Purchase Order Processing System of Bangkok Polyethylene Public Company Limited

by

Mr. Sataporn Suratepin

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
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Project Title	Purchase Order Processing System of Bangkok Polyethylene Public Company Limited
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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.

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ABSTRACT

In today's business environment, Information Technology has created competitive firms, managed global competitions, and provided useful products and services to customers. Information systems have become vital to management, organization, and operations of large organizations. They can lead to operational efficiency, doing things better, faster and cheaper. They can result in functional effectiveness, better decision-making and at the same time work is accomplished within a shorter period of time with more accuracy.

System analysis and Design Methods are used to analyze, design and develop information systems and computer-based applications for the organization. FAST methodology has been employed successfully for continuous system development and improvement. The Phases of the FAST methodology are conducted step-by-step. These integrate all the popular design strategies, including Structured Design (via Process Modeling), Information Engineering (via data modeling), prototyping (via rapid application development), Joint Application Development (for all methods) and Rapid Application Development

Therefore, the new Information System is intended to provide better solution to the existing problems and increase the performance and productivity of operations. This information system will serve the management and end-users of the organization with consistency, accuracy, timelines, security, and reliability.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

I. INTRODUCTION

1.1 Background of the Project

Bangkok Polyethylene Public Company Limited (BPE) is a famous company in Thailand. They provide a level of service that improves customer satisfaction and grows long-term loyalty and profitability. Complaints from all agents are very important information. BPE intends to reduce problems in the company, and improve agent's satisfaction. Retention of long-term profitability requires a powerful customer relationship and management solution across the entire company.

The existing purchase order processing system is done manually. It doesn't support agent's satisfaction. And it generates a lot of paper work and is a very slow process. All reports are out of date and management can not make decisions on time.

The proposed purchase order processing system will be able to reduce a lot of paperwork and generate all reports such as agent report, product selling report, purchase order reports and do any managerial job easily. Finally, BPE can gain more benefits and able to reduce some costs by using this proposed system

1.2 Objectives of the Project

The project proposes to develop the existing manual system. This project can enhance business function in terms of capability and control by using a computerized database, which contains all the necessary information of the customer service system. The objectives of this project are as follows:

(1) To study the existing system and design the new system.

(2) To design the new system for more effective work for marketing department.

(3) To identify user requirements.

(4) To identify business requirements.

(5) To identify information system requirements.

(6) To improve the effectiveness, efficiency and timeliness of the purchase order processing system.

(7) To provide more accurate information, reduce redundancy and error data manipulation.

(8) To increase accuracy in reports.

1.3 Scope of the Project

The project will cover major functions of purchase order processing system, which is directly involved with the Marketing Department as follows:

(1) The system must be designed based on concept of User Friendly GUI.

(2) The system can generate purchase order.

(3) The system can check existing product.

(4) The system can check financial status of agent.

(5) The management report should be real time report.

(6) The system has basic security such as system authentication.

(7) Reduce redundant data for document processes.

(8) Provide and print out all information and statistical reports to support managerial decision-making.

(9) Provide various kinds of reports such as summary of purchase order, summary of product selling, etc.

1.4 Deliverables

(1) Project Introduction

(a) Background of the Project

(b) Objectives of the Project

(c) Scope of the Project

(2) The Existing System

(a) Background of the Company

(b) Existing Business Function

(c) Current Problems Analysis

(d) Existing Computer System

(3) The Proposed System

(a) Requirements Analysis and System Specification

(1) Functional Requirement

(2) Nonfunctional Requirement

(b) Candidate Systems Matrix and Feasibility Analysis Matrix

(c) Data Modeling and Analysis

(1) Entity Relationship Diagram (ERD)

(d) Process Modeling

(1) Context Data Flow Diagram

(2) Functional Decomposition Diagram

(3) Event Diagram

(e) System Design

(1) Database Design

(2) Structure Chart

(3) Input Design

(4) Output Design

(5) User Interface Design

(f) Hardware and Software Requirement

(g) Security and Controls

(h) Cost/Benefit Analysis

(1) Estimate Costs for each candidate system solution

(2) Tangible and Intangible Benefits

(3) Payback Analysis and Net Present Value for each candidate system solution with graph

(4) Project Implementation

(a) Overview of Project Implementation

(b) Construction Phase

(c) Implementation Phase

(5) Conclusions and Recommendations

1.5 Project Plan

The project plan of Purchase Order Processing System for Bangkok Polyethylene Public Company Limited (BPE) is shown in Figure 1.1.

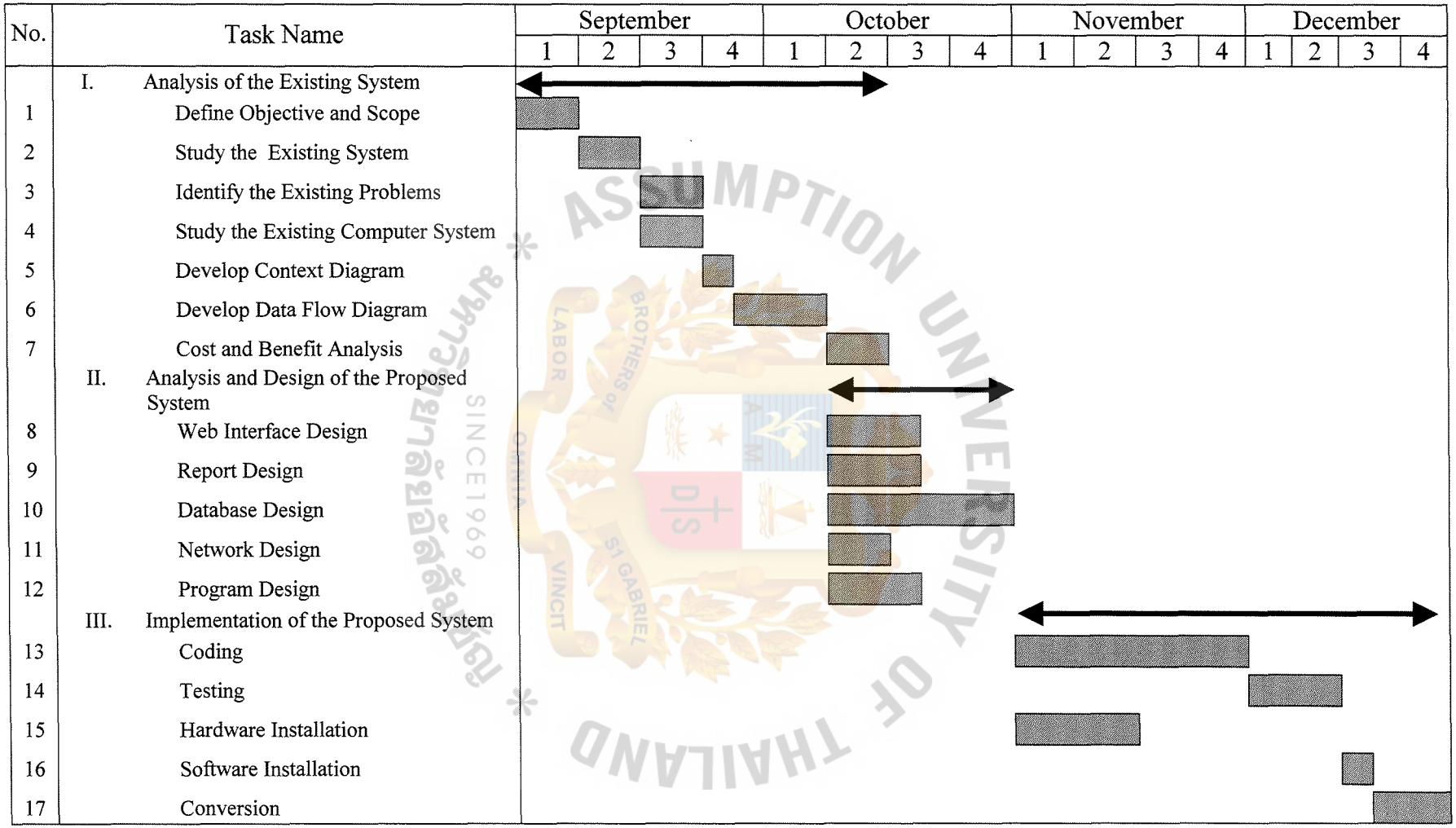


Figure 1.1. Project Plan of The Purchase Order Processing System.

II. THE EXISTING SYSTEM

2.1 Background of the Organization

Bangkok Polyethylene Public Company Limited (BPE) was founded in January 31, 1989 with a registered capital of 60 million baht and finally increased its registered capital to 1,700 million baht in the year 1992. BPE receives investment support from the Board of Investment (BOI) for production of High Density Polyethylene (HDPE) resins. BPE, one of the downstream petrochemical industries located the plant in Map Ta Phut Industrial Estate, Rayong. BPE produces HDPE resins by converting raw materials from Thai Olefins Co., Ltd. (TOC) under the BPE and BPE trademark for domestic and export markets.

BPE selects the slurry process technology from Mitsui Petrochemical Industries Co., Ltd., Japan. The process is very clean and safe due to the state of the art design in producing HDPE under low pressure with all safety measures in mind. This process has very good reputation and has been used to produce quality product under the brand name of BPE brand and has been accepted worldwide.

Every production step is controlled closely under world-class standard to ensure the customers that BPE produces world-class standard products, which have been accepted and exported to over 80 countries worldwide.

2.2 Existing Business Functions

Bangkok Polyethylene Public Company Limited (BPE) is organized into five main divisions as follows:

(1) Inventory

The duty of Inventory department is to control the product for delivery to customers.

(2) Finance

The Finance department records the transaction of money in the company and checks and assesses the money from agents.

(3) Human Resource

The Human Resource department keeps record of personnel, concerning about personal information and income of a person. Another function of this department is operating activities for employees of the company.

(4) Manufacturing

The main function of Manufacturing is producing the product according to customer's order, which is forwarded by the Marketing department. After producing the product it is sent to Inventory department.

(5) Marketing

The main function of Marketing department is supervising and inventing the purchase order and sending purchase order information to other departments.

(6) Information Technology

This department handles all the technology of the company, setting IT strategy plan and setting training schedule of newly implemented system.

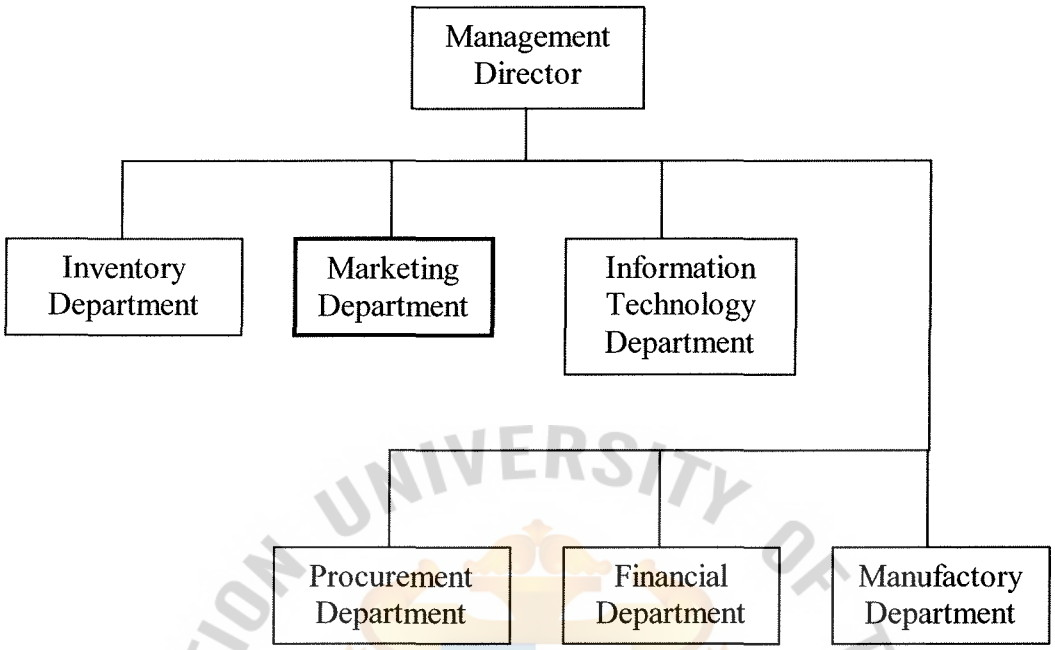


Figure 2.1. Organization Chart of Bangkok Polyethylene Public Company Limited.

2.3 Existing Business System

At present, the existing system of organization is done manually. So all the files are kept manually in paper form. This is the main cause of problems such as poor communication with customers and loss of data or information. So it is difficult to control the process. The existing system provides the following information.

Existing Purchase Order Processing Process

(1) Agent purchases order via telephone to marketing department.

(2) Marketing department checks the product and shipment date from Inventory department.

(3) Marketing department informs purchase order information via telephone.

2.4 Current Problem Analysis

Most of the Purchase Order Processing System uses manual system to process all the procedure, which cause the following problems:

(1) Difficult to search a particular order when agent users query an order information as they are not well organized.

(2) There is lack of computerized system to reduce processing time and improve better performance.

(3) Historical information is recorded in manual format, so utilization of the information for management to make a right decision and expand the organization is not complete.

(4) High operation cost because most of the process is paper work requiring rechecking and confirmation.

(5) Worker's support is time consuming because there is no database to record the workers department so it is necessary to search on the document only.

2.5 Existing Computer System

The existing computer system is a manual system but the system consists of one computer server and ten workstations connected together by Local Area Network (LAN) using Microsoft Window 2000 Server. The customer service has 5 workstations for serving and taking care of all customers's call, in order to support the service process manually through the tasks of recording, maintaining and generating reports. For this, at least one personnel is required full time. A lot of paper is also generated. The existing computer system is shown in Figure 2.2.

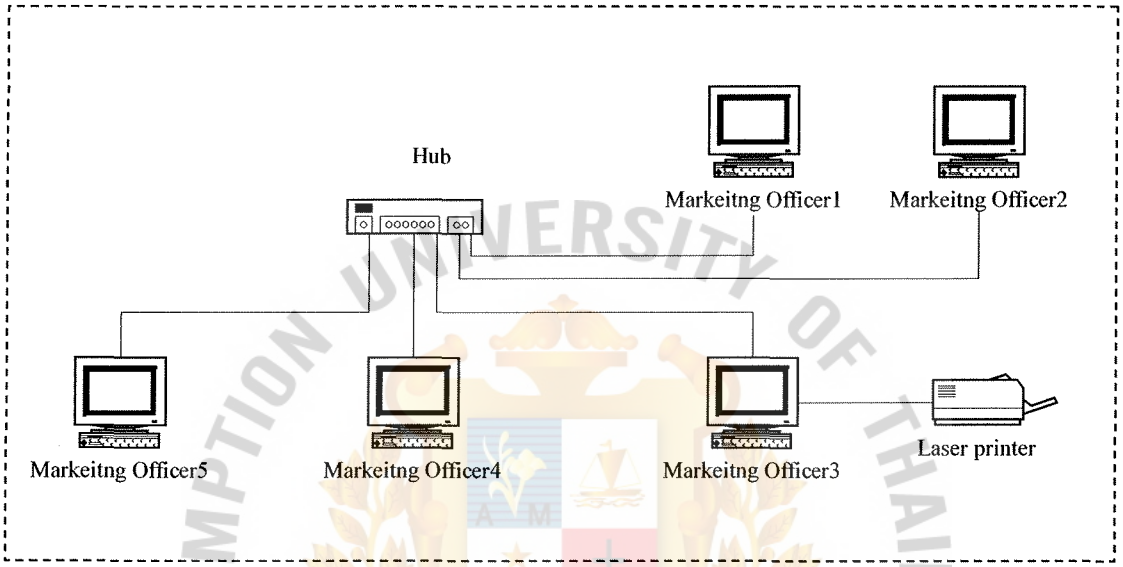


Figure 2.2. The Existing Purchase Order Processing System.

III. THE PROPOSED SYSTEM

3.1 Requirements Analysis

All user requirements are collected from research and site visit with the users. Some requirements are from Business flow chart. The requirement analyst drafts to describe the system function from the perspective of external user. Analyzing the requirements for proposed Purchase Order Processing System not only solves the present problems but also improves for better performance, information, economy, security and control, efficiency and service of the organization. The requirements are categorized as functional and nonfunctional:

(a) Functional Requirement

(1) The system should create PO for agent as necessary.

(2) The system should find the existing product in inventory.

(3) The system should find the financial status by each agent.

(4) The system should track PO and send message information to agent.

(5) The system should cancel PO from agent and marketing department.

(6) The system should edit PO from agent.

(b) Nonfunctional Requirement **PIECE** framework is used to analyst the nonfunctional requirement

Performance

(1) The throughput should be 10 Purchase Orders concurrently.

(2) The verify Purchase Order response time should be 5-10 min. for 1 Purchase Order.

Information

(1) The system should record Purchase Order, agent and marketing information of each transaction.

(2) The system should retrieve information of financial status & product information.

(3) The proposed system should be real-time system.

Economy

(1) The proposed system should reduce cost of organization. Software reduces the job of agent and marketing department.

Control (and Security)

(1) The system should provide security and access control.

(2) The system should provide backup and recovery function to protect against loss of data.

Efficiency

(1) The proposed system should reduce redundancy.

(2) The system should produce all reports without time consuming.

Service

(1) The system should produce accurate results.

(2) The system should be easy to learn and use.

3.2 Feasibility Analysis of Candidate System

In the candidate system, the first candidate solution is in-house development software solution. The second candidate is outsourcing solution. The third candidate is software package solution. The columns of matrix represent candidate solution. The rows of matrix represent characteristics that differentiate the candidates based on some of the characteristics of the information system. And the solution constraints take the form of architectural decisions intended to bring order and consistency to application.

The feasibility analysis matrix is the candidate system matrix with an analysis and ranking of the candidate system. The proposed candidate system and feasibility analysis matrix is shown in Tables 3.1 and 3.2 respectively.

Table 3.1. Candidate Systems Matrix.

Characteristics	Candidate 1	Candidate 2	Candidate 3
Portion of System Computerized Brief description of that portion of the system that would be computerized in this candidate.	In house software development.	Outsourcing to develops the new software solution to satisfy requirements.	Andaman Soft would be purchased and customized to satisfy requirements.
Benefits Brief description of the business benefits that would be realized for this candidate.	Fully supports user requirements and easy to update the new user requirement in the future.	Same as candidate 1.	This solution can be implemented quickly because it's a purchased solution.
Servers and Workstations A description of the servers and workstations needed to support this candidate.	Technically architecture dictates Pentium IV, MS Windows 2000 Class servers and workstations (clients).	Same as candidate 1.	Same as candidate 1.
Software Tools Needs **Software tools needed to design and build the candidate (e.g., database management system, emulators, operating systems, languages, etc.). Not generally applicable if applications software packages are to be purchased.**	ASP.Net and Crystal Report for customization of package to provide report writing and integration.	Same as candidate 1.	ASP and Crystal Report to generate all required reports.

Table 3.1. Candidate Systems Matrix (Continued).

Characteristics	Candidate 1	Candidate 2	Candidate 3
Application Software A description of the software to be purchased, built, accessed, or some combination of these techniques.	Custom Solution	Solution Same as candidate 1.	Package Solution.
Method of Data Processing Generally some combination of: on-line, batch, deferred batch, remote batch, and real-time.	Web Server Architecture.	Same as candidate 1.	Same as candidate 1.
Output Devices and Implications A description of output devices that would be used, special output requirements (e.g., network, preprinted forms, etc.) and output considerations (e.g., timing constraints)	(2) HP Laser Jet 4050N.	Same as candidate 1.	Same as candidate 1.
Input Devices and Implications A description of input methods to be used, input devices (e.g., keyboard, mouse, etc.), special input requirements (e.g., new or revised forms from which data would be input), and input considerations (e.g., timing of actual inputs).	Keyboard and mouse.	Same as candidate 1.	Same as candidate 1.

Table 3.1. Candidate Systems Matrix (Continued).

Characteristics	Candidate 1	Candidate 2	Candidate 3
Storage Devices and Implications Brief description of what data would be stored, what data would be accessed from existing stores, what storage media would be used, how much storage capacity would be needed, and how data would be organized.	MS SQL Server DBMS with 250 GB arrayed capability.	Same as Candidate 1.	Same as Candidate 1.

Table 3.2. Feasibility Analysis Matrix.

Feasibility Criteria	Wt.	Candidate 1	Candidate 2	Candidate 3
Operational Feasibility Functionality. A description of to what degree the candidate would benefit the organization and how well the system would work. Political. A description of how well received this solution would be from user management, user, and organization perspective.	30%	IT Department takes a long time to collect user requirement. And now they have a lot of job to handle, for example Financial Department, Inventory Department etc. BPE will hire a new programmer to support the new software solution. Score : 90	Outsourcing can support all the user requirements and business process because the system was created from user idea. So, user will be satisfied and willing to use this solution. Score : 100	The software must have customization to fit business process. Score : 80
Technical Feasibility Technology. An assessment of the maturity, availability (or ability to acquire), and desirability of the computer technology needed to support this candidate. Expertise. An assessment of the technical expertise needed to develop, operate, and maintain the candidate system.	30%	IT Department of BPE has knowledge of ASP .net to maintain the new system. MS SQL Server is a mature technology based on version number. It is easy to find expertise to take care of the database. Score : 90	Same as candidate 1. Score : 90	This solution uses ASP to develop the system. It is very stable but it requires know how for IT department. So it takes a lot of time and cost for training. Score : 90

Table 3.2. Feasibility Analysis Matrix (Continued).

Feasibility Criteria	Wt.	Candidate 1	Candidate 2	Candidate 3
Economic Feasibility	30%			
Cost to develop:		Approximately 1,392,500Baht.	Approximately 1,326,500 Bath.	Approximately 1,739,500 Bath.
Payback period (discounted):		Approximately 2.10 years.	Approximately 1.8 years.	Approximately 2.1 years.
Net Present Value:		Approximately 1,334,199 Bath.	Approximately 2,829,733 Bath.	Approximately 2,752,651 Bath.
Detailed calculations:		See Table C.5, C.6 & Figure C.1.	See Table C.7, C.8 & Figure C.3.	See Table C.9, C.10 & Figure C.5.
		Score : 70	Score : 70	Score : 50
Scheduled Feasibility An assessment of how long the solution will take to design and implement.	10%	More than 8 months.	4 months.	Less than 2 months.
		Score : 60	Score : 80	Score : 80
Ranking	100%	77.5	85	75

From the feasibility analysis matrix (Table 3.2), after ranking or scoring all candidates on each criterion, candidate system solution 2 has the highest score which means candidate system 2 offers the best overall combination of technical, operational, economic and schedule feasibility. Thus, candidate system solution 2 is recommended to Purchase Order Processing System of the BPE.

3.3 Data Modeling and Analysis

Data modeling is a technique for organizing and documenting the Purchase Order Processing system's data and is sometimes called database modeling because it is eventually implemented as a database and defined business requirements for database. A simple logical data model is called an entity-relationship diagram or ERD.

Entity Relationship Diagram (ERD) depicts data in terms of the entities and relationships described by the data. The first task in data modeling is to discover the fundamental entities in front office system that are or might be described by data as shown in Table 3.3.

The next task in data modeling is to construct the context data model to establish the project scope. The context data model includes fundamental business entities. The completed task is shown in Figure A.1. in Appendix A. The following task is a key-based data model. The key-based data model is to identify the key of each entity, eliminate nonspecific relationship and add associative entities. Figure A.2 in Appendix A is the key-based data model for the front office management information system project. Notice that the primary key is specified for each entity. The last task is a fully attributed data model. The fully attributed data model is to identify the remaining data attributes and subsetting criteria. Figure A.3 in Appendix A provides the fully attributed data model for the front office management information system project.

Table 3.3. Fundamental Entities for Purchase Order Processing System.

Entity Name	Business Definition
Agent	The customer of the BPE is called agent, which buys a product from BPE and sells it to customer. This entity stores information of agent such as id, name, address, etc.
Payment	This entity stores a payment transaction of agent, which keeps the agent's name, amount, pay date, etc.
PO_Header	Agent creates purchase order whose record is stored in PO_Header table. Other departments use purchase order information from this table. Fields of data in this table are concerned with purchase order information such as purchase order id, agent id, net price, etc.
PO_Line	This entity is the detail of purchase order, which depends on PO_Header. PO_Line store the product id, quantity, amount, etc.
Product	This entity records the available product in inventory under supervision of inventory department. Product table stores many fields such as product id, name of product, quantity, status of product, etc.

3.4 Process Modeling

Process modeling is a technique used for organizing and documenting the structure and flow of data through the front office system's processes and/or logic, policy, and procedures to be implemented by the front office system's processes. The process modeling of front office management information system is shown by the data flow diagram. Data flow diagram (DFD) depicts the flow of data through the system and the work or processing performed by Purchase Order processing system.

(a) Context data flow diagram

Before constructing the process model, the system context data flow diagram is constructed to establish initial project scope. The context data flow diagram, which is illustrated in Figure 3.1 defines the scope and boundary of the Purchase Order processing system. Because the scope of the project is always subject to change, the context data flow diagram is also subject to constant change.

