/2001	28/1/2002	฿2,020.00
flr001	29/1/2002	28/2/2002	฿2,030.00
flr001	1/3/2002		฿2,040.00
flr002	20/12/2001	28/1/2002	฿4,030.00
flr002	29/1/2002	28/2/2002	฿4,050.00
flr002	1/3/2002		฿4,055.00
flr003	20/12/2001	28/1/2002	฿4,030.00
flr003	29/1/2002	28/2/2002	฿4,050.00
flr003	1/3/2002		฿4,055.00
flr004	20/12/2001	28/1/2002	฿4,030.00
flr004	29/1/2002	28/2/2002	฿4,050.00
flr004	1/3/2002		฿4,055.00
pcl001	20/12/2001	28/1/2002	฿3,550.00
pcl001	29/1/2002	28/2/2002	฿3,570.00
pcl001	1/3/2002		฿3,600.00

Figure H.2. Selling Price Movement Report.

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

APPENDIX I

PROJECT MANAGEMENT

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

No.	Task Name
	I. Analysis of the Existing System
1	Define the Objective and Scope
2	Study the Existing System
3	Identify the Existing Problems
4	Study the Existing Computer System
5	Develop Context Diagram
6	Develop Data Flow Diagram
7	Cost and Benefit Analysis
	II. Analysis and Design of the Proposed System
8	Interface Design
9	Report Design
10	Database Design
11	Network Design
12	Program Design
	III. Implementation of the Proposed System
13	Coding
14	Testing
15	Hardware Installation
16	Software Installation
17	Conversion

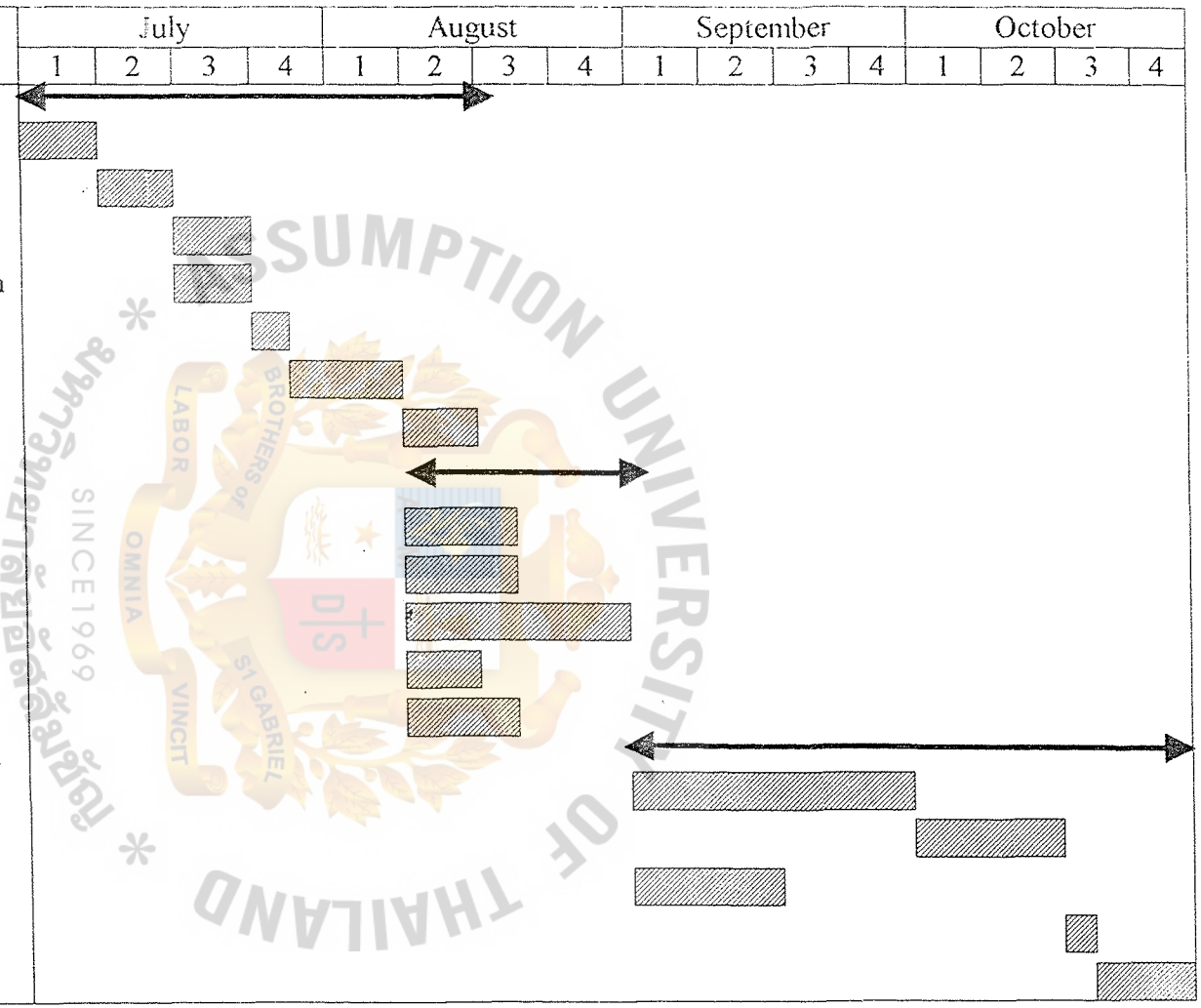

Figure I.1. Project Plan of Textile Inventory System.

BIBLIOGRAPHY

1. Date, C. J. An Introduction to Database System, 7th Edition. MA: Addison Wesley, 2000.

2. Deitel, H. M. and P. J. Deitel. C: How to Program. London: Pretice-Hall, 1994.

3. Folk, Michael J., Bill Zoellick, and Greg Riccardi. File Structures: An Object-Oriented Approach with C++. MA: Addison-Wesley, 1998.

4. FitzGerald, J. and Ardre F. FitzGerald. Fundamantals of Systems Analysis. NY: Hohn Wiley & Sons, 1987.

5. Goldschlager, Les and Andrew Lister. Computer Science: A Modern Introduction, 2nd Edition. England: Prentice Hall, 1988.

6. Greer, Tyson. Understanding Intranets. Redmond, WA: Microsoft Press, 1998.

7. Kendall, Kenneth E. and Julie E. Kendall. System Analysis and Design, Third Edition. NJ: Prentice-Hall, 1995.

8. Korth, F. Henry and Abraham Slberschatz. Database System Concepts. NY: McGraw-Hill International, 1991.

9. Kosiur, David. Understanding Electronic Commerce. WA: Microsoft Press, 1997.

10. Laudon, Kenneth C. and Jane P. Laudon. Management Information System: Organization and Technology in the Networked Enterprise, 6th Edition. NJ: Prentice-Hall, 2000.

11. Lewis, T. G. and M. Z. Smith. Applying Data Structures. Boston: Houghton Mifflin, 1976.

12. Loomis, Mary E. S. Data Management and File Structures, 2nd Edition. London: Prentice-Hall, 1988.

13. Post, Gerald V. and David L. Anderson. Management Information System: Solving Business Problems with Information Technology. Chicago: Irwin, 1997.

14. Trepper, Charles. E-Commerce Strategies. USA: Microsoft Press, 2000.

15. Whitten, Jeffrey L., Lonnie D. Bentley, and Kevin C. Dittman. Systems Analysis and Design Methods, 5th Edition. NY: McGraw-Hill, 2001.

St. Gabriel's Library, Au