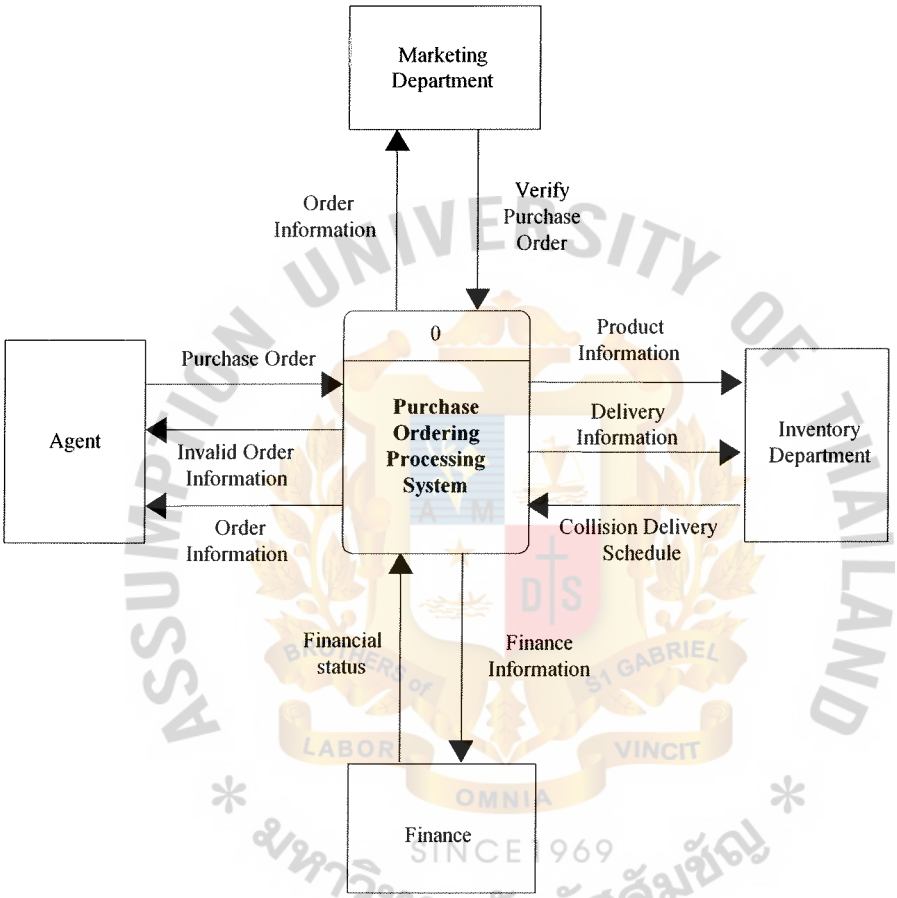


Figure 3.1. Context Data Flow Diagram of Purchase Order Processing System.

(b) Functional Decomposition Diagram

Decomposition is the act of breaking a system into its component subsystems, processes and subprocesses. A decomposition diagram, also called an hierarchy chart, shows the top-down functional decomposition and structure of a system. A functional decomposition diagram is drawn to partition the system into logical subsystems and/or functions. Figure 3.2 is the functional decomposition diagram for the Purchase Order processing system.

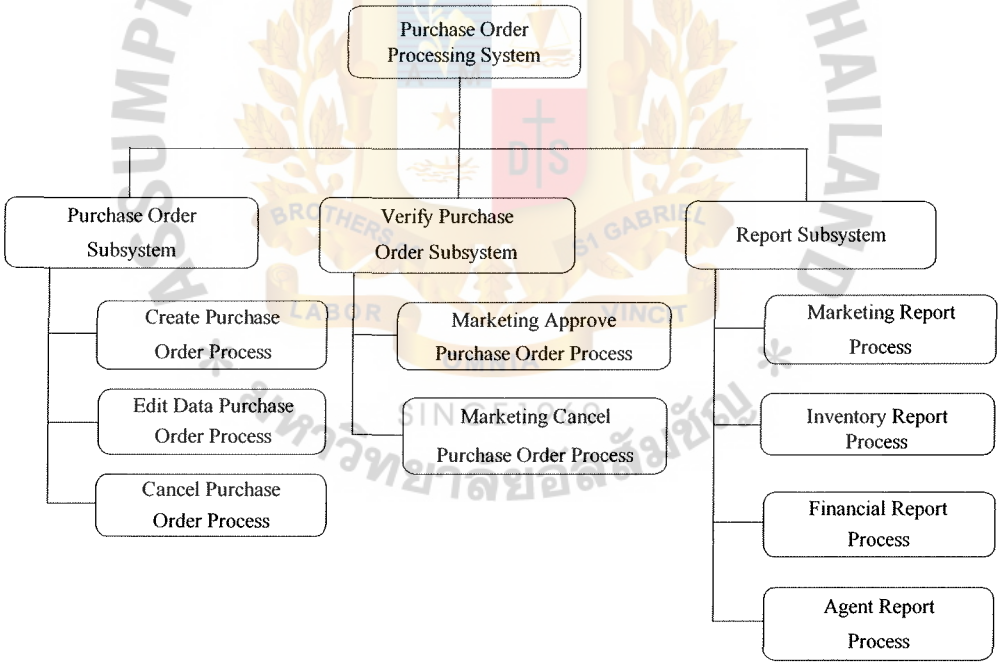


Figure 3.2. Decomposition Diagram of Purchase Order Processing System.

(c) Event diagram

An event is a logical unit of work that must be completed as a whole. An event is triggered by a discrete input to the front office system and is completed when the process of front office has responded with the appropriate outputs. Using the decomposition diagram as an outline, we can draw one event diagram for each front office event process. The event diagram shows the inputs, outputs and data store interactions for the event. An event diagram is constructed and validated for each event. Appendix C displays the event diagram for each single event of the Purchase Order Processing system respectively.

3.5 System Design

The actual development of a system is simplified if a thorough system analysis has been performed. System design is defined as the tasks that focus on the specification of a detailed computer-based solution. System design focuses on the technical or implementation concerns of Purchase Order Processing System.

(a) Information system architecture

Information system architecture of Purchases Order Processing System should be Distributed System which is the Data, Process and Interface component of an information system which are distributed to multiple locations in a computer network. Accordingly, the processing workload required to support these components is also distributed across multiple computers on the network.

There are many flavors of distributed system architecture, but for Purchases Order Processing System, it should be 3-tier web server solution in which data and data manipulate layers are placed on database server, and

application logic is placed on application server. Only the presentation logic and presentation are placed on the clients.

The benefit of 3-tier web server solution

(1) The client executes a minimum of overall system component.

(2) Only the user interface and some relative stable or personal application logic needs be executed on the client.

(3) It very much simplifies client configuration and management.

(b) Data architecture (Distributed Relational Database)

In a distributed RDBMS, the underlying database engine that processes all database command is executed on database server. It also provides for backup, recovery, and security. The advantage of distributed RDBMS is reduced data traffic on the network.

(c) Interface architecture

On-line input and outputs are selected for the Purchases Order Processing System because on-line input and output provide for a more conversation dialogue between user and computer applications. They also provide near immediate feedback in response to transaction, problems and inquiries. BPE is a fast-paced economy; most business transactions and inquiries are best processed as soon as possible. The management report should be updated because it is used for making decisions about further business plans. The example of input Screen for the Purchases Order Processing system is displayed in Appendix H and the example of output Screen report for the Purchases Order Processing system is displayed in Appendix H.

3.6 Hardware and Software Requirement

The next concern for the proposed Purchases Order Processing System is the hardware and software specification to support the system. Both the hardware and software specifications have to be provided based on the budget of the project. The hardware requirement, hardware configuration of the proposed system and software requirement will be shown as follows:

(a) Hardware Requirement

(1) Computer Server

(a) CPU INTEL XEON

(b) Memory 2 GB DDR RAM

(c) Hard Disk (7200/100) 200 GB

(d) 52X Speed CD-ROM

(e) Floppy Disk 1.44 MB

(f) Integrated Super VGA Graphic Controller

(g) 17" Super VGA Color Monitor

(h) LAN 10/100 Mbps

(i) Mouse and Keyboard

(2) Workstation

(a) CPU Pentium IV 4.4 GHz

(b) Memory 256 MB DDR RAM

(c) Hard Disk (7200/100) 40 GB

(d) Floppy Disk 1.44 MB

(e) SVGA Controller

(f) 15" Super VGA Color Monitor

(g) LAN 10/100 Mbps

(h) Mouse and Keyboard

(3) Printer

(a) Laser Printer

(4) Uninterrupted Power Supply (UPS)

(a) 1000 VA/280 Watts

(b) Back up time 60 minutes at full load

(5) Hub, LAN-CARD and UTP Line

(b) Software Requirement

(1) Network Operating System

(a) Microsoft Windows 2000 Server for computer server

(2) Operating System

(a) Microsoft Windows XP for each workstation

(3) Microsoft Office 2000

(4) MS SQL Server for Database Management System

To connect the database server and the client machine together, the network infrastructure must be addressed. The proposed system will employ the existing network infrastructure as it supports TCP/IP protocol. Therefore, there is no need for modification of the network infrastructure. The network configuration of the proposed system is shown in Figure 3.3.

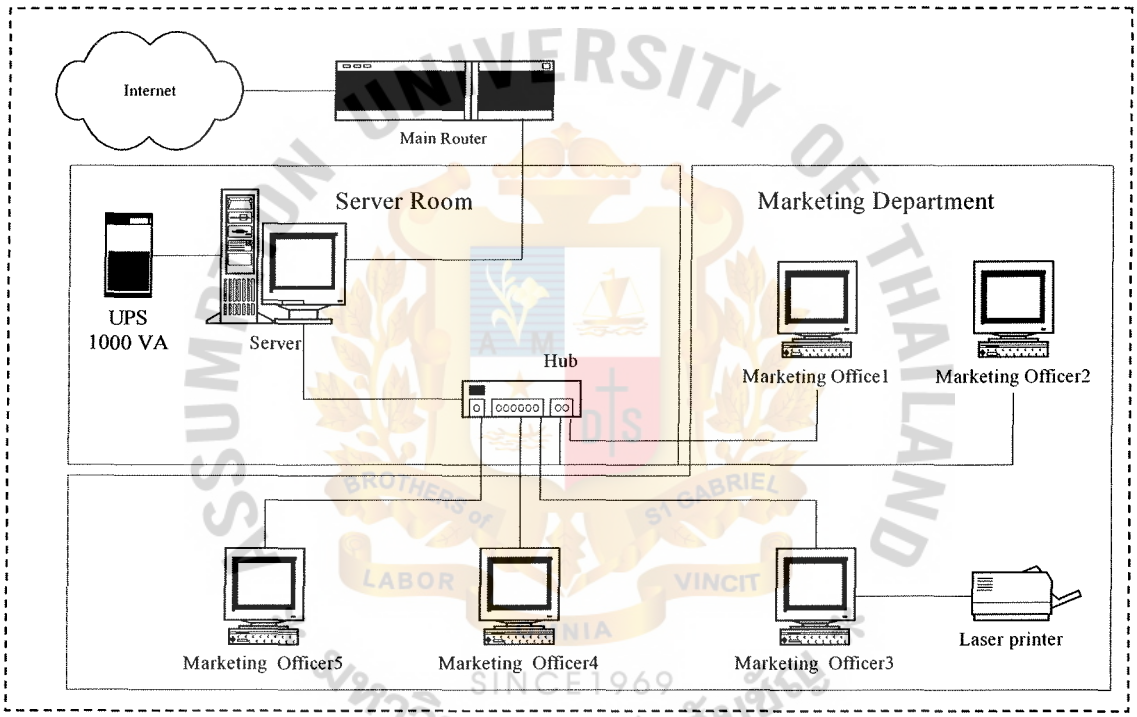


Figure 3.3. The Proposed Purchase Order Processing System.

3.7 Security and Controls

Computer System plays such a critical role in BPE, so that the organization must take special steps to protect their information system and to ensure they are accurate and reliable.

Before the proposed system was implemented, data of the existing system about individuals or organization was maintained and secured as paper records dispersed in separate business. The existing system can be accessed more easily by a large number of people and by groups outside the organization. Then, they are more susceptible to destruction, fraud, error, and misuse.

The heightened vulnerability of the proposed system has created special concern for the users of Information system. Concerns include disaster, security, and human errors. Servers are important because they must collect all application, and database. Then BPE must set up a server room, which creates the environment control and policies as follows:

(a) Access Identification Card

(b) Monitor detector

(c) Firewall

(d) Full network redundancy

After BPE considers about environment control, the next step should be general control, an overall control that ensures the effective operation of programmed procedures, an apply to the application areas, and includes the following:

(a) Unauthorized Access. To protect from unauthorized access, each user must log on to the client by using own user name and password to access the system. They can access only their task and to ensure that casual users can not access the performance of the database.

(b) Database control. The system analyst and programmer should design security for the database. Each user has a specific task to read, write, delete and edit data in database.

(c) Back up and recovery plan. The system must back up data once a week. Especially the server must be maintained one time per month.

3.8 Cost/Benefit Analysis

To consider which system is suitable for the organization, it must be considered carefully about the cost that must be invested in the new system. The important question is after how long will we get back our investment including the limitation of budget. However, we must consider the highest benefit, which is most valuable for Purchase Order Processing System that dose not only increase the efficiency of management and operation, but also a lot of advantages from the system. In fact, the benefits can not be measured immediately but it takes time to prove intangible benefits. Moreover, cost comparison is a good example for comparing manual system and computerized system by representing them in figure and chart. However, the benefits of the proposed system can probably be projected in both tangible and intangible benefits.

The existing system cost analysis and the estimation of development costs and operating costs for candidate system solution 1, 2 and 3 are shown in appendix C.

Benefits normally increase profits or decrease costs, both highly desirable characteristics of a new information system. After this project is finished, the Purchase Order Processing System will get the following benefits which are classified as tangible and intangible as follows:

(a) Tangible benefits

Tangible benefits are those that can be easily quantified or can be calculated.

(1) Elimination of stationary usage.

(2) Increased throughput. Performance of the proposed system is better. The number of agents has increased.

(3) Decreased response time. The system responds to the transactions and requests faster.

(4) Decreased of document files.

(5) Reduced expenses.

(b) Intangible benefits

Intangible benefits are those benefits believed to be difficult or impossible to quantify.

(1) Enhance accuracy, timeliness and efficiency of operation.

(2) Retrieve information faster.

(3) Increase the access to information on a timely basis.

(4) Easy to provide report which is in real time.

(5) Improve decision making of top level management.

(6) Reduce risk of human error.

(7) Reduce paper work and time consumption.

IV. PROJECT IMPLEMENTATION

4.1 Overview of Project Implementation

Project management is needed for developing the new system. It is an on-going activity by which an analyst plans, delegates, directs, and controls progress to develop an acceptable system within the allotted time and budget.

Project management provides the basic framework for the management of system projects. For this reason, project management techniques and project modeling techniques are very helpful in successfully implementing the project. A Gantt chart is being used here to effectively present the milestones of this project.

4.2 Overview of Project Management

System implementation is the construction of the new system and the delivery of the system into production (meaning day-to-day operation). System implementation consists of two phases, namely construction and delivery.

The purpose of the construction phase is twofold:

(1) To build and test a functional system that fulfills business and design requirements.

(2) To implement the interfaces between the new and the existing production systems.

After the approval of the technical design statement and prototypes, construction of the new system begins. During construction, the system components are constructed and tested. The first activity in the construction phase is to build and test the networks. The second activity is to build and test the databases. This task must immediately precede other programming activities because databases are the resources shared by the computer programs to be written. After completion of this activity, installation and

testing of the software package is done. Writing and testing of the new programs follow this activity.

4.3 Testing

Testing is a very important skill in computer programming. Modules and programs are tested and debugged as they are written. Testing should not be deferred until after the entire program has been written.

The following types of testing are performed:

(1) Stub testing: A test performed on individual modules, whether they are main program, subroutine, subprogram, block, or paragraph.

(2) Unit or Program testing: A test whereby all the modules that have been coded and stub tested are tested as an integrated unit. Unit testing uses the test data created during the design phase. All modules are then implemented and that unit equals the program itself.

(3) System testing: A test that ensures that application programs written in isolation work properly when they are integrated into the new system.

(4) Peak load testing: A test that determines whether the system can handle the volume activities in the peak period of processing demand.

(5) Storage testing: A test that determines the storage capacity of the system to store transaction data on a disk or in other files.

(6) Back up and recovery testing: It tests that all back up and recovery procedures are working properly and with consistency.

(7) Performance or Response time testing: A test that determines how much time will be taken by the system to process one instruction.

(8) Human factors testing: It determines how users will react when they use the system, such as input, output, and interface design.

4.4 Prepare Conversion Plan

The purpose of this activity is to prepare a detailed conversion plan to provide a smooth transition from the old system to the new system. The following steps are required to complete this activity:

(1) Collect and review design specifications for the new system to identify databases to be installed and user training needs.

(2) Establish a schedule for installation of databases.

(3) Identify a training program and schedule for the system users.

(4) Develop a detailed installation strategy to follow in converting from the existing to the new production information system.

The development team agreed on the parallel conversion approach for the conversion. Under this approach, both the old and the new systems are operated for some period of time. This is done to ensure that all major problems in the new system have been solved before the old system is discarded. This strategy minimizes the risk of major flaws in the new system causing irreparable harm to the business.

Training:

Converting to a new system necessitates that system users be trained and provided with documentation that guides them through in using the new system. Training is performed on a group basis because it is a better use of time, and it encourages group-learning possibilities. The golden rule applies here in user manual writing: "Write unto others as you would have them write unto you". Simple and clear user manuals are given to the users. The user manuals contain a detailed explanation of people's jobs for the new system. They also show how the new system fits into the overall plan. Schedule of training sessions are then established and conducted on a group basis.

System Support:

System support is the on-going maintenance of a system after it has been placed into operation. This includes program maintenance and system improvement. It consists of four on-going activities, namely:

(1) System maintenance

(2) System recovery

(3) End-user assistance

(4) System enhancement and reengineering

System maintenance is actually the corrective action taken when some errors or bugs are identified in the system. These bugs may be caused by miscommunication of the requirements or design flaws. Some are even caused by unanticipated situations, which were, therefore, not tested.

The fundamental objectives of the system maintenance are:

(1) To make predictable changes to existing programs to correct errors that were made during system design and implementation.

(2) To preserve those aspects of the programs that were already correct.

System recovery can be defined as the overcoming from crash. From time to time, system failure is inevitable. It generally results in an aborted or "hung" program and possible loss of data. Hence, during system recovery, the system is fixed.

System support also asks for the end-user assistance. Users always require additional assistance, no matter how well they have been trained. Hence, the use of the system should be routinely observed, conducting user satisfaction surveys and meetings, changing business procedures and clarifications, providing additional training, and logging additional ideas and requests in the repository.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The purpose of this system development project is to analyze, design and implement Purchase Order Processing System for Bangkok Polyethylene Public Company Limited (BPE). The necessary functions that they perform are keeping the purchase order record, which is done manually. The time has come to change to the computerized system. The development of computer information system is not easy and the cost is high from the beginning. It takes much time and many factors to accomplish the objective. The development of the system cannot go smoothly if the executive and office are not involved in development. Therefore, user and executive must participate in almost every phase including analysis, design and implementing the system, due to the users being the ones who know exactly what they would like the proposed system should be to match the objective.

For the existing system, the necessary functions are done manually. There is data redundancy. It is not only time consuming to do routine work but also requires storage area for keeping a lot of paper work a lot since most of the business is concerned with documents; so it is very necessary to keep all as reference and support information.

The proposed system can provide more efficient service to all uses to do their routine work conveniently and quickly. It supports decision making of the management. Furthermore, manpower is also reduced.

The proposed system uses the payback period and net present value to evaluate the system cost and benefit. The payback period for the proposed system is approximately 1.8 years. It is the period for the project to be under taken along with the company policy. The net present value is 2,829,733.70 Baht, which is a positive value.

Therefore, this system is worth making investment.

Table 5.1. Shows the time spent on each process of the proposed system compared with the existing system. It shows that each process of the proposed system spends less than each process of the existing system, which involved many manual work steps. This table shows how the proposed system is more effective than the existing system.

Table 5.1. Degree of Achievement of the Proposed System.

Process	Existing System	Proposed System
Purchase Order Time	15 mins	5 mins.
Verify Purchase Order	5 mins	2 mins.
Check Financial Status	10 mins.	0 mins.
Check Existing Product	10 mins.	0 mins.
Generate All Reports	4 days.	7 mins.

(1) Purchase Order Time

The proposed system is able to record purchase order easily. It is a convenience for agent recording via web screen.

(2) Verify Purchase Order

The proposed system provides easy investigate purchase order which already checks the existing product and financial status of agent. Marketing department checks the shipment date only.

(3) Check Financial Status

The proposed system gives more convenience in check financial status when agent would like to purchase order via Purchase Order Processing System. The system finds the limit of agent from the database.

(4) Check Existing Product

The proposed system gives more convenience in check existing product when agent would like to purchase order via Purchase Order Processing System. The system finds the number of existing products from the database when agents select each product.

(5) Generate All Report

The proposed system is easy to generate report. It is takes a short time and information is accurate.

On completion, from the performance and ability of the new system, it is clear that the proposed Purchase Order Processing System is able to achieve the business solutions, increase revenue and reduce time and cost.

5.2 Recommendations

After the new system has been developed, there should be regular maintenance and periodical system usage training facilities for staff to ensure the system is in full utilization. Users need to be informed about the effective use of the computer system. They need to be educated on the practice.

This Purchase Order Processing System meets today's user requirement but in the future, this systems may be redesigned or reverse-engineered for supporting more requirements in the future.

The important thing is to integrate with existing ERP (back office), to reduce job and increase efficiency in job such as select shipment date, show available product, etc. Analysis and design should be continued in the related functions of marketing and inventory to enhance the information system of the organization and provide the best user satisfaction in the current highly competitive environment.

APPENDIX A

ENTITY-RELATIONSHIP DESIGN

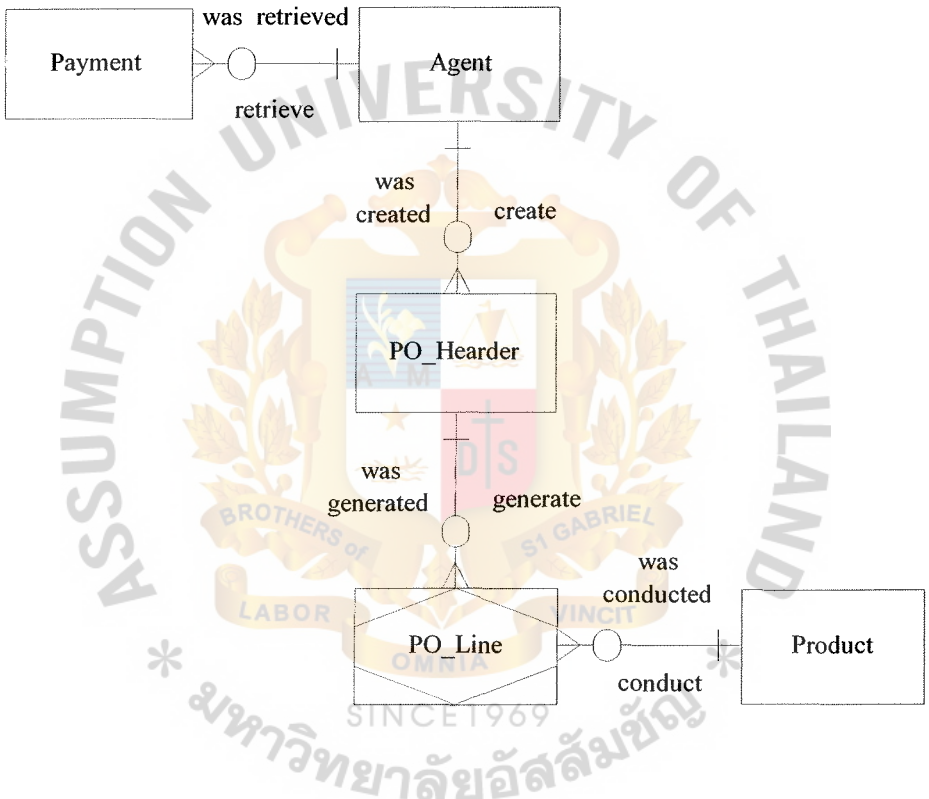


Figure A.1. Entity Relationship Diagram (Context Data Model).

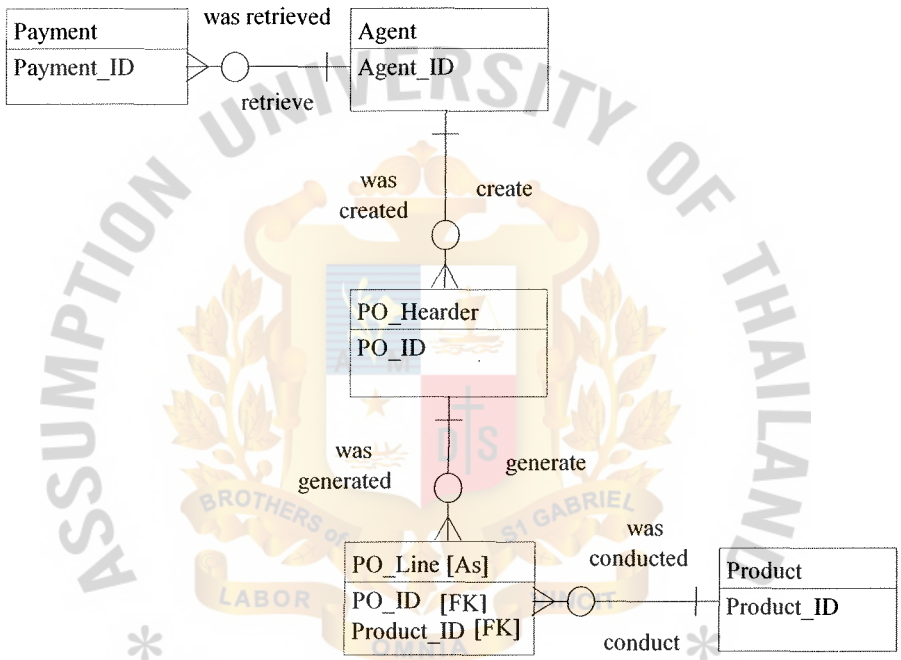


Figure A.2. Entity Relationship Diagram (Key-Based Data Model).

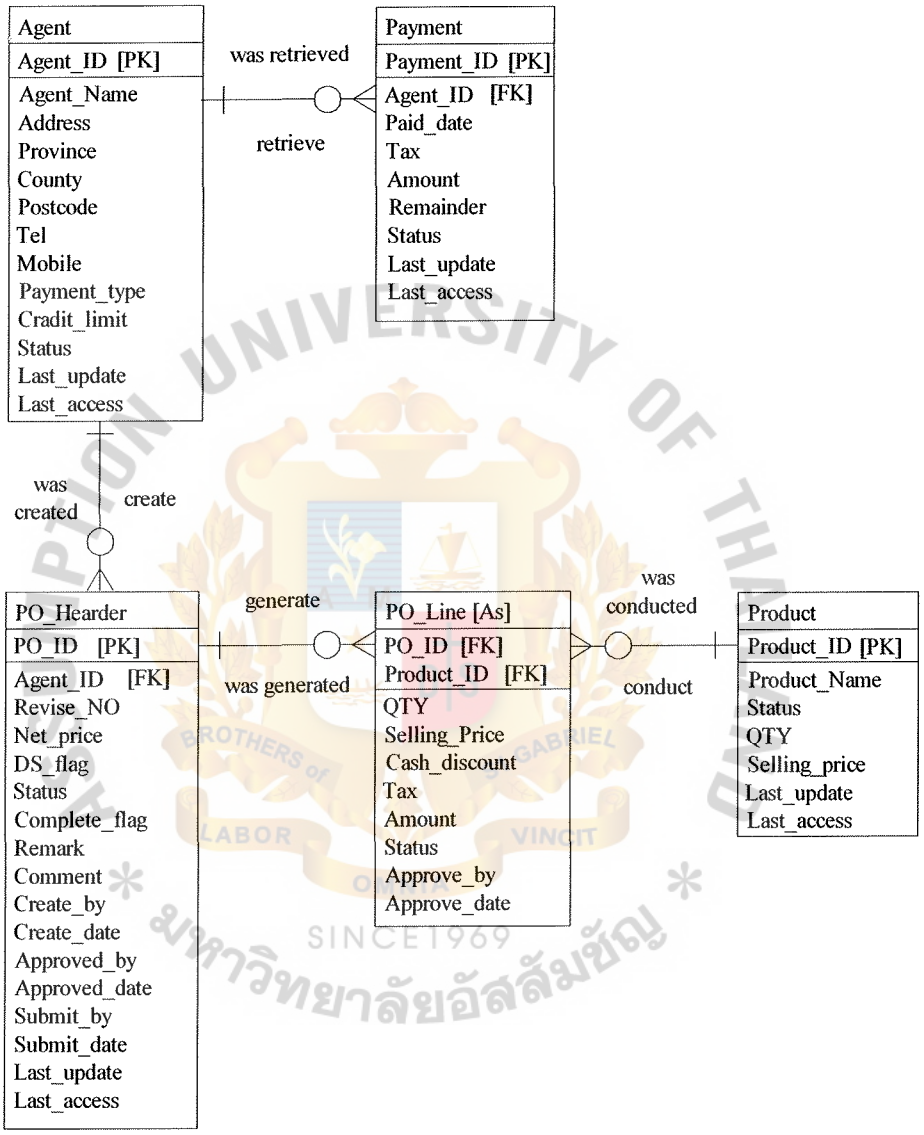


Figure A.3. Entity Relationship Diagram (Fully Attributed Data Model).

APPENDIX B

DATAFLOW DIAGRAM

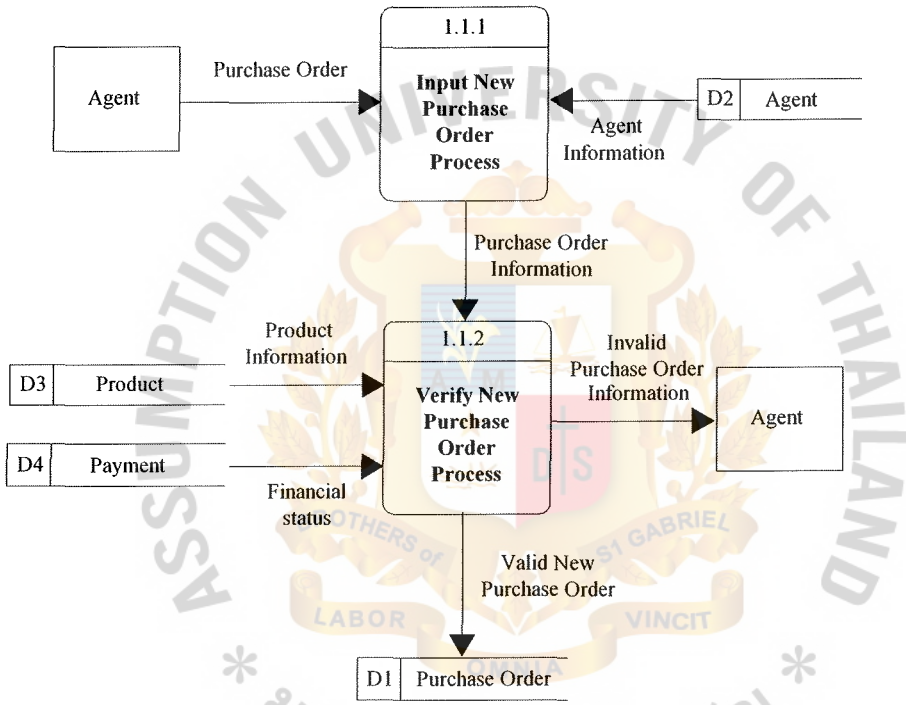


Figure B.1. Event Diagram of Create Purchase Order Process.

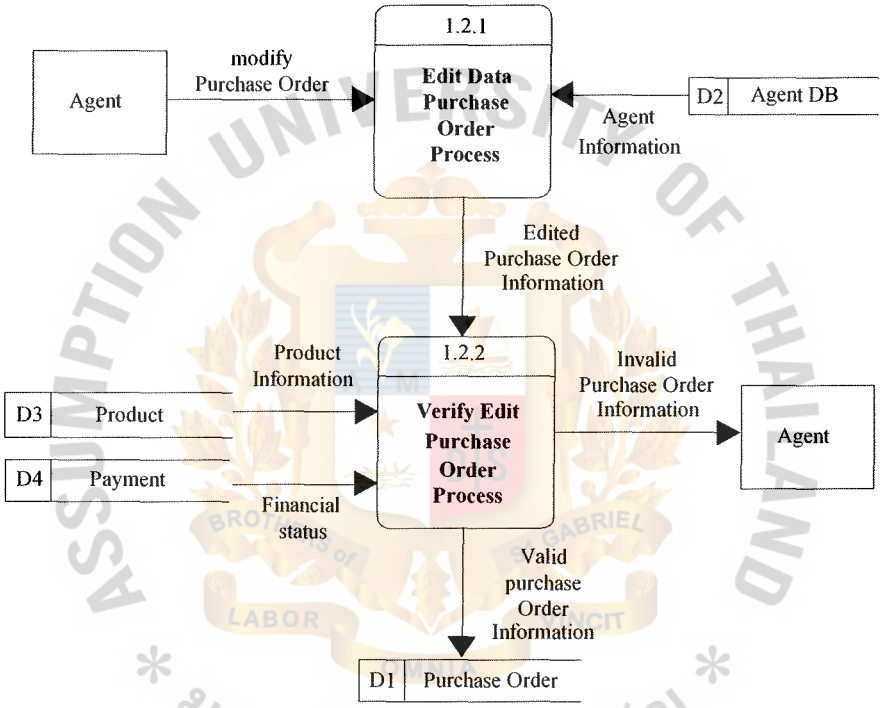


Figure B.2. Event Diagram of Edit Purchase Order Process.

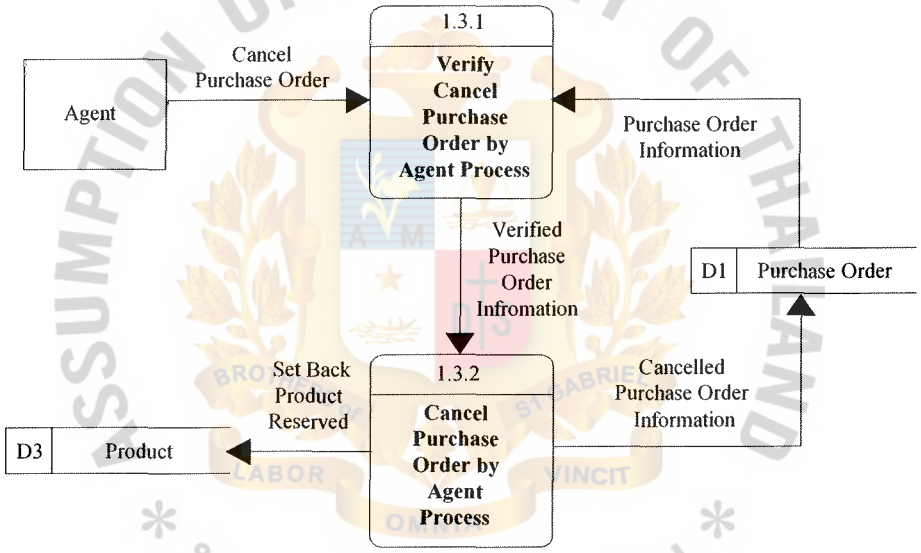


Figure B.3. Event Diagram of Cancel Purchase Order Process.

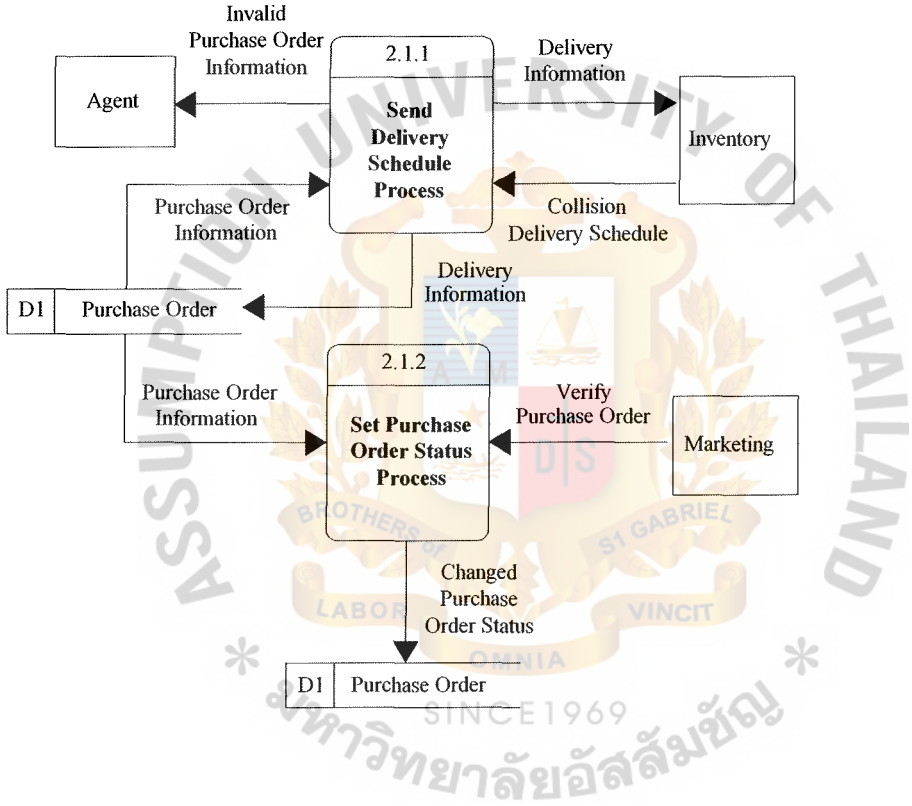


Figure B.4. Event Diagram of Marketing Approve Purchase Order Process.

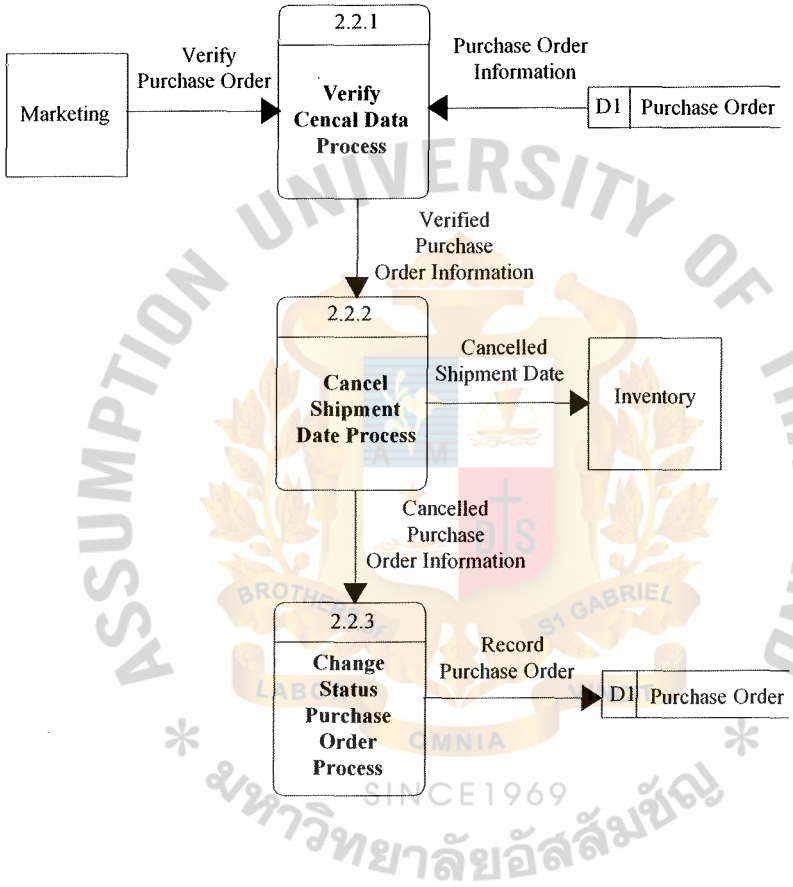


Figure B.5. Event Diagram of Marketing Cancel Purchase Order Process.

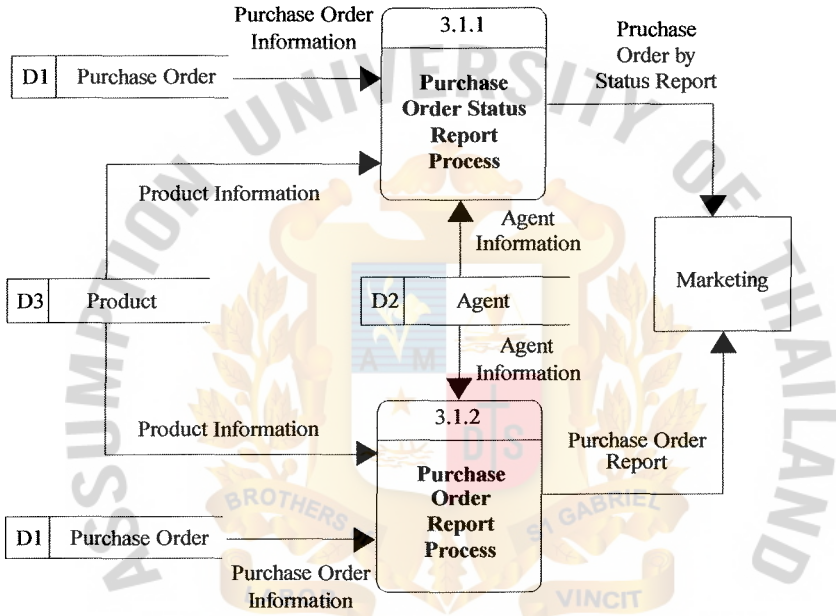


Figure B.6. Event Diagram of Marketing Report Process.

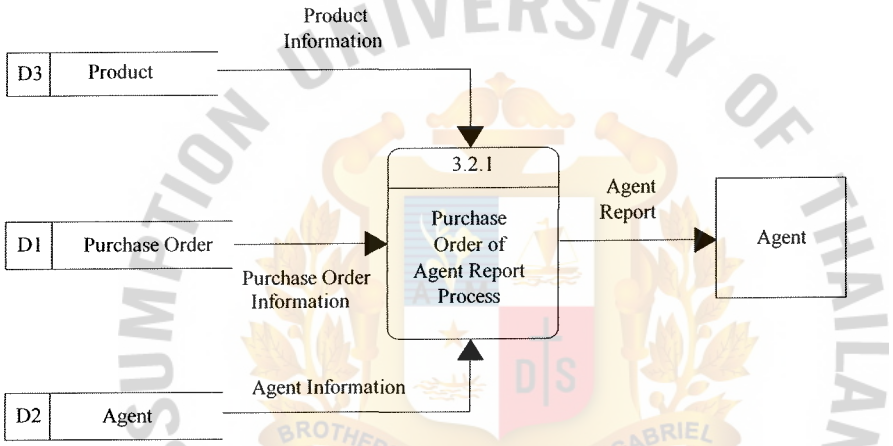


Figure B.7. Event Diagram of Agent Report Process.

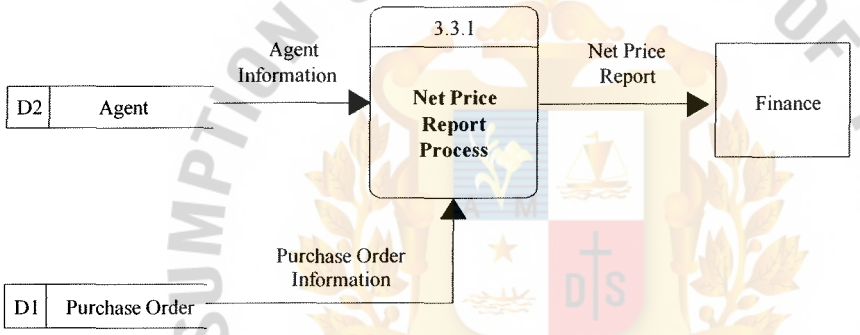


Figure B.8. Event Diagram of Financial Report Process.

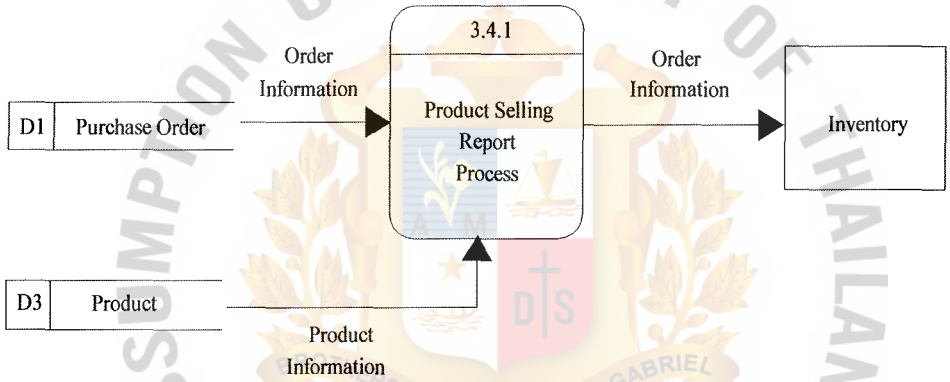


Figure B.9. Event Diagram of Inventory Report Process.

APPENDIX C

COST-BENEFIT ANALYSIS

(1) The existing Purchase Order Processing System cost analysis.

Table C.1. Existing Purchase Order Processing System Cost Analysis (in Baht).

Cost items	Years				
	1	2	3	4	5
Fixed Cost					
Workstations Maintenance Cost	28,000.00	30,240.00	32,659.20	35,271.94	38,093.69
Workstation Cost 6@25,000	150,000.00	-	-	-	-
Laser Jet Printer 1 unit @ 18,500	18,5000.00	-	-	-	-
Total Fixed Cost	196,500.00	30,240.00	32,659.20	35,271.94	38,093.69
Operating Cost					
Salary Cost:					
Manager 1 person @ 50,000	50,000.00	53,000.00	58,400.00	62,900.00	67,980.00
Officer 5 persons @ 15,500	93,000.00	100,440.00	108,475.20	117,153.22	126,525.47
Total monthly salary Cost	143,000.00	153,440.00	166,875.00	180,053.00	194,505.47
Total Annual Salary Cost	1,716,000.00	1,841,280.00	2,002,502.40	2,160,638.64	2,334,065.64
Office Supplies & Miscellaneous Cost:					
Stationary Per Annual	10,000.00	12,000.00	13,000.00	15,000.00	14,500.00
Paper Per Annual	7,000.00	9,000.00	12,000.00	13,000.00	15,000.00
Utility Per Annual	7,500.00	8,100.00	8,748.00	9,447.84	10,203.67
Miscellaneous Per Annual	3,500.00	3,780.00	4,082.40	4,408.99	4,761.71
Total Annual Operating Cost	1,744,000.00	1,874,400.00	2,040,332.80	2,202,495.47	2,378,531.02
Total Existing System Cost	1,940,500.00	1,904,400.00	2,072,992.00	2,237,767.41	2,416,624.71
Accumulated Cost	1,940,500.00	3,844,900.00	5,917,892.00	8,155,659.41	10,572,284.12

(2) Estimated Costs for Candidate System Solution 1

Table C.2. Estimated Costs for Candidate System 1 (in Baht).

Cost items	Years				
	1	2	3	4	5
Development Cost					
Personnel Cost:					
System Analyst 2 persons @ 60,000	120,000.00	-	-	-	-
New Hardware Cost:					
Server Cost 1 unit @ 300,000	300,000.00	-	-	-	-
Workstation Cost 5 units @ 50,000	250,000.00	-	-	-	-
Laser Jet Printer 1 units @ 18,500	18,500.00	-	-	-	-
New Software Cost:		-	-	-	-
Andaman Soft Package	1,200,000.00				
Microsoft window 2000 server	150,000.00	-	-	-	-
Workstation Software	91,000.00	-	-	-	-
Firewall	60,000.00	-	-	-	-
Total Development Cost	2,139,500.00	-	-	-	-
Operating Cost					
Personnel Cost:					
Technician 1 person	12,000.00	12,840.00	13,738.80	14,700.52	15,729.55
Officer Salaries	800,000.00	850,000.00	900,000.00	960,000.00	1,334,098.30
Maintenance Cost:					
Server Maintenance	13,500.00	14,445.00	15,456.15	16,538.08	17,695.75
Workstations Maintenance	12,000.00	12,840.00	13,738.80	14,700.52	15,729.55
Application Maintenance	10,000.00	10,700.00	11,449.00	12,250.43	13,107.96
Office Supplies & Miscellaneous Cost:					
Stationary Per Annual	9,000.00	9,630.00	10,304.10	11,025.39	11,797.16
Paper Per Annual	7,000.00	7,490.00	8,014.30	8,575.30	9,175.57
Utility Per Annual	6,500.00	6,955.00	7,441.85	7,962.78	8,520.17
Miscellaneous Per Annual	2,000.00	2,140.00	2,289.80	2,450.09	2,621.59
Total Annual Operating Cost	872,000.00	927,040.00	982,432.80	1,048,203.11	1,428,475.60
Total Cost of Candidate System 1	3,011,500.00	1,799,040.00	2,781,472.80	3,829,675.91	1,428,475.60
Accumulated Cost	3,011,500.00	4,810,540.00	7,592,012.80	11,421,688.71	16,679,840.22

(3) Estimated Costs for Candidate System Solution 2.

Table C.3. Estimated Costs for Candidate System 2 (in Baht).

Cost items	Years				
	1	2	3	4	5
Development Cost					
Personnel Cost:					
Sys. Analyst 2 person @ 66,000	132,000.00	-	-	-	-
Programmer 6 person @ 25,000	150,000.00	-	-	-	-
Implementation day @ 10,000	100,000.00	-	-	-	-
New Hardware Cost:					
Server Cost 1 units @ 300,000	300,000.00	-	-	-	-
Workstation Cost 5 units @ 50,000	250,000.00	-	-	-	-
Laser Jet Printer 1 units @ 18,500	18,500.00	-	-	-	-
New Software Cost:					
Window 2000 Server 1 units	150,000.00	-	-	-	-
SQL Server License 5 units	65,000.00	-	-	-	-
Workstation Software for 5 units	91,000.00	-	-	-	-
ASP.Net License	40,000.00	-	-	-	-
Firewall 1 units	60,000.00	-	-	-	-
Total Development Cost	1,356,500.00	-	-	-	-
Operating Cost					
Personnel Cost:					
Officer Salaries	1,000,450.00	1,123,00.00	1,223,000.00	1,250,000.00	1,334,098.30
Maintenance Cost:					
Server Maintenance	13,500.00	14,445.00	15,456.15	16,538.08	17,695.75
Workstations Maintenance	12,000.00	12,840.00	13,738.80	14,700.52	15,729.55
Application Maintenance	10,000.00	10,700.00	11,449.00	12,250.43	13,107.96
Office Supplies & Miscellaneous Cost:					
Stationary Per Annual	9,000.00	9,630.00	10,304.10	11,025.39	11,797.16
Paper Per Annual	7,000.00	7,490.00	8,014.30	8,575.30	9,175.57
Utility Per Annual	6,500.00	6,955.00	7,441.85	7,962.78	8,520.17
Miscellaneous Per Annual	2,000.00	2,140.00	2,289.80	2,450.09	2,621.59
Total Annual Operating Cost	1,060,450.00	1,187,200.00	1,291,694.00	1,323,502.59	1,412,746.05
Total Cost of Candidate System 2	2,416,950.00	1,187,200.00	1,291,694.00	1,323,502.59	1,412,746.05
Accumulated Cost	2,426,950.00	3,604,150.00	4,895,844.00	6,219,346.59	7,632,092.64

(4) Estimated Costs for Candidate System Solution 3.

Table C.4. Estimated Costs for Candidate System 3 (in Baht).

Cost items	Years				
	1	2	3	4	5
Development Cost					
Personnel Cost:					
Sys. Analyst 3 person @ 66,000	198,000.00	-	-	-	-
Programmer 6 person @ 25,000	150,000.00	-	-	-	-
Database Admin 2 person @ 20,000	40,000.00	-	-	-	-
Technicial 2 person @ 15,000	30,000.00	-	-	-	-
New Hardware Cost:		-	-	-	-
Server Cost 1 unit @ 300,000	300,000.00	-	-	-	-
Workstation Cost 5 units @ 50,000	250,000.00	-	-	-	-
Laser Printer 1 units @ 18,500	18,500.00				
New Software Cost:		-	-	-	-
Window 2000 Server 1 unit	150,000.00	-	-	-	-
SQL Server License 5 units	65,000.00	-	-	-	-
Workstation Software	91,000.00	-	-	-	-
ASP.Net License	40,000.00	-	-	-	-
Firewall 1 units	60,000.00	-	-	-	-
Total Development Cost	1,392,500.00				
Operating Cost					
Personnel Cost:					
Officer Salaries	1,100,000.00	1,290,000.00	1,400,000.00	1,500,000.00	1,700,000.00
Maintenance Cost:					
Server Maintenance	13,500.00	14,445.00	15,456.15	16,538.08	17,695.75
Workstations Maintenance	12,000.00	12,840.00	13,738.80	14,700.53	15,729.55
Application Maintenance	10,000.00	10,700.00	11,449.00	12,250.43	13,107.96
Office Supplies & Miscellaneous Cost:					
Stationary Per Annual	9,000.00	9,630.00	10,304.10	11,025.39	11,797.16
Paper Per Annual	7,000.00	7,490.00	8,014.30	8,575.30	9,175.57
Utility Per Annual	6,500.00	6,955.00	7,441.85	7,962.78	8,520.17
Miscellaneous Per Annual	2,000.00	2,140.00	2,289.00	2,450.09	2,621.59
Total Annual Operating Cost	1,160,000.00	1,354,200.00	1,468,694.00	1,573,502.59	1,778,647.75
Total Cost of Candidate System 3	2,552,500.00	1,354,200.00	1,469,694.00	1,573,502.59	1,778,647.75
Accumulated Cost	2,552,500.00	3,906,700.00	5,375,394.00	6,948,896.59	8,727,544.34

Table C.5. Payback Analysis for Candidate System 1 (in Baht).

Cost Items	Years						
	0	1	2	3	4	5	6
Development Cost	-1,392,500.00	-	-	-	-	-	-
Operation & maintenance cost	-	-1,160,000.00	-1,354,200.00	-1,468,694.00	-1,573,502.59	-1,778,647.75	-1,903,153.09
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Time-adjusted costs (adjusted to present value)	-1,392,500.00	-1,055,600.00	-1,123,986.00	-1,101,520.50	-1,069,981.76	-1,102,761.61	-1,065,765.73
Cumulative time-adjusted costs over lifetime	-1,392,500.00	-2,448,100.00	-3,572,086.00	-4,673,606.50	-5,743,588.26	-6,846,349.87	-7,912,115.60
Existing System Operation Cost	0.00	1,940,500.00	1,904,400.00	2,072,992.00	2,237,767.41	2,416,624.71	2,609,954.69
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Time-adjusted benefits (current of present value)	0.00	1,765,855.00	1,580,652.00	1,554,744.00	1,521,681.84	1,498,307.32	1,461,574.62
Cumulative time-adjusted benefits over lifetime	0.00	1,765,855.00	3,346,507.00	4,901,251.00	6,422,932.84	7,921,240.16	9,382,814.78
Cumulative lifetime time-adjusted cost + benefits	-1,392,500.00	-682,245.00	-225,579.00	227,644.50	679,344.58	1,074,890.29	1,470,699.19
The Payback Period is approximately 2.6 years.							
Lifetime ROI = (Estimated lifetime benefits - Estimated lifetime costs) / Estimated lifetime costs = 0.19*100 = 19%							

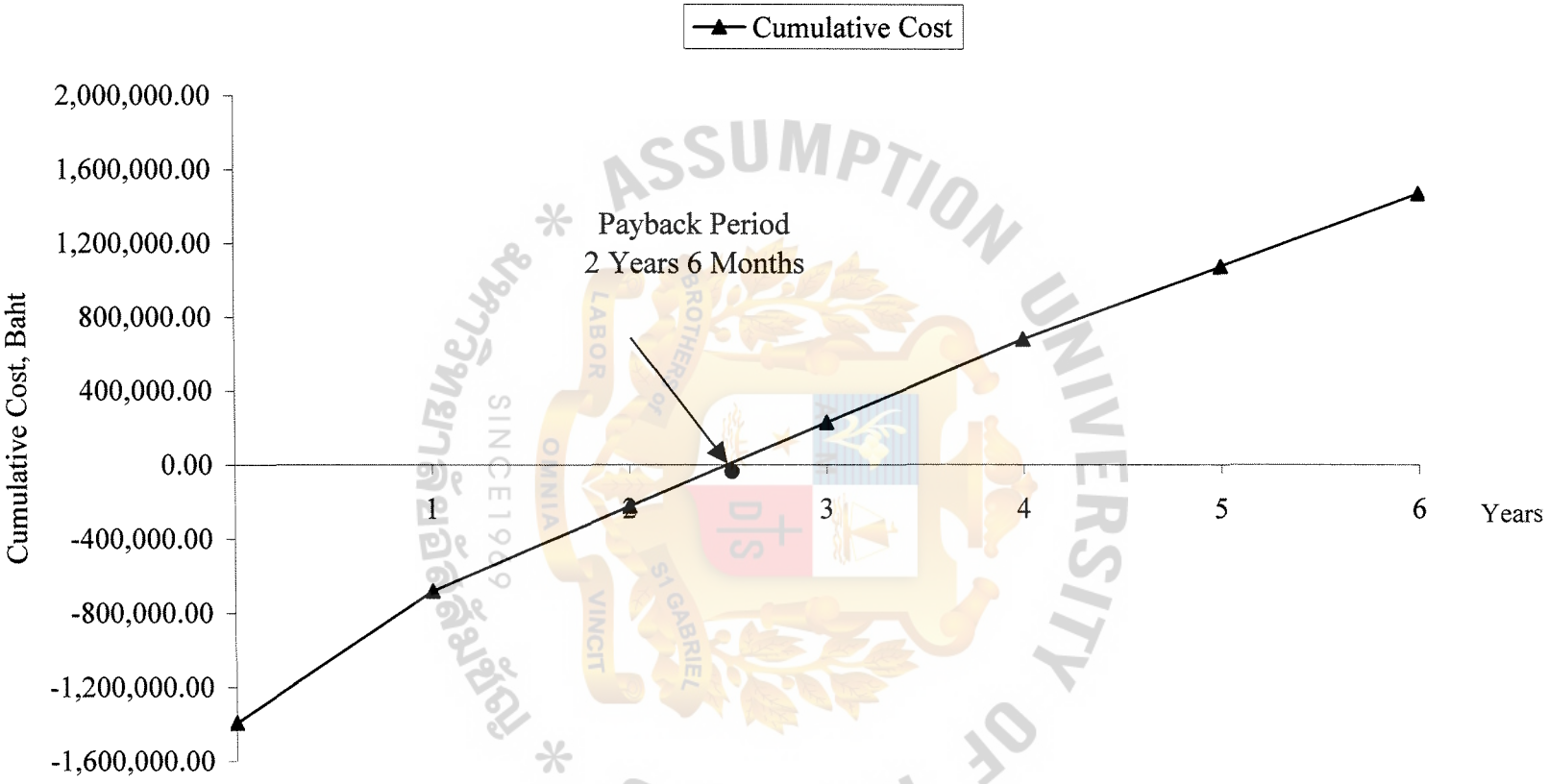


Figure C.1. Payback Analysis for Cadidate System 1.

Table C.6. Net Present Value Analysis for Candidate System 1 (in Baht).

Cost Items	Years						
	0	1	2	3	4	5	6
Development Cost	-1,392,500.00	-	-	-	-	-	-
Operation & maintenance cost	-	-1,160,000.00	-1,354,200.00	-1,468,694.00	-1,573,502.59	-1,778,647.75	-1,903,153.09
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value of annual costs	-1,392,500.00	-1,055,600.00	-1,123,986.00	-1,101,520.50	-1,069,981.76	-1,102,761.61	-1,065,765.73
Total present value of lifetime costs	-	-	-	-	-	-	-7,912,115.60
Existing System Operation Cost	0.00	1,940,500.00	1,904,400.00	2,072,992.00	2,237,767.41	2,416,624.71	2,609,954.69
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value of annual benefits	0.00	1,765,855.00	1,580,652.00	1,554,744.00	1,521,681.84	1,498,307.32	1,461,574.62
Total present value of lifetime benefits	-	-	-	-	-	-	9,382,814.78
NET PRESENT VALUE OF THIS ALTERNATIVE	-	-	-	-	-	-	1,470,699.19
The Net Present Value of this candidate system is 1,470,699.19							

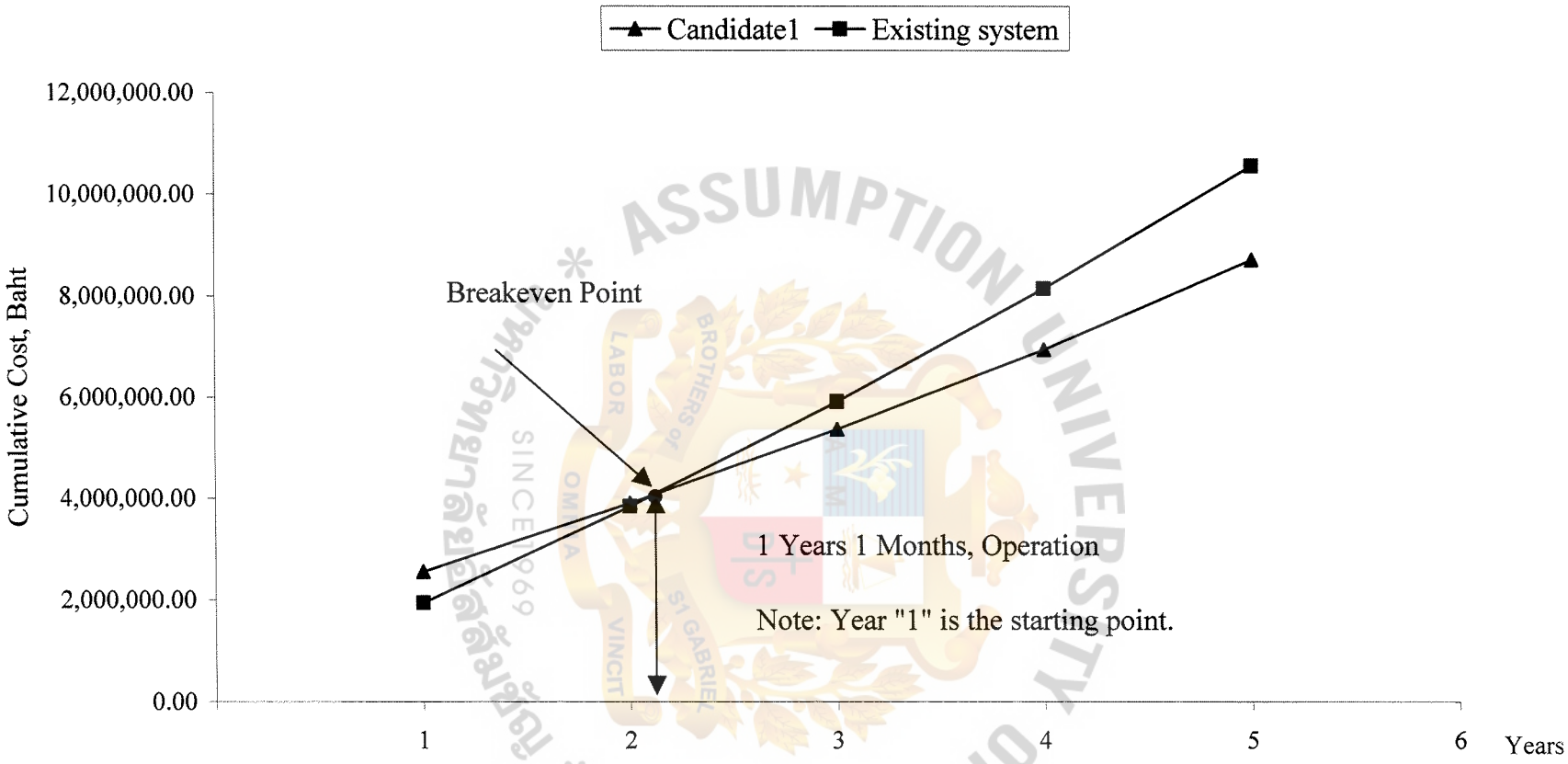


Figure C.2. Cost Comparison between Existing System and Cadidate System 1.

Table C.7. Payback Analysis for Candidate System 2 (in Baht).

Cost Items	Years						
	0	1	2	3	4	5	6
Development Cost	-1,356,500.00	-	-	-	-	-	-
Operation & maintenance cost	-	-1,060,450.00	-1,187,200.00	-1,291,694.00	-1,323,502.59	-1,412,746.05	-1,511,638.27
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Time-adjusted costs (adjusted to present value)	-1,356,500.00	-965,009.50	-985,376.00	-968,770.50	-899,981.76	-875,902.55	-846,517.43
Cumulative time-adjusted costs over lifetime	-1,356,500.00	-2,321,509.50	-3,306,885.50	-4,275,656.00	-5,175,637.76	-6,051,540.31	-6,898,057.75
Existing System Operation Cost	0.00	1,940,500.00	1,904,400.00	2,072,992.00	2,237,767.41	2,416,624.71	2,609,954.69
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Time-adjusted benefits (current of present value)	0.00	1,765,855.00	1,580,652.00	1,554,744.00	1,521,681.84	1,498,307.32	1,461,574.62
Cumulative time-adjusted benefits over lifetime	0.00	1,765,855.00	3,346,507.00	4,901,251.00	6,422,932.84	7,921,240.16	9,382,814.78
Cumulative lifetime time-adjusted cost + benefits	-1,356,500.00	-555,654.50	39,621.50	625,595.00	1,247,295.08	1,869,699.85	2,484,757.04
The Payback Period is approximately 1.11 years.							
Lifetime ROI = (Estimated lifetime benefits - Estimated lifetime costs) / Estimated lifetime costs = 0.17*100 = 17%							

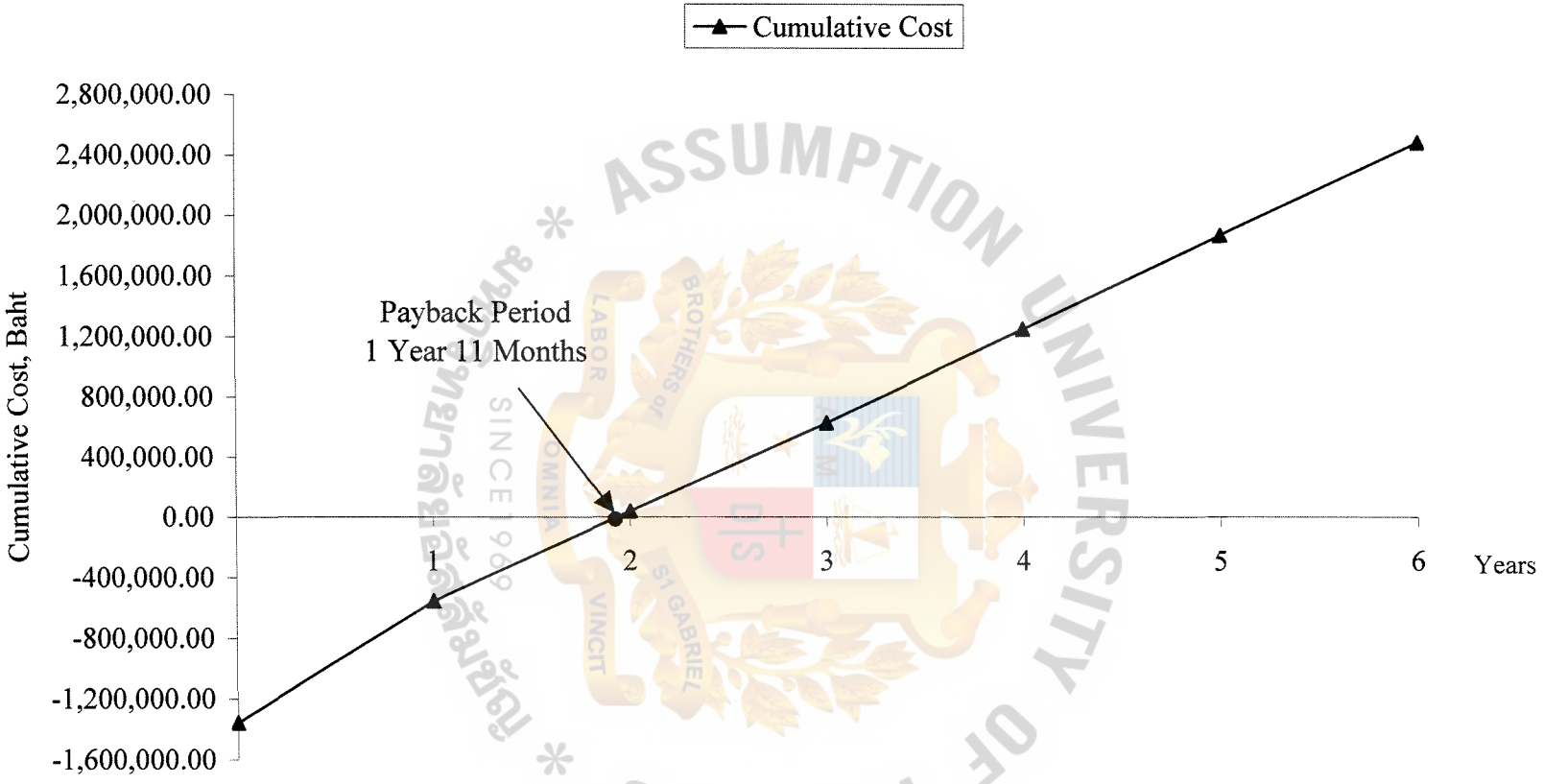


Figure C.3. Payback Analysis for Cadidate System 2.

Table C.8. Net Present Value Analysis for Candidate System 2 (in Baht).

Cost Items	Years						
	0	1	2	3	4	5	6
Development Cost	-1,356,500.00						
Operation & maintenance cost		-1,060,450.00	-1,187,200.00	-1,291,694.00	-1,323,502.59	-1,412,746.05	-1,511,638.27
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value of annual costs	-1,356,500.00	-965,009.50	-985,376.00	-968,770.50	-899,981.76	-875,902.55	-846,517.43
Total present value of lifetime costs	-	-	-	-	-	-	-6,898,057.75
Existing System Operation Cost	0.00	1,940,500.00	1,904,400.00	2,072,992.00	2,237,767.41	2,416,624.71	2,609,954.69
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value of annual benefits	0.00	1,765,855.00	1,580,652.00	1,554,744.00	1,521,681.84	1,498,307.32	1,461,574.62
Total present value of lifetime benefits	-	-	-	-	-	-	9,382,814.78
NET PRESENT VALUE OF THIS ALTERNATIVE	-	-	-	-	-	-	2,484,757.04
The Net Present Value of this candidate system is 2,484,757.04							

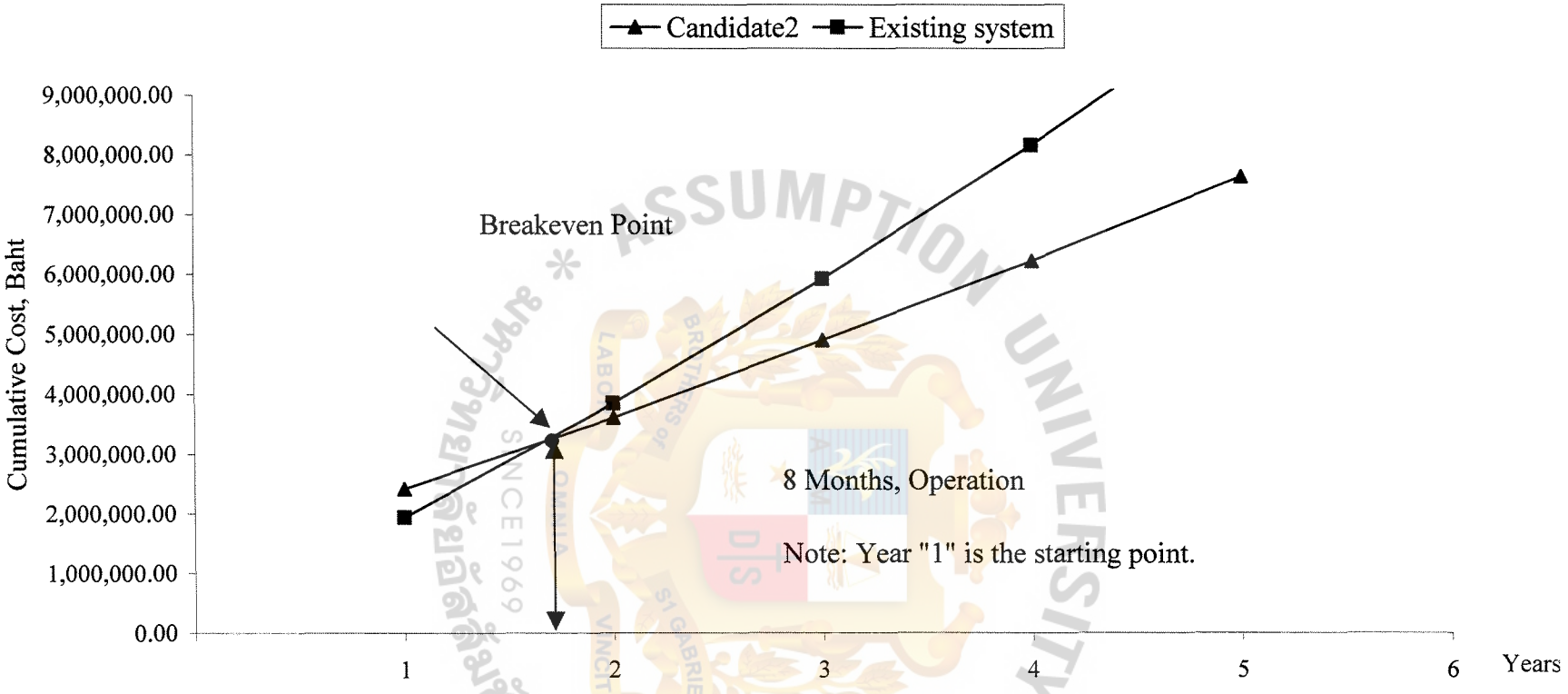


Figure C.4. Cost Comparison between Existing System and Cadidate System 2.

Table C.9. Payback Analysis for Candidate System 3 (in Baht).

Cost Items	Years						
	0	1	2	3	4	5	6
Development Cost	-2,139,500.00	-	-	-	-	-	-
Operation & maintenance cost	-	-872,000.00	-927,040.00	-982,432.80	-1,048,203.11	-1,428,475.60	-1,528,468.89
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Time-adjusted costs (adjusted to present value)	-2,139,500.00	-793,520.00	-769,443.20	-736,824.60	-712,778.11	-885,654.87	-855,942.58
Cumulative time-adjusted costs over lifetime	-2,139,500.00	-2,933,020.00	-3,702,463.20	-4,439,287.80	-5,152,065.91	-6,037,720.79	-6,893,663.37
Existing System Operation Cost	0.00	1,940,500.00	1,904,400.00	2,072,992.00	2,237,767.41	2,416,624.71	2,609,954.69
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Time-adjusted benefits (current of present value)	0.00	1,765,855.00	1,580,652.00	1,554,744.00	1,521,681.84	1,498,307.32	1,461,574.62
Cumulative time-adjusted benefits over lifetime	0.00	1,765,855.00	3,346,507.00	4,901,251.00	6,422,932.84	7,921,240.16	9,382,814.78
Cumulative lifetime time-adjusted cost + benefits	-2,139,500.00	-1,167,165.00	-355,956.20	461,963.20	1,270,866.92	1,883,519.37	2,489,151.42
The Payback Period is approximately 2.4 years.							
Lifetime ROI = (Estimated lifetime benefits - Estimated lifetime costs) / Estimated lifetime costs = 0.25*100 = 25%							

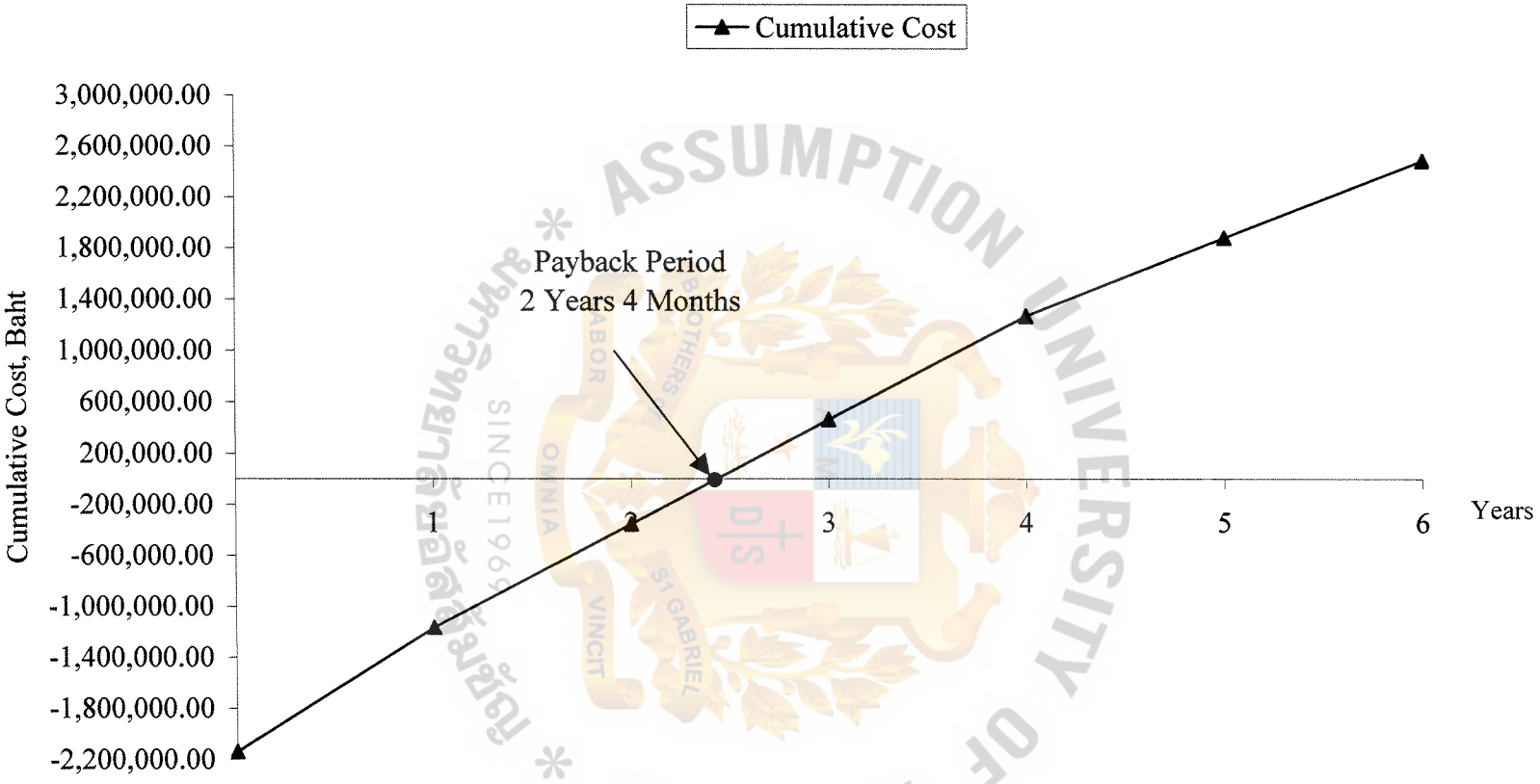


Figure C.5. Payback Analysis for Cadidate System 3.

Table C.10. Net Present Value Analysis for Candidate System 3 (in Baht).

Cost Items	Years						
	0	1	2	3	4	5	6
Development Cost	-2,139,500.00	-	-	-	-	-	-
Operation & maintenance cost	-	-872,000.00	-927,040.00	-982,432.80	-1,048,203.11	-1,428,475.60	-1,528,468.89
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value of annual costs	-2,139,500.00	-793,520.00	-769,443.20	-736,824.60	-712,778.11	-885,654.87	-855,942.58
Total present value of lifetime costs	-	-	-	-	-	-	-6,893,663.37
Existing System Operation Cost	0.00	1,940,500.00	1,904,400.00	2,072,992.00	2,237,767.41	2,416,624.71	2,609,954.69
Discount factors for 10%	1.00	0.91	0.83	0.75	0.68	0.62	0.56
Present value of annual benefits	0.00	1,765,855.00	1,580,652.00	1,554,744.00	1,521,681.84	1,498,307.32	1,461,574.62
Total present value of lifetime benefits	-	-	-	-	-	-	9,382,814.78
NET PRESENT VALUE OF THIS ALTERNATIVE	-	-	-	-	-	-	2,489,151.42
The Net Present Value of this candidate system is 2,489,515.42							

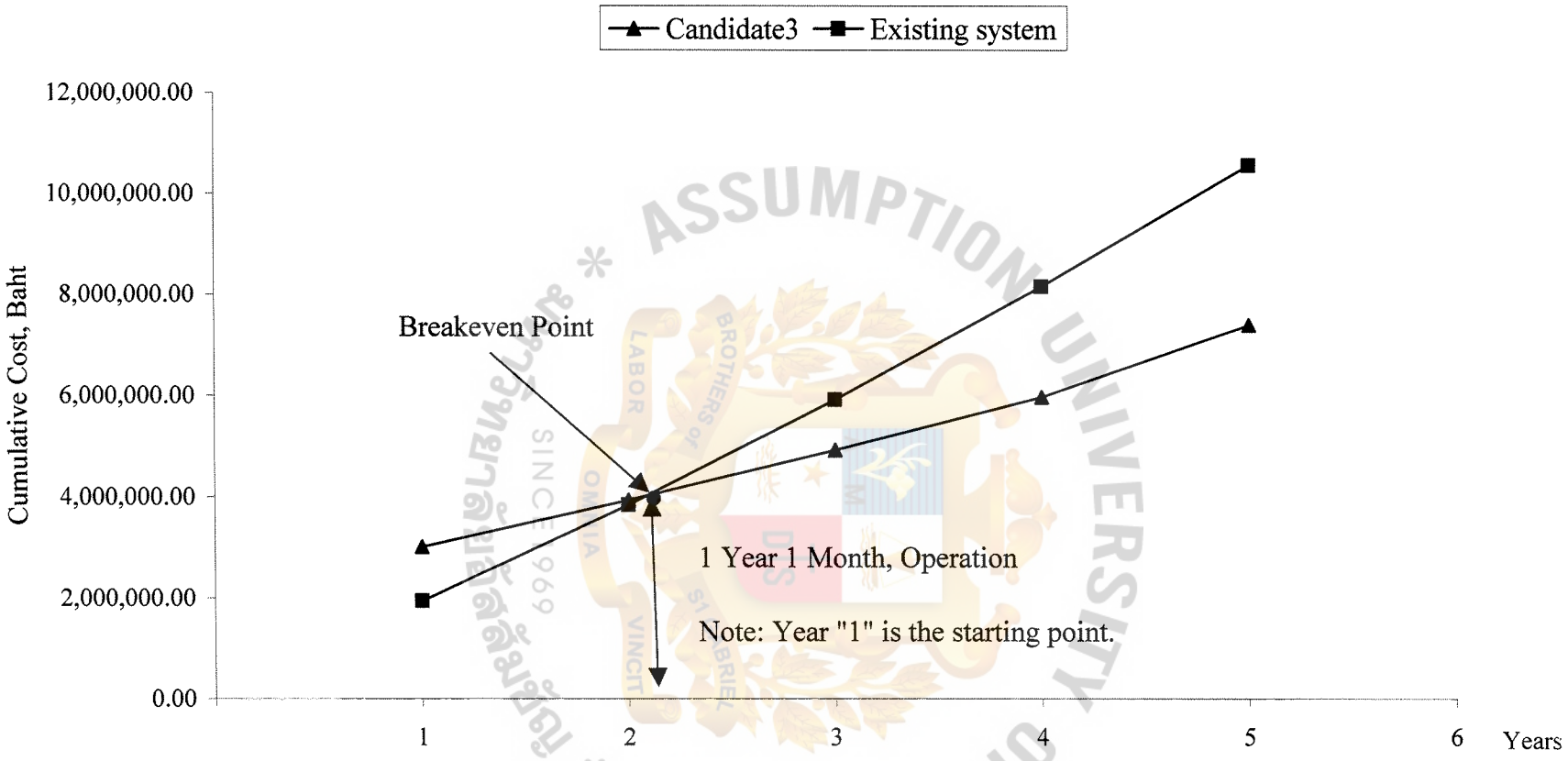


Figure C.6. Cost Comparison between Existing System and Cadidate System 3.

APPENDIX D

STRUCTURE CHART

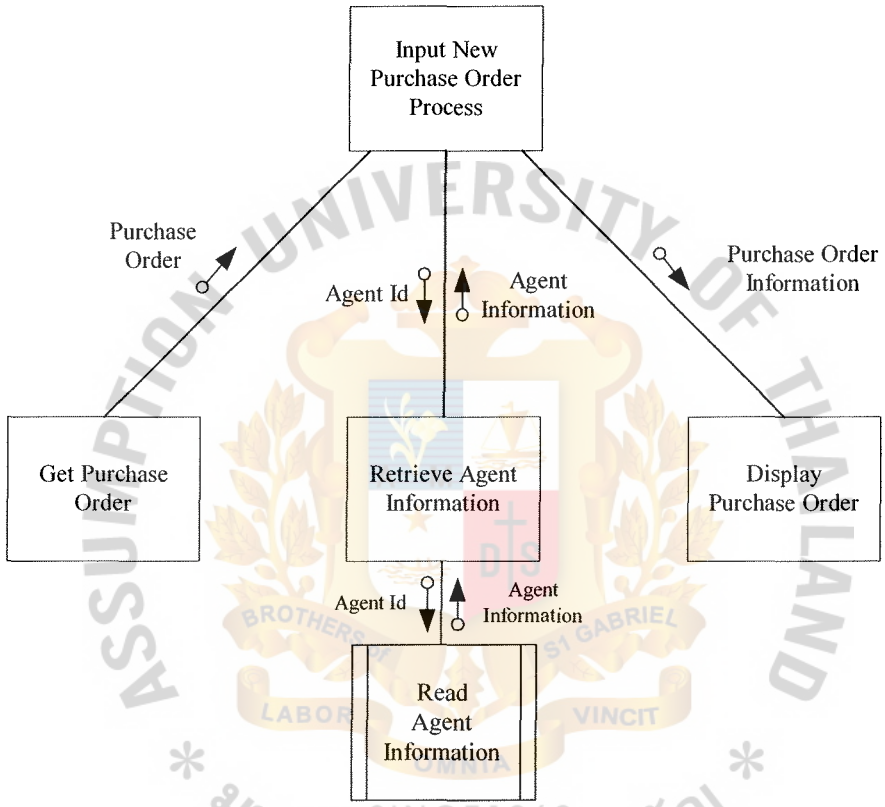


Figure D.1. Structure Chart of Input New Purchase Order Process.

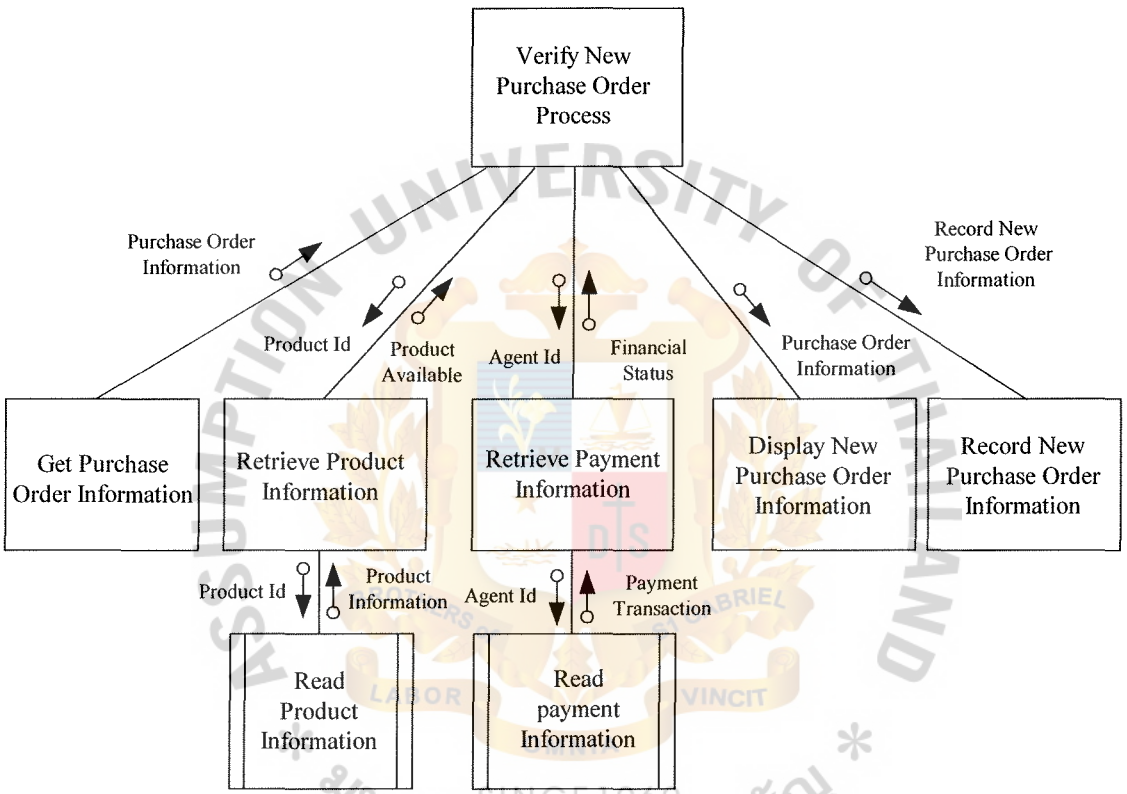


Figure D.2. Structure Chart of Verify New Purchase Order Process.

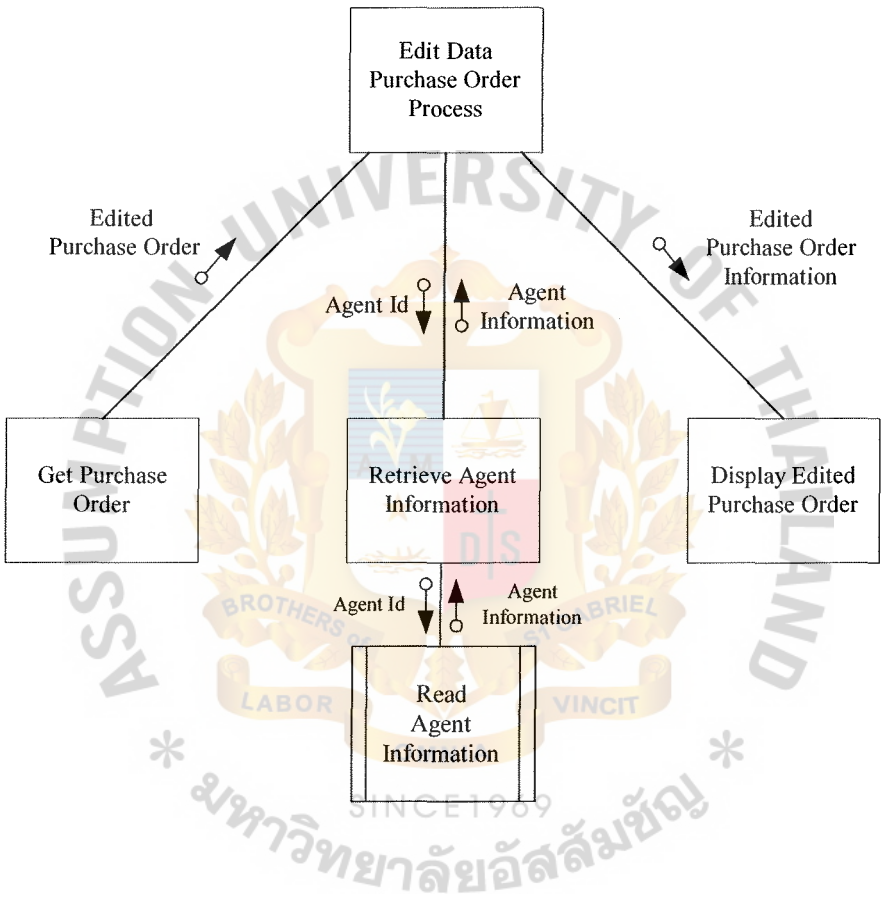


Figure D.3. Structure Chart of Edit Data Purchase Order Process.

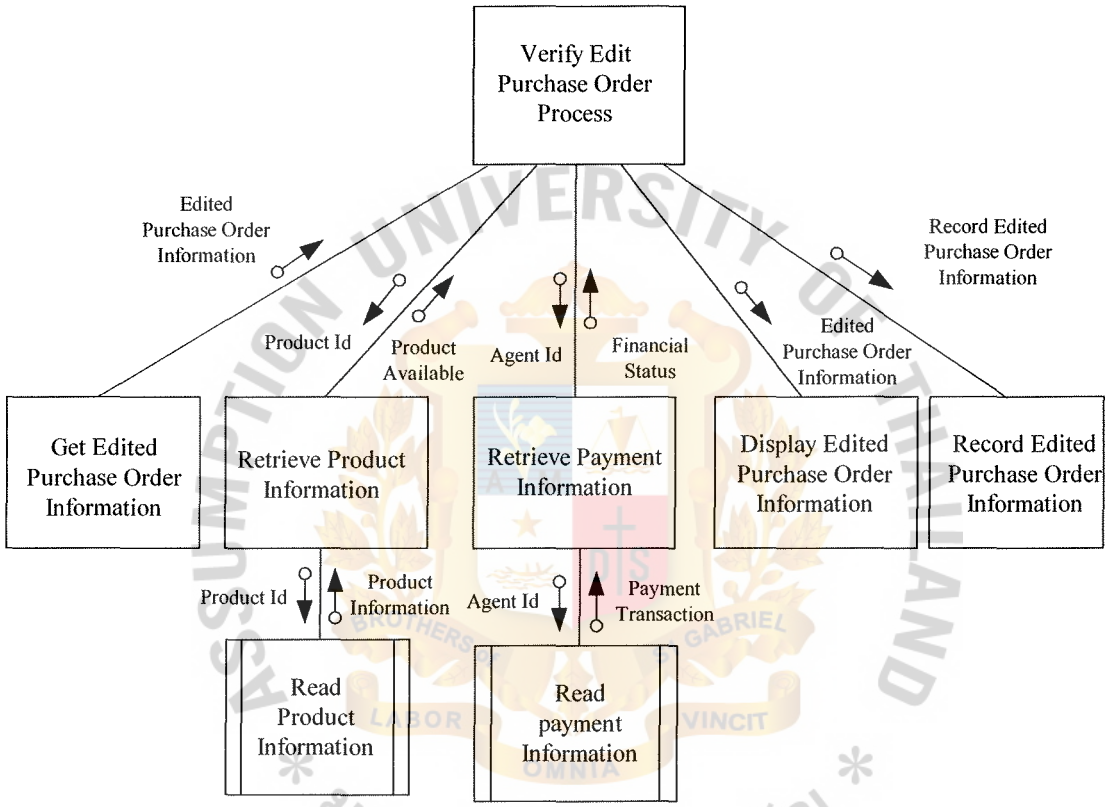


Figure D.4. Structure Chart of Verify Edit Purchase Order Process.

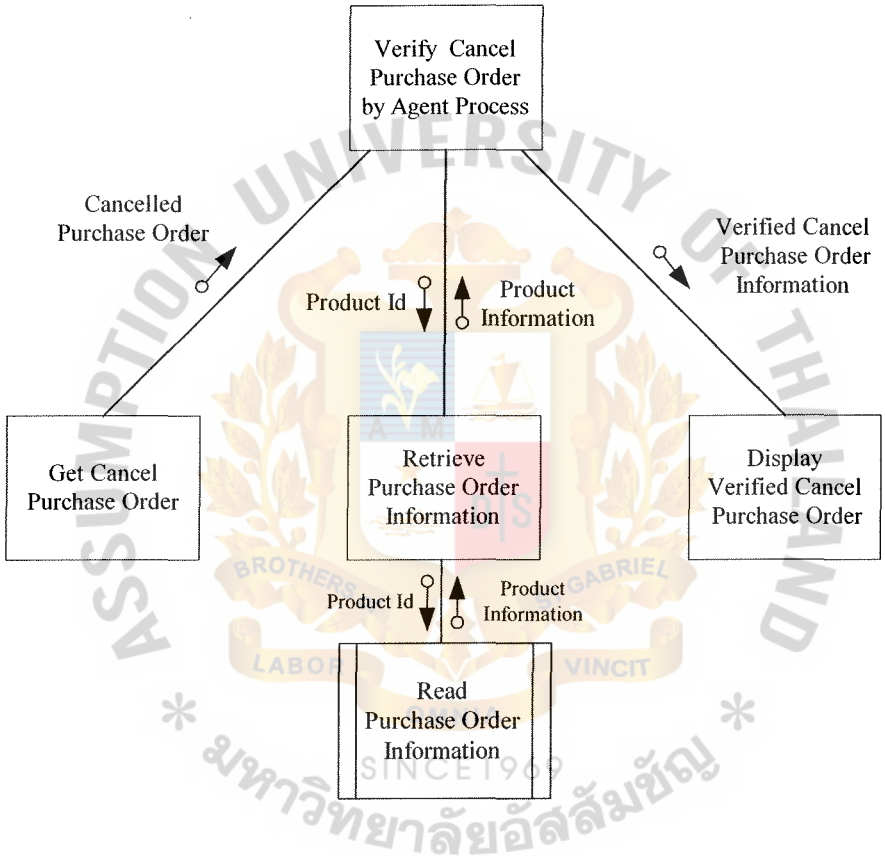


Figure D.5. Structure Chart of Verify Cancel Purchase Order by Agent Process.

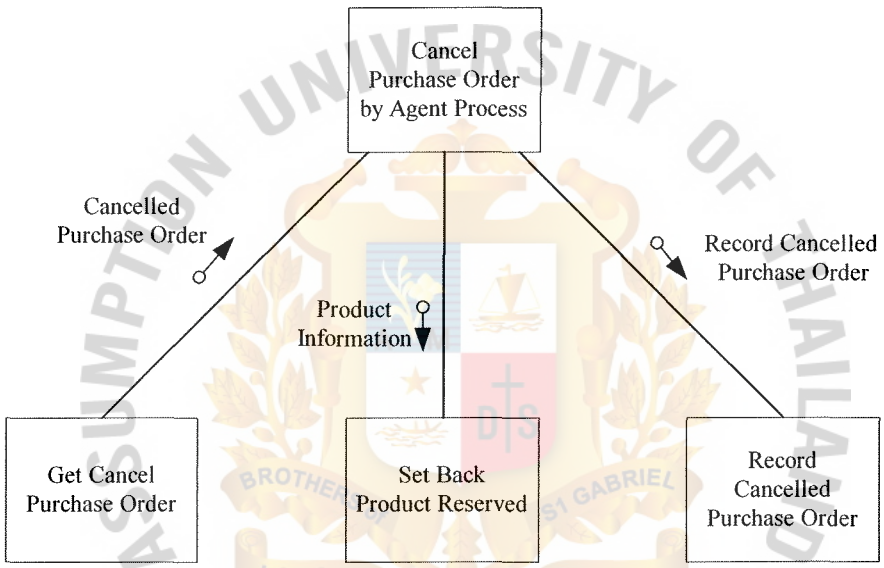


Figure D.6. Structure Chart of Cancel Purchase Order by Agent Process.

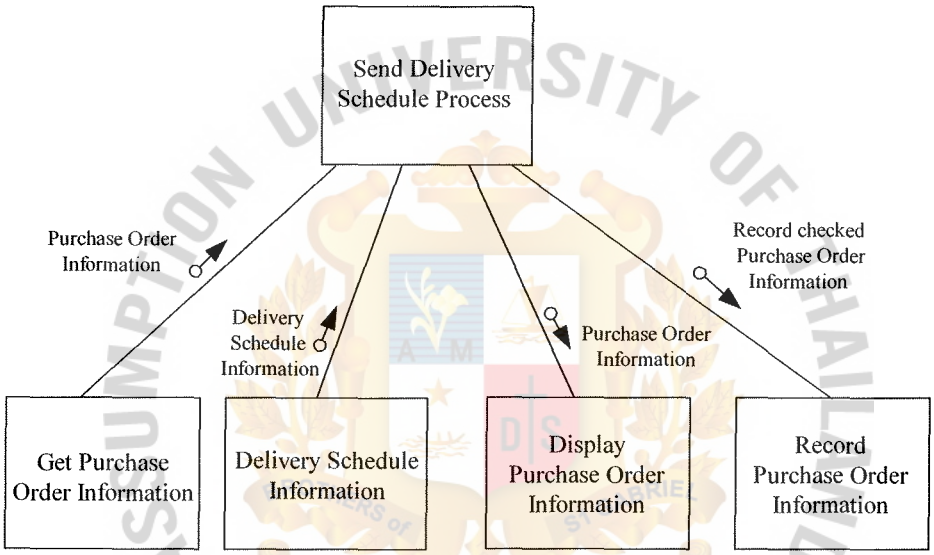


Figure D.7. Structure Chart of Send Delivery Schedule Process.

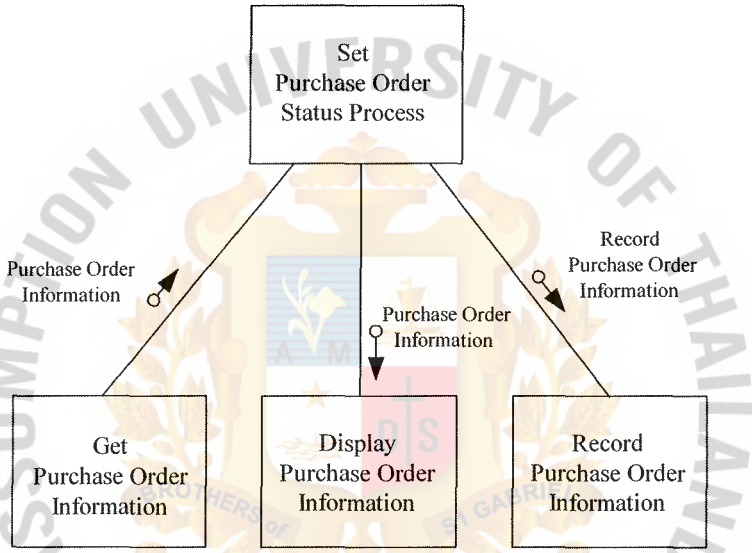


Figure D.8. Structure Chart of Set Purchase Order Status Process.

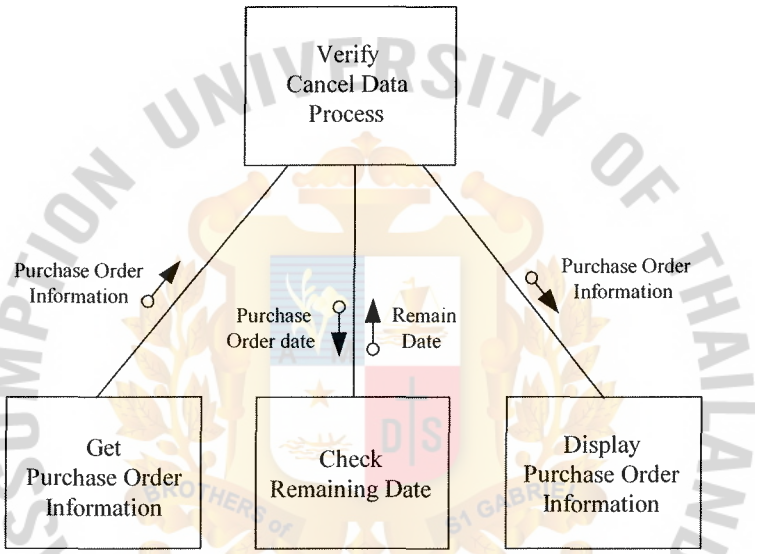


Figure D.9. Structure Chart of Verify Cancel Data Process.

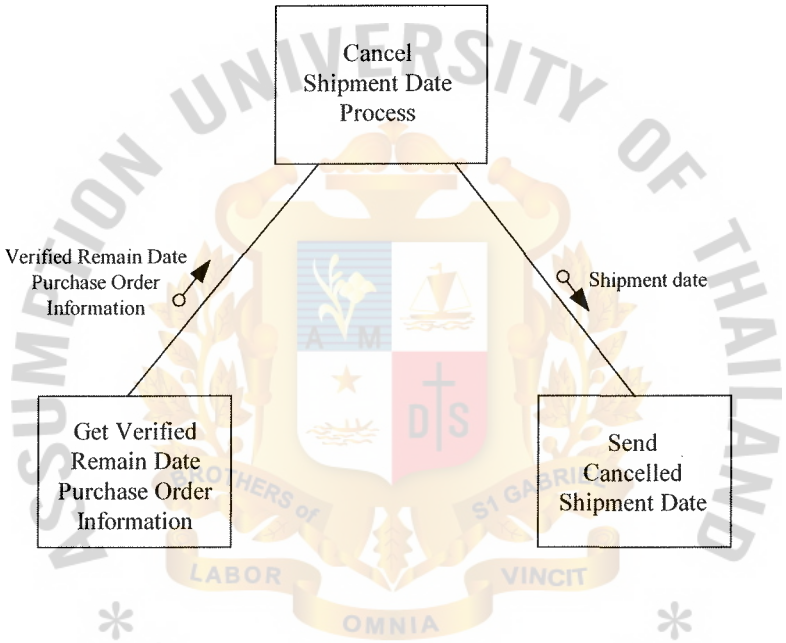


Figure D.10. Structure Chart of Cancel Shipment Date Process.

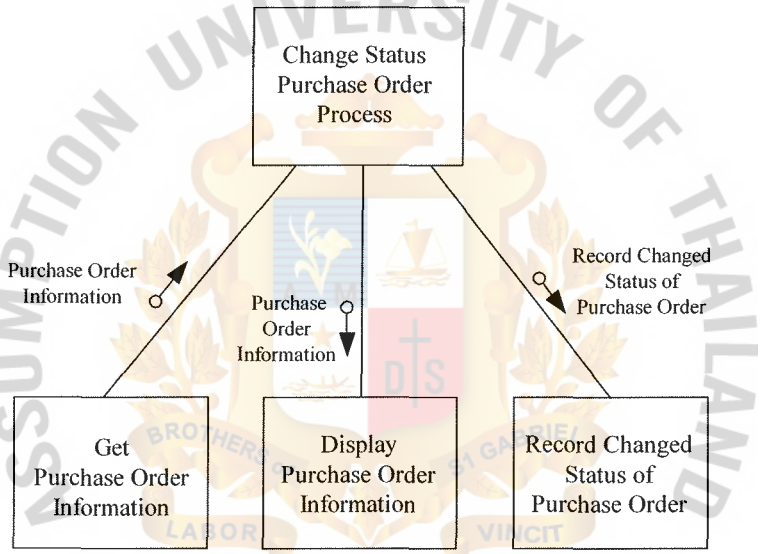


Figure D.11. Structure Chart of Change Status Purchase Order Process.

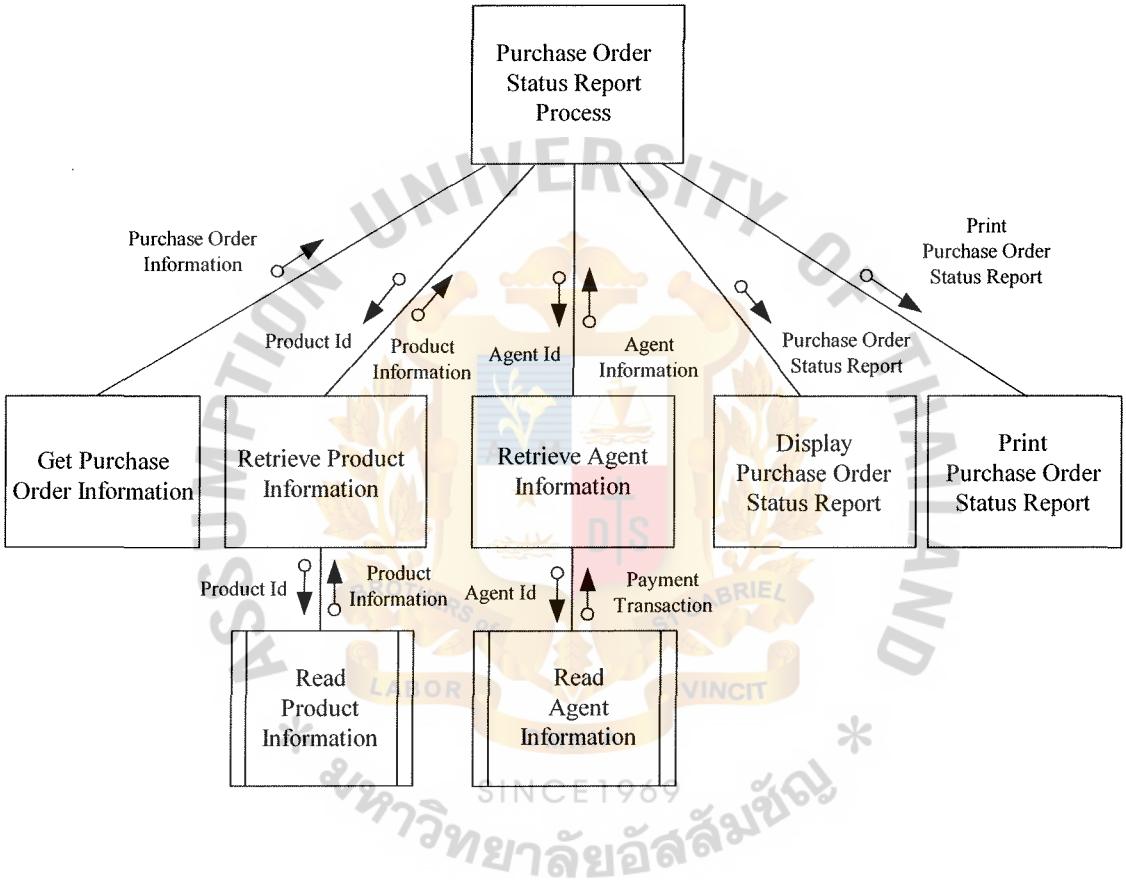


Figure D.12. Structure Chart of Purchase Order Status Report Process.

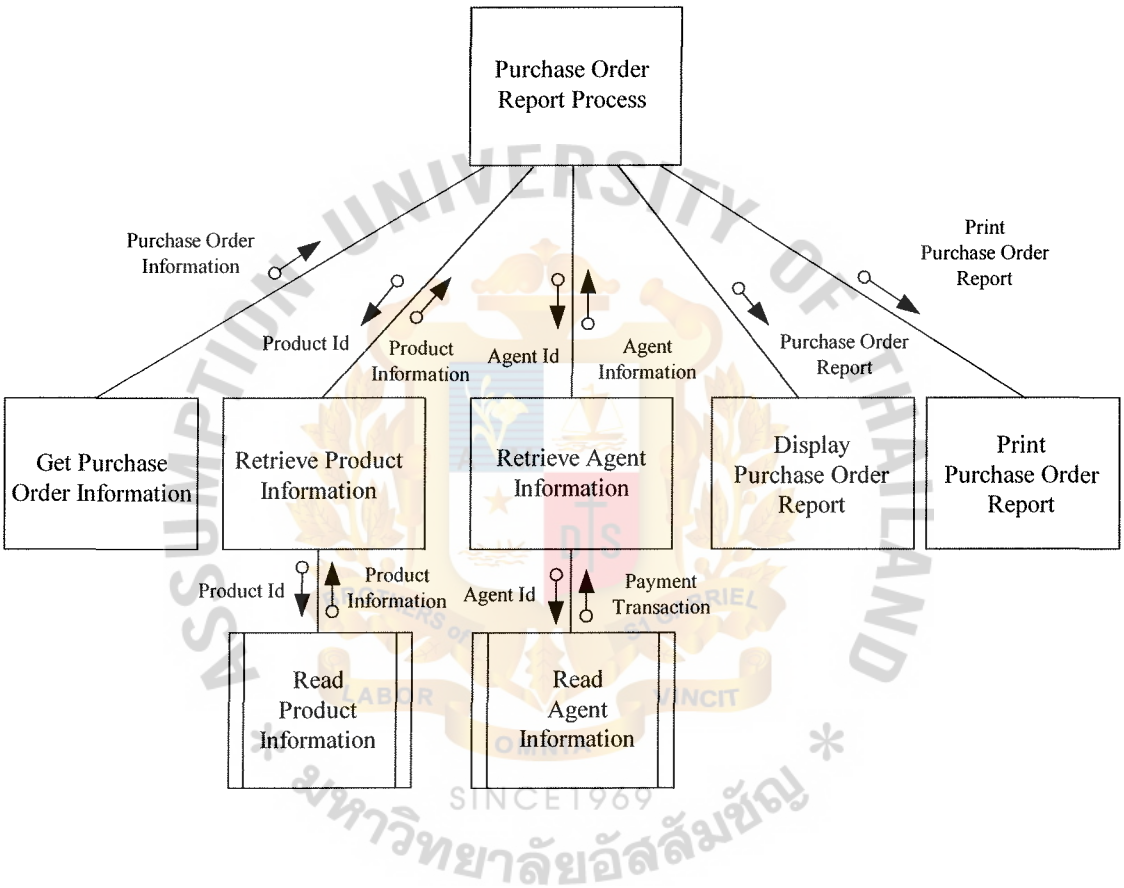


Figure D.13. Structure Chart of Purchase Order Status Report Process.

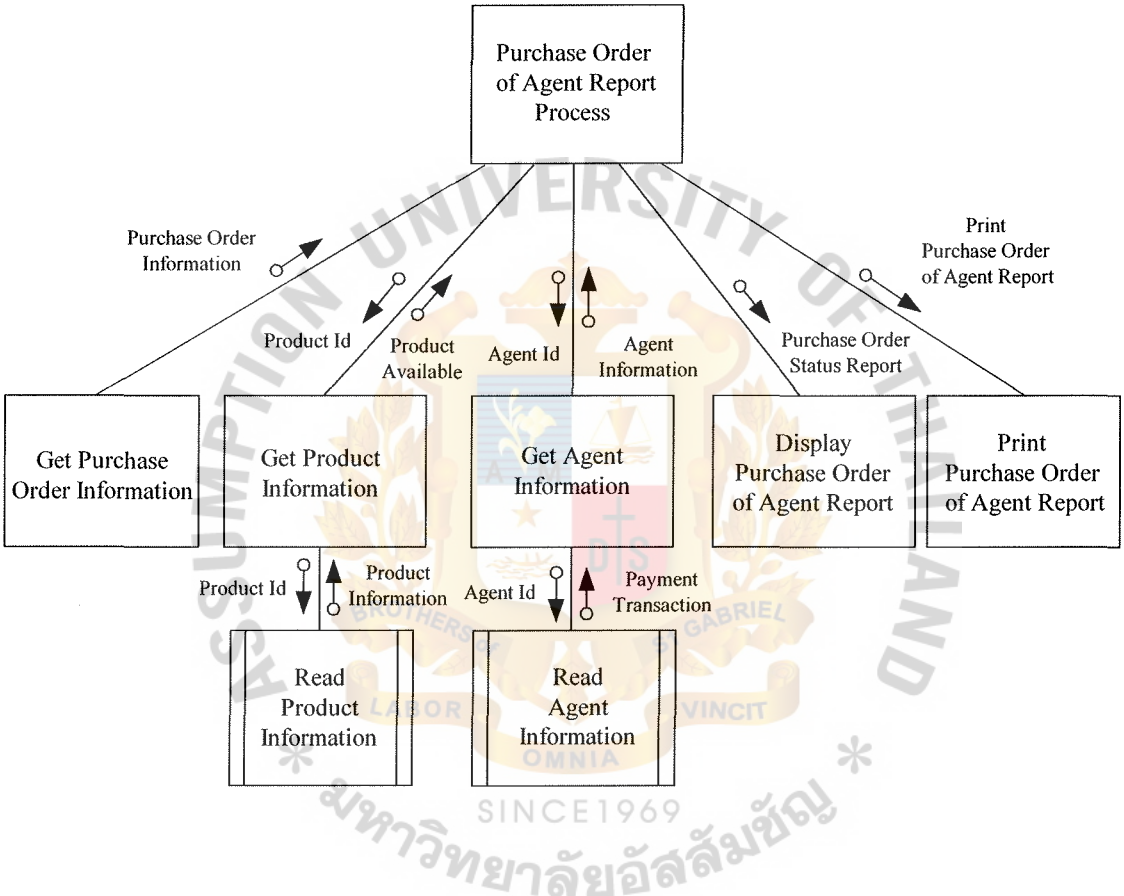


Figure D.14. Structure Chart of Purchase Order of Agent Report Process.

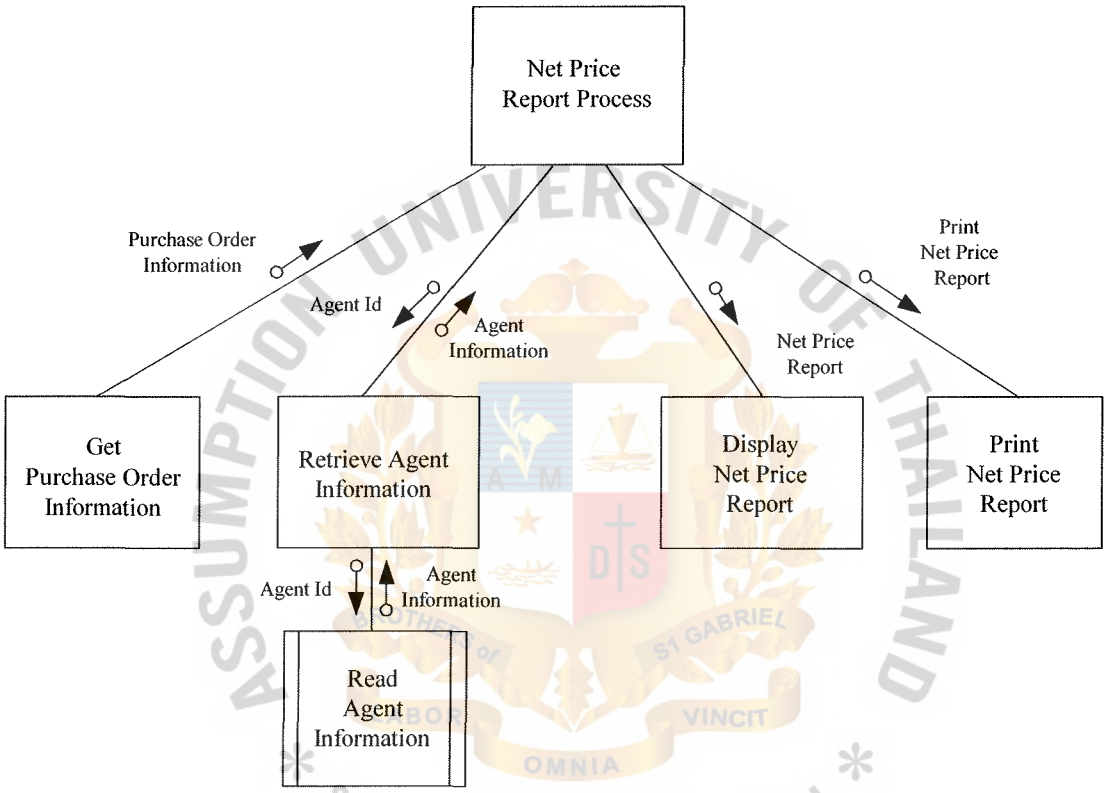


Figure D.15. Structure Chart of Net Price Report Process.

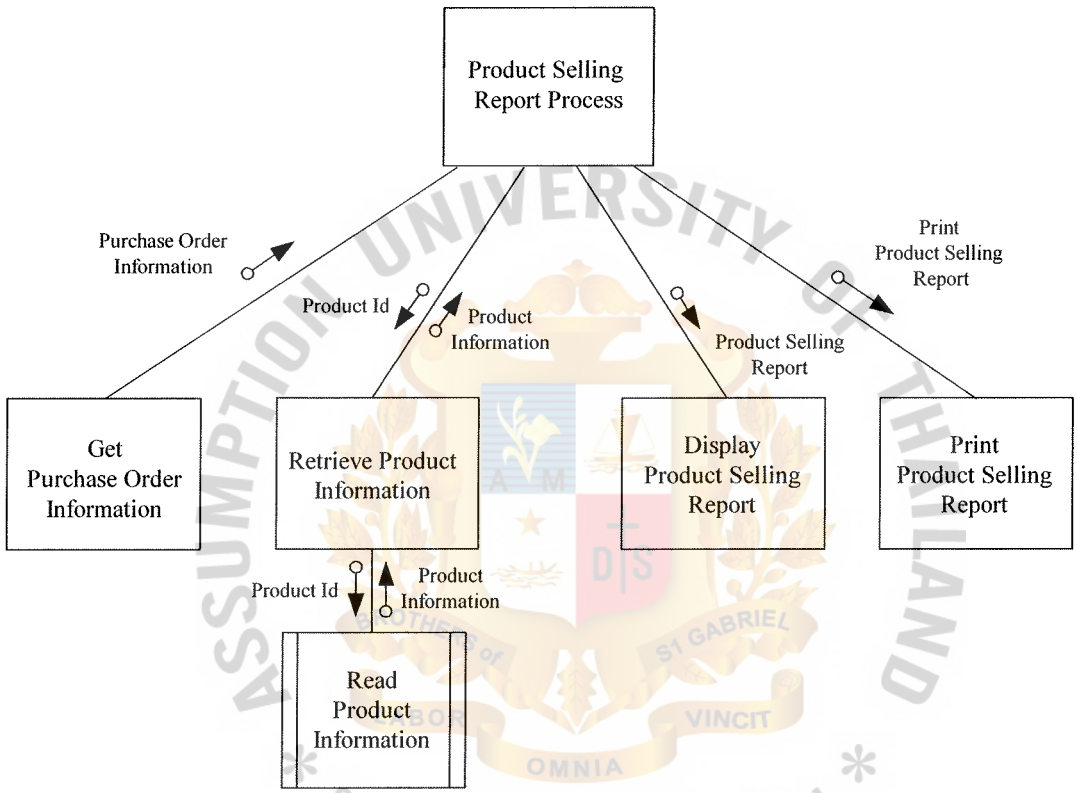


Figure D.16. Structure Chart of Product Selling Report Process.

APPENDIX E

PROCESS SPECIFICATION

PROCESS SPECIFICATION

Table E.1. Process Specification of Process 1.1.1.

Items	Descriptions
Process Name:	Input New Purchase Order Process
Data In:	Purchase Order Agent Information
Data Out:	Purchase Order Information
Process:	(1) Get new purchase order such as … (2) Retrieve agent information from agent Database. (3) Send order information to verify product process.
Attachment:	(1) Agent (2) Data Store D2

Table E.2. Process Specification of Process 1.1.2.

Items	Descriptions
Process Name:	Verify New Product Process
Data In:	Purchase Order Information Product Available Financial Status
Data Out:	Invalid Purchase Order Information Valid purchase Order Information
Process:	(1) Receive the Purchase order information from input new purchase order process. (2) Retrieve Financial Status (3) Retrieve Product Information (4) Verify Purchase Order information. (5) Send invalid purchase order information to agent. (6) Record valid New Purchase Order Information to Purchase Order database.
Attachment:	(1) Agent (2) Data Store D1 (3) Data Store D3 (4) Data Store D4

Table E.3. Process Specification of Process 1.2.1.

Items	Descriptions
Process Name:	Edit Data Purchase Order Process
Data In:	Modified Purchase Order Agent Information
Data Out:	Edited Purchase Order Information
Process:	(1) Get modified purchase order. (2) Retrieve agent information from agent database. (3) Edit modified purchase order information. (4) Send order information to verify edit product process.
Attachment:	(1) Agent (2) Data Store D2

Table E.4. Process Specification of Process 1.2.2.

Items	Descriptions
Process Name:	Verify Edit Product Process
Data In:	Edited Purchase Order Information Product Available
Data Out:	Invalid purchase Order Information Valid Purchase Order Information
Process:	(1) Receive the order information from edit data purchase order process. (2) Verify order information. (3) Send invalid order information to agent. (4) Send valid Purchase Order information to Purchase Order database
Attachment:	(1) Agent (2) Data Store D1 (3) Data Store D3 (4) Data Store D4

Table E.5. Process Specification of Process 1.3.1.

Items	Descriptions
Process Name:	Verify Cancel Purchase Order by Agent Process
Data In:	Purchase Order Information Cancel Purchase Order
Data Out:	Verified Purchase Order Information
Process:	(1) Get purchase order. (2) Retrieve Purchase Order information from Purchase Order database. (3) Verify cancel purchase order information. (4) Send verify purchase order to Cancel purchase order by agent process.
Attachment:	(1) Agent (2) Data Store D1

Table E.6. Process Specification of Process 1.3.2.

Items	Descriptions
Process Name:	Cancel Purchase Order by Agent Process
Data In:	Verified Purchase Order Information
Data Out:	Cancelled Purchase Order Information
Process:	(1) Get verify Purchase Order from verify cancel purchase order process. (2) Cancel Purchase Order. (3) Record cancelled Purchase Order information to Purchase Order database.
Attachment:	(1) Agent (2) Data Store D1

Table E.7. Process Specification of Process 2.1.1.

Items	Descriptions
Process Name:	Send Delivery Schedule Process
Data In:	Purchase Order Information Verify Purchase Order Collision Delivery Schedule
Data Out:	Invalid Purchase Order Information Delivery Information Shipment date checked Purchase Order
Process:	(1) Get verify Purchase Order from marketing. (2) Retrieve Purchase Order information from Purchase Order database (3) Get collision delivery schedule from inventory. (4) Send invalid order information to agent. (5) Send delivery information to inventory. (6) Send Shipment date checked Purchase Order to set Purchase Order status process.
Attachment:	(1) Agent (2) Inventory (3) Marketing (4) Data Store D1

Table E.8. Process Specification of Process 2.1.2.

Items	Descriptions
Process Name:	Set Purchase Order Status Process
Data In:	Shipment date checked Purchase Order
Data Out:	Order Information Purchase Order Status
Process:	(1) Get order information from delivery schedule process. (2) Set purchase order status. (3) Record Purchase Order Status to Purchase Order database.
Attachment:	(1) Data Store D1

Table E.9. Process Specification of Process 2.2.1.

Items	Descriptions
Process Name:	Verify Cancel Data Process
Data In:	Verify purchase Order Purchase Order Information
Data Out:	Verified purchase Order Information
Process:	(1) Get Purchase Order information from Purchase Order database. (2) Set Verify purchase Order. (3) Send Verified purchase Order Information to Cancel Shipment Date Process Process.
Attachment:	(1) Marketing (2) Data Store D1

Table E.10. Process Specification of Process 2.2.2.

Items	Descriptions
Process Name:	Cancel Shipment Date Process
Data In:	Verify purchase Order Information Purchase Order Information
Data Out:	Cancelled Shipment Date Cancelled Purchase Order Information
Process:	(1) Get Verify purchase Order Information from Verify Cancel Data Process. (2) Send Cancel Shipment Date to Inventory Department. (3) Send Cancelled Purchase Order Information to Change Status Purchase Order Process.
Attachment:	(1) Inventory

Table E.11. Process Specification of Process 2.2.3.

Items	Descriptions
Process Name:	Change Status Purchase Order Process
Data In:	Cancelled Purchase Order Information
Data Out:	Record Cancelled Purchase Order Information
Process:	(1) Get Cancelled Purchase Order Information from Cancel Shipment Date Process (2) Set purchase order status. (3) Record Purchase Order Status to Purchase Order database.
Attachment:	(1) Data Store D1

Table E.12. Process Specification of Process 3.1.1.

Items	Descriptions
Process Name:	Purchase Order Status Report Process
Data In:	Purchase Order Information Agent Information Product information
Data Out:	Purchase Order Status Report
Process:	(1) Get Purchase Order Information from Purchase Order Database. (2) Get Product Information from Product Database. (3) Get Agent Information from Agent Database. (4) Generate Purchase Order Status Report.
Attachment:	(1) Data Store D1 (2) Data Store D2 (3) Data Store D3 (4) Marketing

Table E.13. Process Specification of Process 3.1.2.

Items	Descriptions
Process Name:	Purchase Order Report Process
Data In:	Purchase Order Information Agent Information Product information
Data Out:	Purchase Order Report
Process:	(1) Get Purchase Order Information from Purchase Order Database. (2) Get Product Information from Product Database. (3) Get Agent Information from Agent Database. (4) Generate Purchase Order Report.
Attachment:	(1) Data Store D1 (2) Data Store D2 (3) Data Store D3 (4) Marketing

Table E.14. Process Specification of Process 3.2.1.

Items	Descriptions
Process Name:	Agent Report Process
Data In:	Purchase Order Information Agent Information Product information
Data Out:	Agent Report
Process:	(1) Get Purchase Order Information from Purchase Order Database. (2) Get Product Information from Product Database. (3) Get Agent Information from Agent Database. (4) Generate Agent Report.
Attachment:	(1) Data Store D1 (2) Data Store D2 (3) Data Store D3 (4) Agent

Table E.15. Process Specification of Process 3.3.1.

Items	Descriptions
Process Name:	Net Price Report Process
Data In:	Purchase Order Information Agent Information
Data Out:	Net Price Report
Process:	(1) Get Purchase Order Information from Purchase Order Database. (2) Get Agent Information from Agent Database. (3) Generate Net Price Report.
Attachment:	(1) Data Store D1 (2) Data Store D2 (4) Finance

Table E.16. Process Specification of Process 3.4.1.

Items	Descriptions
Process Name:	Product Selling Report Process
Data In:	Purchase Order Information Product Information
Data Out:	Product Selling Report
Process:	(1) Get Purchase Order Information from Purchase Order Database. (2) Get Product Information from Product Database. (3) Generate Product Selling Report.
Attachment:	(1) Data Store D1 (2) Data Store D3 (4) Inventory

APPENDIX F

DATABASE DESIGN

STRUCTURE OF DATABASE TABLE

Table F.1. Structure of Agent Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	Agent_ID	Char(10)	Y	Y				Primary Key
2	Agent_Name	Char(150)						Attribute
3	Address	Char(250)						Attribute
4	Province	Char(150)						Attribute
5	County	Char(150)						Attribute
6	Postcode	Char(5)			Y			Attribute
7	Tel	Char(30)						Attribute
8	Mobile	Char(30)			Y			Attribute
9	Payment_Type	Char(1)						Attribute
10	Credit_Limit	Float(10,2)						Attribute
11	Status	Char(1)						Attribute
12	Last_update	Char(10)						Attribute
13	Last_access	Date						Attribute

Table F.2. Structure of Payment Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	Payment_ID	Char(10)	Y	Y				Primary Key
2	Agent_ID	Char(10)				Agent		Foreign Key
3	Paid_dated	Date						Attribute
4	Tax	Float(4,2)			Y			Attribute
5	Amount	Float(10,2)						Attribute
6	Remainder	Float(10,2)						Attribute
7	Status	Char(1)						Attribute
8	Last_update	Char(10)						Attribute
9	Last_access	Date						Attribute

Table F.3. Structure of PO_Header.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	PO_ID	Char(10)	Y	Y				Primary Key
2	Agent_ID	Char(10)				Agent		Foreign Key
3	Revise_NO	Char(2)			Y			Attribute
4	Net_Price	Float(10,2)			Y			Attribute
5	DS_flag	Boolean						Attribute
6	Status	Char(1)						Attribute
7	Compelete_flag	Char(1)			Y			Attribute
8	Remark	Char(250)			Y			Attribute
9	Comment	Char(150)			Y			Attribute

Table F.3. Structure of PO_Header (continued).

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
10	Create_by	Char(10)			Y			Attribute
11	Create_Date	Date			Y			Attribute
12	Approve_by	Char(10)			Y			Attribute
13	Approve _Date	Date			Y			Attribute
14	Submit_by	Char(10)			Y			Attribute
15	Submit _Date	Date			Y			Attribute
16	Last_update	Char(10)						Attribute
17	Last_access	Date						Attribute

Table F.4. Structure of PO_Line Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	PO_ID	Char(4)	Y	Y		PO_Header		Foreign Key
2	Product _ID	Char(15)	Y	Y		Product		Foreign Key
3	QTY	Char(10)						Attribute
4	Cash_discount	Float(5,2)			Y			Attribute
5	Tax	Float(5,2)			Y			Attribute
6	Amount	Float(10,2)						Attribute
7	Status	Char(1)						Attribute

Table F.5. Structure of Product Table.

No.	Field Name	Field Type	Index	Unique	Nullable	Foreign Key to Table	Check	Key Type
1	Product_ID	Char(10)	Y	Y				Primary Key
2	Product_Name	Char(100)						Attribute
3	Status	Char(1)						Attribute
4	QTY	Char(15)					>=0	Attribute
5	Selling_price	Float(10,2)					>=0	Attribute
6	Last_update	Char(10)						Attribute
7	Last_access	Date						Attribute

APPENDIX G

DATA DICTIONARY

DATA DICTIONARY

Table G.1. Data Dictionary of Agent Table.

Field Name	Meaning
Agent _ID	Identity of agent
Agent_Name	Name of agent
Address	Address of agent
Province	Province of agent
Country	Country of agent
Postcode	Postcode of agent
Tel	Telephone number of agent
Mobile	Mobile phone number of agent
Status	Status of agent
Last_update	UserID of user who is latest update
Last_access	Date of user which is latest update

Table G.2. Data Dictionary of Payment Table.

Field Name	Meaning
Payment_ID	Identity of payment transaction
Agent_ID	Identity of agent
Paid_date	Paid date
Tax	Tax
Amount	Amount of payment
Remainder	Remainder of payment
Last_update	UserID of user who is latest update
Last_access	Date of user which is latest update

Table G.3. Data Dictionary of PO_Header Table.

Field Name	Meaning
PO_ID	Identity of purchase order
Agent_ID	Identity of Agent
Revise_NO	Number of revise
DS_flag	Flag of delivery
Status	Status of purchase order
Complete_flag	Complete flag of purchase order
Remark	Remark of purchase order
Comment	Comment of Marketing Department
Create_by	User who create purchase order
Create_date	Create date
Approved_by	User who approve purchase order
Approved_date	Approve date
Submit_by	User who submit purchase order
Submit_date	Submit date
Last_update	UserID of user who is latest update
Last_access	Date of user which is latest update

Table G.4. Data Dictionary of PO_LINE Table.

Field Name	Meaning
PO_ID	Location Code
Product_ID	Identity of product
QTY	Quantity of product
Selling_price	Selling price of product
Tax	Tax
Amount	Amount price

Table G.5. Data Dictionary of Product Table.

Field Name	Meaning
Product_ID	Identity of product
Product_Name	Name of Product
QTY	Quantity of product
Selling_price	Selling price of product
Status	Status of product
Last_update	UserID of user who is latest update
Last_access	Date of user which is latest update

APPENDIX H

INTERFACE DESIGN

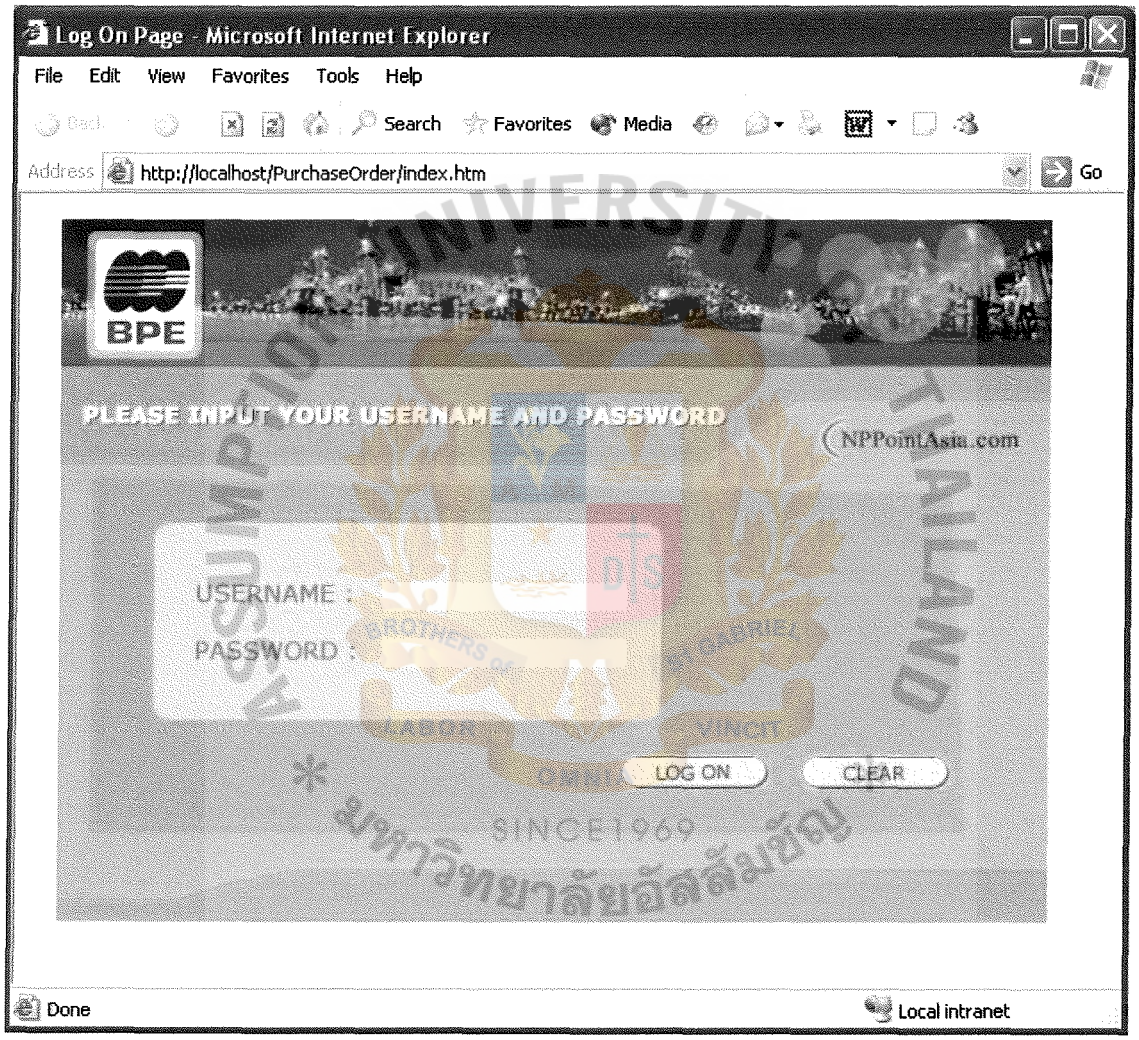


Figure H.1. User Interface for Log on page.

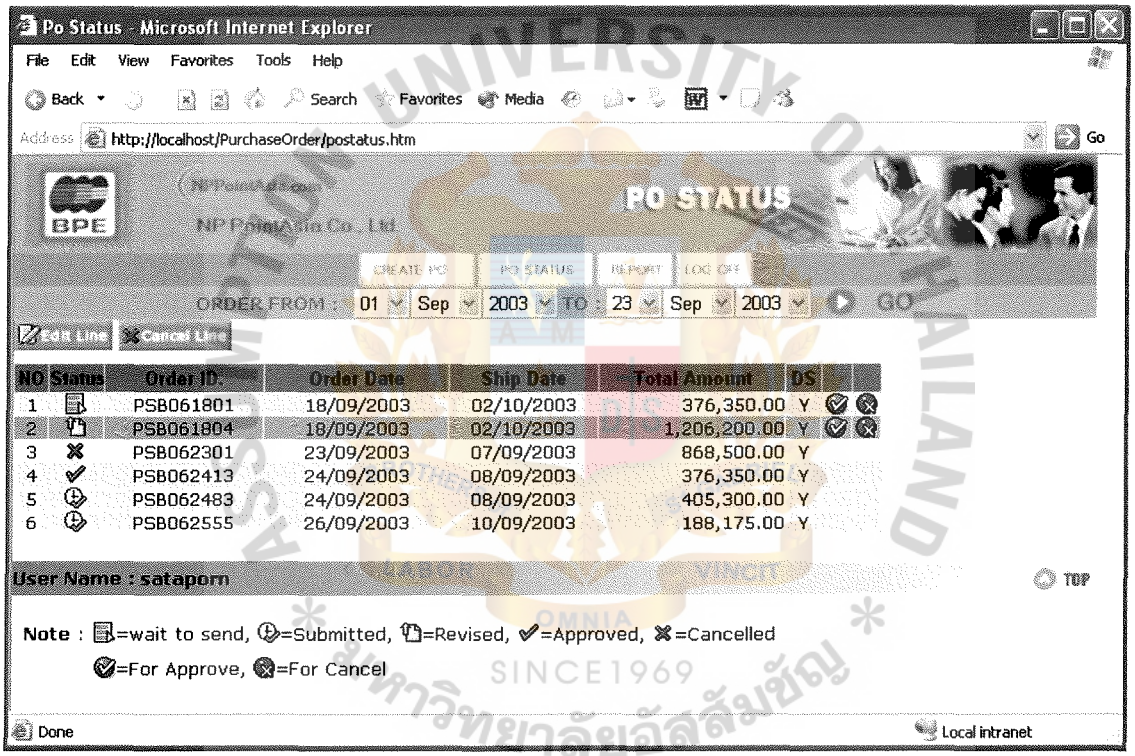


Figure H.2. User Interface for Purchase Order Status by Agent.

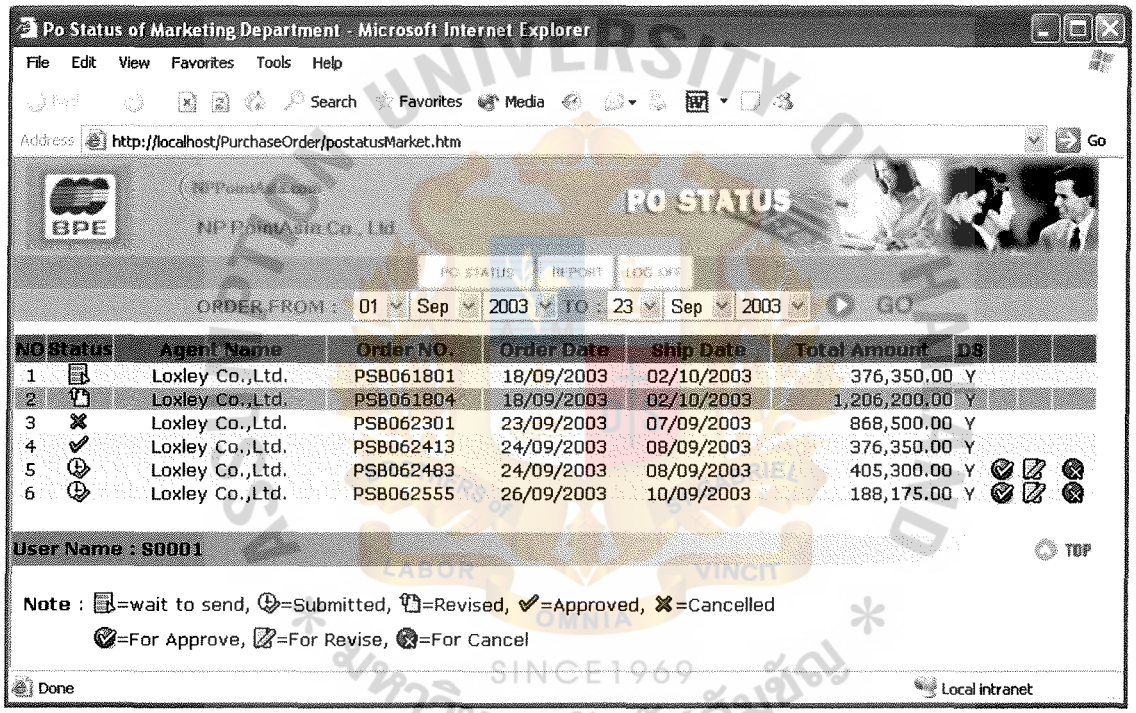


Figure H.3. User Interface for All Purchase Order Status.

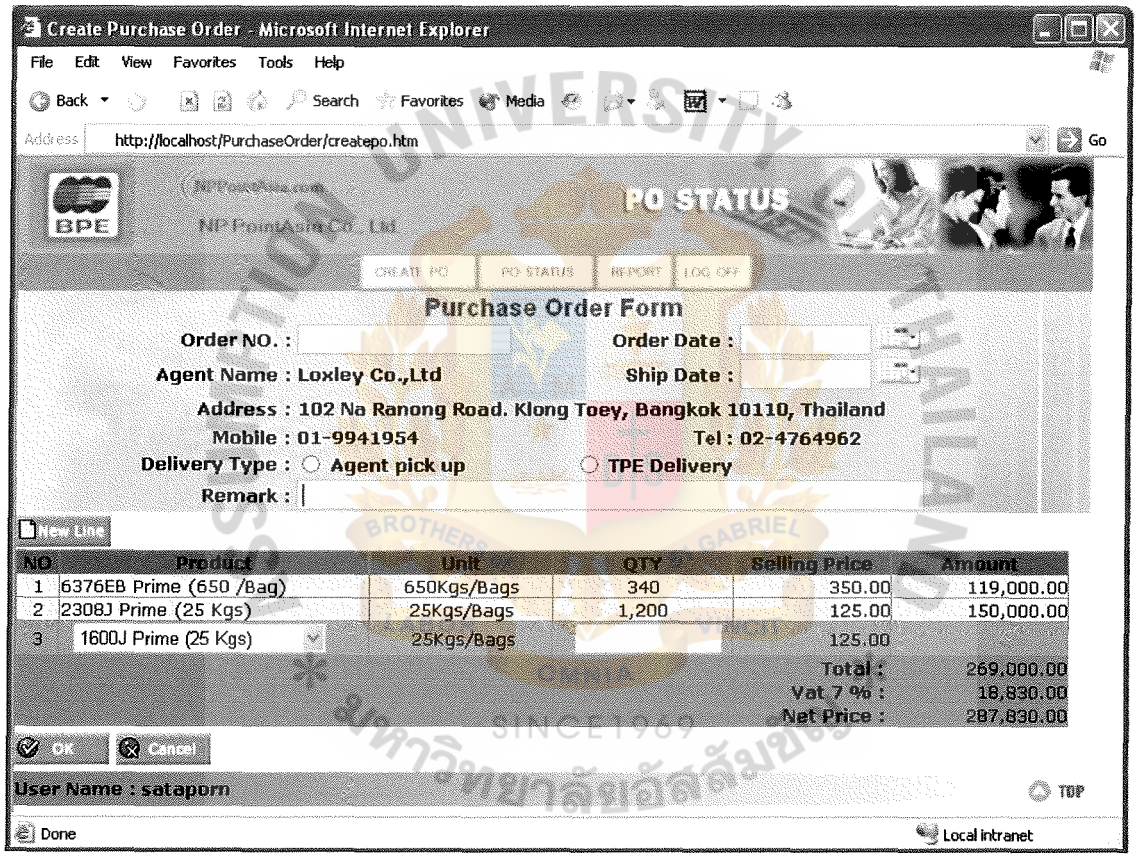


Figure H.4. User Interface for Create Purchase Order.

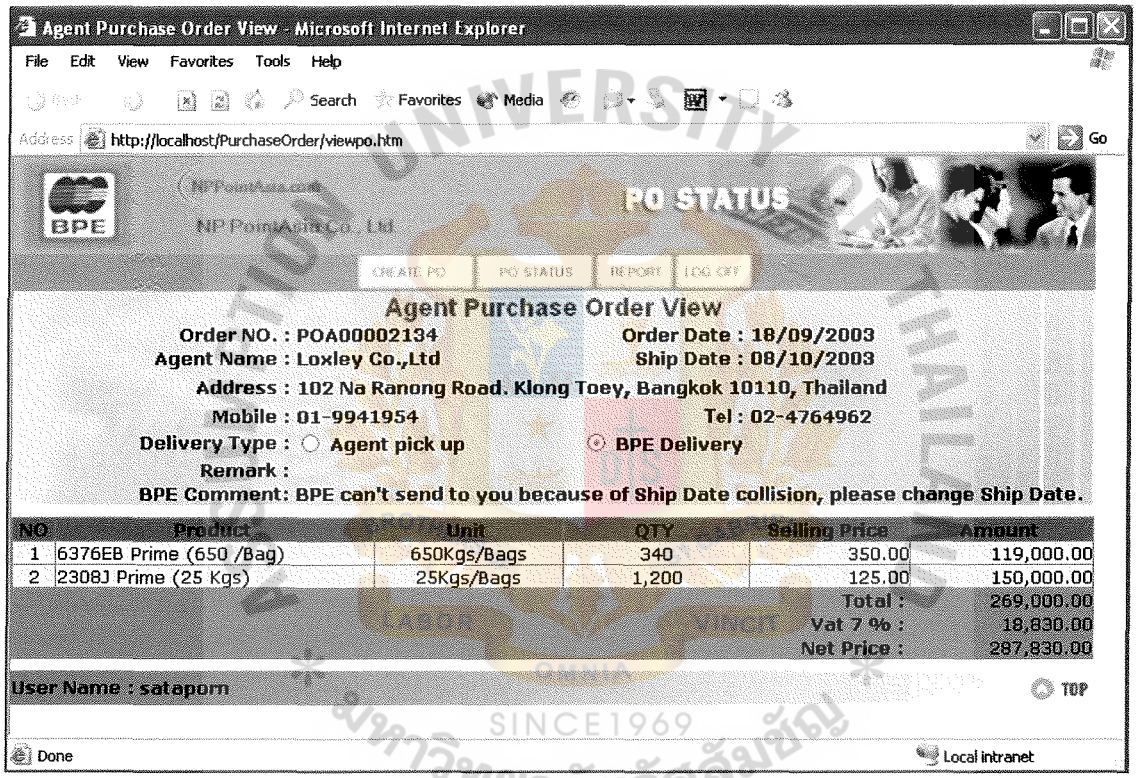
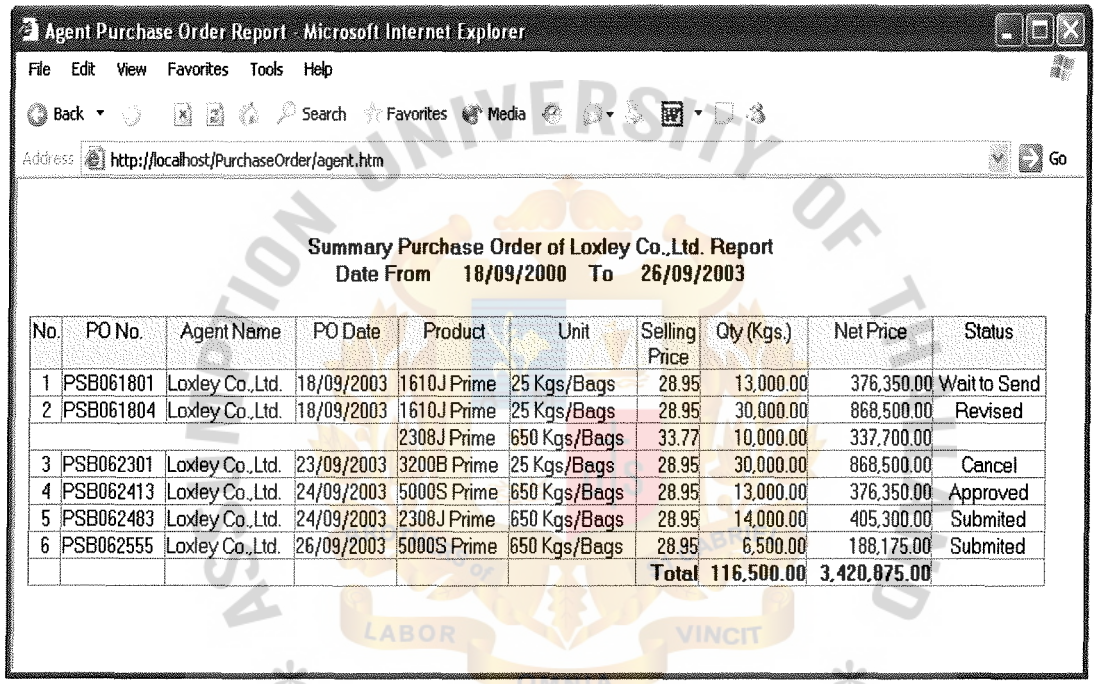


Figure H.5. User Interface for View Purchase Order by Agent.

APPENDIX I

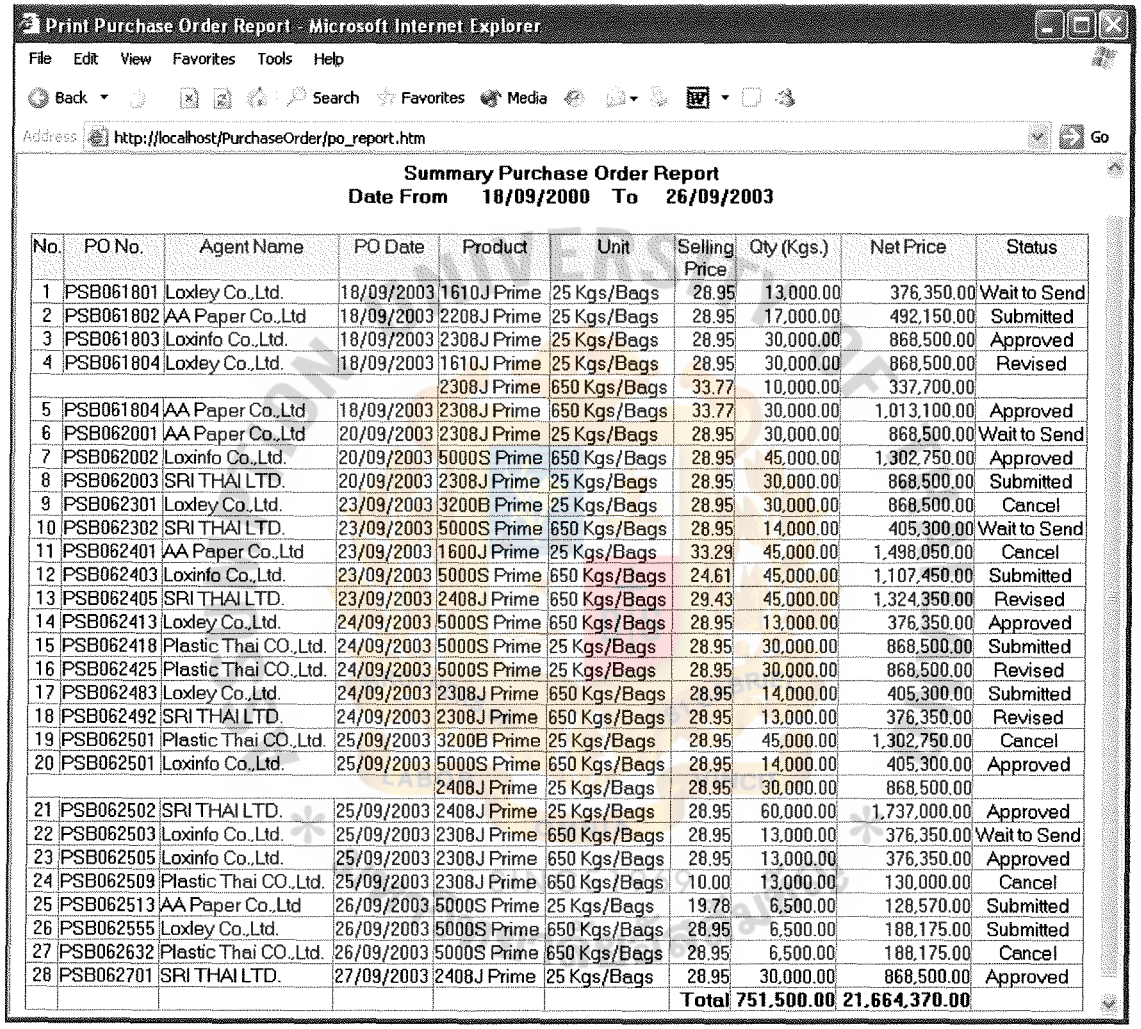
REPORT DESIGN



Summary Purchase Order of Loxley Co.,Ltd. Report
Date From 18/09/2000 To 26/09/2003

No.	PO No.	Agent Name	PO Date	Product	Unit	Selling Price	Qty (Kgs.)	Net Price	Status
1	PSB061801	Loxley Co.,Ltd.	18/09/2003	1610J Prime	25 Kgs/Bags	28.95	13,000.00	376,350.00	Wait to Send
2	PSB061804	Loxley Co.,Ltd.	18/09/2003	1610J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Revised
				2308J Prime	650 Kgs/Bags	33.77	10,000.00	337,700.00	
3	PSB062301	Loxley Co.,Ltd.	23/09/2003	3200B Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Cancel
4	PSB062413	Loxley Co.,Ltd.	24/09/2003	5000S Prime	650 Kgs/Bags	28.95	13,000.00	376,350.00	Approved
5	PSB062483	Loxley Co.,Ltd.	24/09/2003	2308J Prime	650 Kgs/Bags	28.95	14,000.00	405,300.00	Submited
6	PSB062555	Loxley Co.,Ltd.	26/09/2003	5000S Prime	650 Kgs/Bags	28.95	6,500.00	188,175.00	Submited
						Total	**116,500.00**	**3,420,875.00**	

Figure I.1. Output Screen for Summary of Purchase Order by Agent.



Summary Purchase Order Report
Date From 18/09/2000 To 26/09/2003

No.	PO No.	Agent Name	PO Date	Product	Unit	Selling Price	Qty (Kgs.)	Net Price	Status
1	PSB061801	Loxley Co.,Ltd.	18/09/2003	1610J Prime	25 Kgs/Bags	28.95	13,000.00	376,350.00	Wait to Send
2	PSB061802	AA Paper Co.,Ltd	18/09/2003	2208J Prime	25 Kgs/Bags	28.95	17,000.00	492,150.00	Submitted
3	PSB061803	Loxinfo Co.,Ltd.	18/09/2003	2308J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Approved
4	PSB061804	Loxley Co.,Ltd.	18/09/2003	1610J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Revised
				2308J Prime	650 Kgs/Bags	33.77	10,000.00	337,700.00	
5	PSB061804	AA Paper Co.,Ltd	18/09/2003	2308J Prime	650 Kgs/Bags	33.77	30,000.00	1,013,100.00	Approved
6	PSB062001	AA Paper Co.,Ltd	20/09/2003	2308J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Wait to Send
7	PSB062002	Loxinfo Co.,Ltd.	20/09/2003	5000S Prime	650 Kgs/Bags	28.95	45,000.00	1,302,750.00	Approved
8	PSB062003	SRI THAI LTD.	20/09/2003	2308J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Submitted
9	PSB062301	Loxley Co.,Ltd.	23/09/2003	3200B Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Cancel
10	PSB062302	SRI THAI LTD.	23/09/2003	5000S Prime	650 Kgs/Bags	28.95	14,000.00	405,300.00	Wait to Send
11	PSB062401	AA Paper Co.,Ltd	23/09/2003	1600J Prime	25 Kgs/Bags	33.29	45,000.00	1,498,050.00	Cancel
12	PSB062403	Loxinfo Co.,Ltd.	23/09/2003	5000S Prime	650 Kgs/Bags	24.61	45,000.00	1,107,450.00	Submitted
13	PSB062405	SRI THAI LTD.	23/09/2003	2408J Prime	650 Kgs/Bags	29.43	45,000.00	1,324,350.00	Revised
14	PSB062413	Loxley Co.,Ltd.	24/09/2003	5000S Prime	650 Kgs/Bags	28.95	13,000.00	376,350.00	Approved
15	PSB062418	Plastic Thai CO.,Ltd.	24/09/2003	5000S Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Submitted
16	PSB062425	Plastic Thai CO.,Ltd.	24/09/2003	5000S Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Revised
17	PSB062483	Loxley Co.,Ltd.	24/09/2003	2308J Prime	650 Kgs/Bags	28.95	14,000.00	405,300.00	Submitted
18	PSB062492	SRI THAI LTD.	24/09/2003	2308J Prime	650 Kgs/Bags	28.95	13,000.00	376,350.00	Revised
19	PSB062501	Plastic Thai CO.,Ltd.	25/09/2003	3200B Prime	25 Kgs/Bags	28.95	45,000.00	1,302,750.00	Cancel
20	PSB062501	Loxinfo Co.,Ltd.	25/09/2003	5000S Prime	650 Kgs/Bags	28.95	14,000.00	405,300.00	Approved
				2408J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	
21	PSB062502	SRI THAI LTD.	25/09/2003	2408J Prime	25 Kgs/Bags	28.95	60,000.00	1,737,000.00	Approved
22	PSB062503	Loxinfo Co.,Ltd.	25/09/2003	2308J Prime	650 Kgs/Bags	28.95	13,000.00	376,350.00	Wait to Send
23	PSB062505	Loxinfo Co.,Ltd.	25/09/2003	2308J Prime	650 Kgs/Bags	28.95	13,000.00	376,350.00	Approved
24	PSB062509	Plastic Thai CO.,Ltd.	25/09/2003	2308J Prime	650 Kgs/Bags	10.00	13,000.00	130,000.00	Cancel
25	PSB062513	AA Paper Co.,Ltd	26/09/2003	5000S Prime	25 Kgs/Bags	19.78	6,500.00	128,570.00	Submitted
26	PSB062555	Loxley Co.,Ltd.	26/09/2003	5000S Prime	650 Kgs/Bags	28.95	6,500.00	188,175.00	Submitted
27	PSB062632	Plastic Thai CO.,Ltd.	26/09/2003	5000S Prime	650 Kgs/Bags	28.95	6,500.00	188,175.00	Cancel
28	PSB062701	SRI THAI LTD.	27/09/2003	2408J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Approved
						Total	**751,500.00**	**21,664,370.00**	

Figure I.2. Output Screen for Summary of Purchase Order.

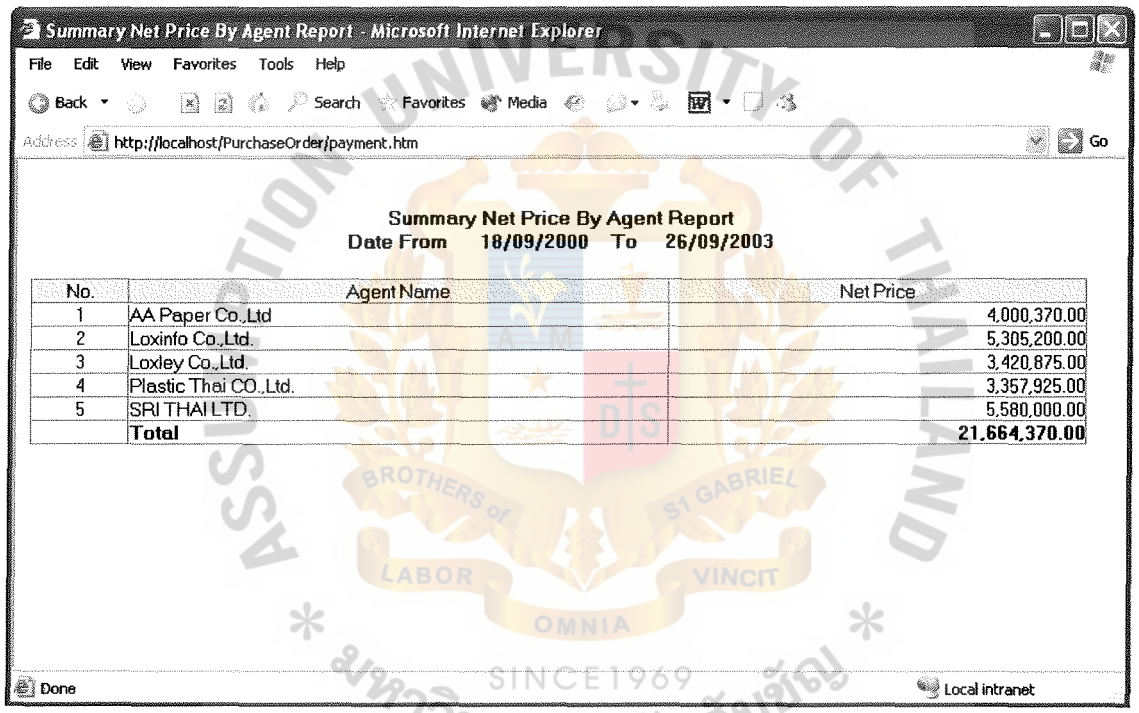
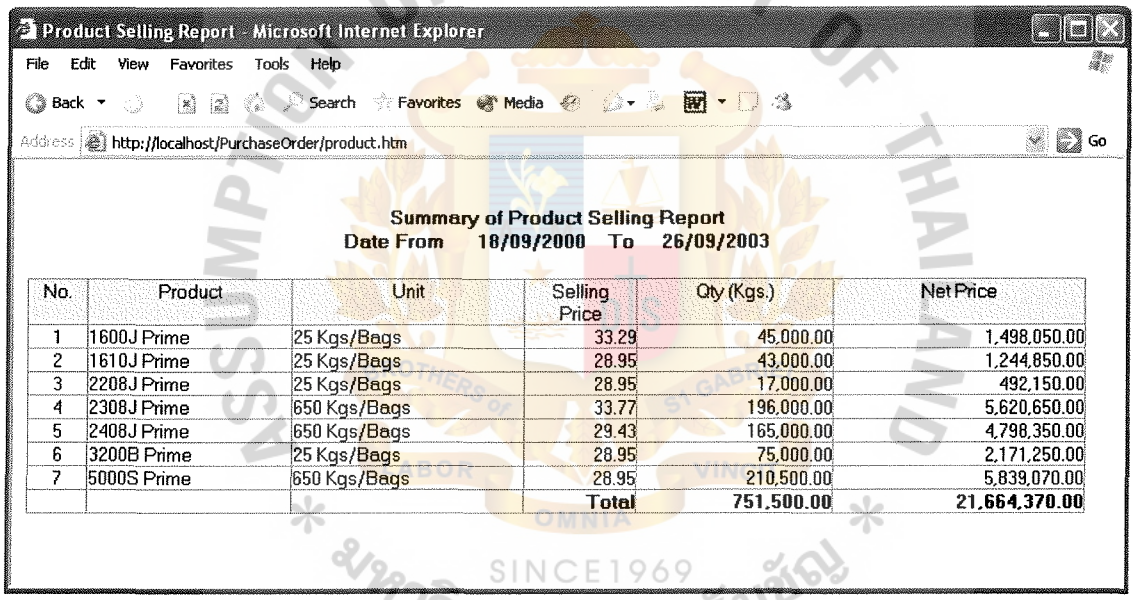


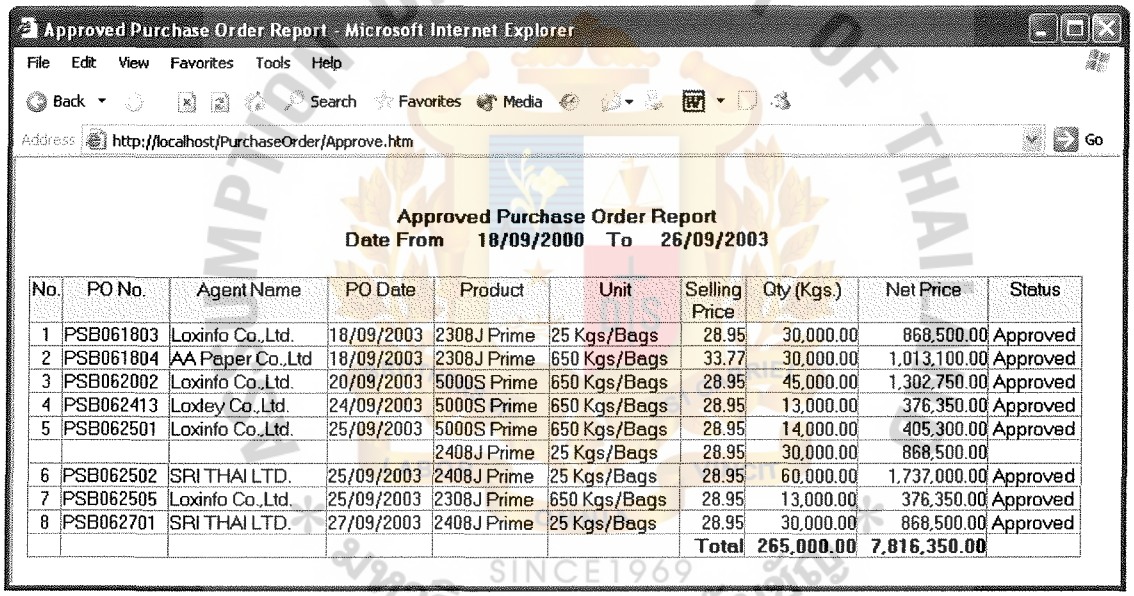
Figure I.3. Output Screen for Summary of Net Price by Agent.



Summary of Product Selling Report
Date From 18/09/2000 To 26/09/2003

No.	Product	Unit	Selling Price	Qty (Kgs.)	Net Price
1	1600J Prime	25 Kgs/Bags	33.29	45,000.00	1,498,050.00
2	1610J Prime	25 Kgs/Bags	28.95	43,000.00	1,244,850.00
3	2208J Prime	25 Kgs/Bags	28.95	17,000.00	492,150.00
4	2308J Prime	650 Kgs/Bags	33.77	196,000.00	5,620,650.00
5	2408J Prime	650 Kgs/Bags	29.43	165,000.00	4,798,350.00
6	3200B Prime	25 Kgs/Bags	28.95	75,000.00	2,171,250.00
7	5000S Prime	650 Kgs/Bags	28.95	210,500.00	5,839,070.00
			Total	**751,500.00**	**21,664,370.00**

Figure I.4. Output Screen for Summary of Product Selling.



Approved Purchase Order Report
Date From 18/09/2000 To 26/09/2003

No.	PO No.	Agent Name	PO Date	Product	Unit	Selling Price	Qty (Kgs.)	Net Price	Status
1	PSB061803	Loxinfo Co.,Ltd.	18/09/2003	2308J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Approved
2	PSB061804	AA Paper Co.,Ltd	18/09/2003	2308J Prime	650 Kgs/Bags	33.77	30,000.00	1,013,100.00	Approved
3	PSB062002	Loxinfo Co.,Ltd.	20/09/2003	5000S Prime	650 Kgs/Bags	28.95	45,000.00	1,302,750.00	Approved
4	PSB062413	Loxley Co.,Ltd.	24/09/2003	5000S Prime	650 Kgs/Bags	28.95	13,000.00	376,350.00	Approved
5	PSB062501	Loxinfo Co.,Ltd.	25/09/2003	5000S Prime	650 Kgs/Bags	28.95	14,000.00	405,300.00	Approved
				2408J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	
6	PSB062502	SRI THAI LTD.	25/09/2003	2408J Prime	25 Kgs/Bags	28.95	60,000.00	1,737,000.00	Approved
7	PSB062505	Loxinfo Co.,Ltd.	25/09/2003	2308J Prime	650 Kgs/Bags	28.95	13,000.00	376,350.00	Approved
8	PSB062701	SRI THAI LTD.	27/09/2003	2408J Prime	25 Kgs/Bags	28.95	30,000.00	868,500.00	Approved
						Total	**265,000.00**	**7,816,350.00**	

Figure I.5. Output Screen for Approved Purchase Order.

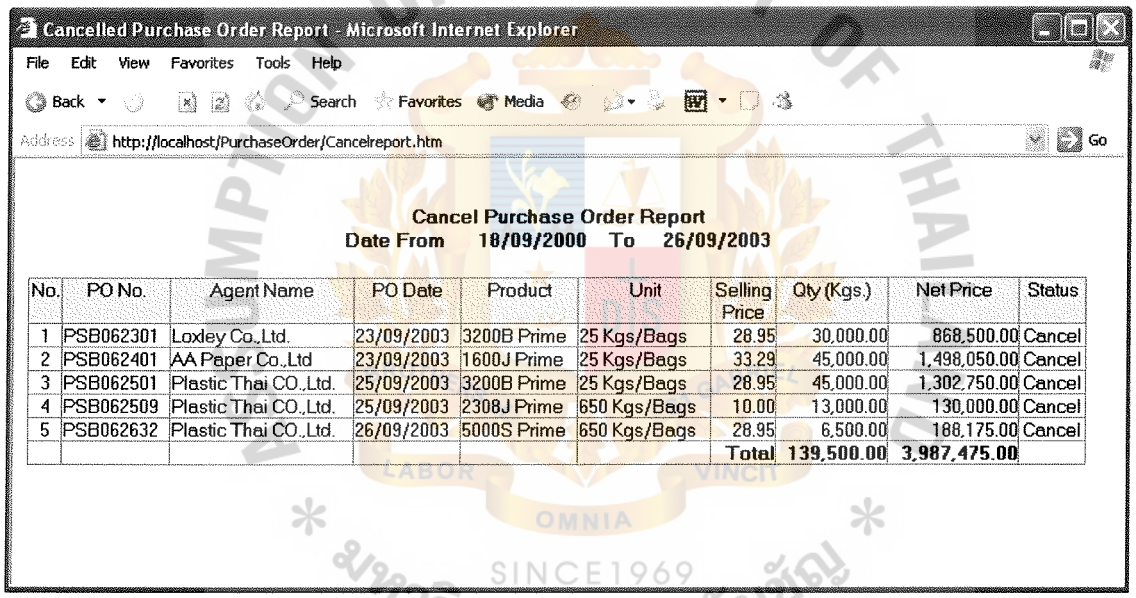


Figure I.6. Output Screen for Cancel Purchase Order.

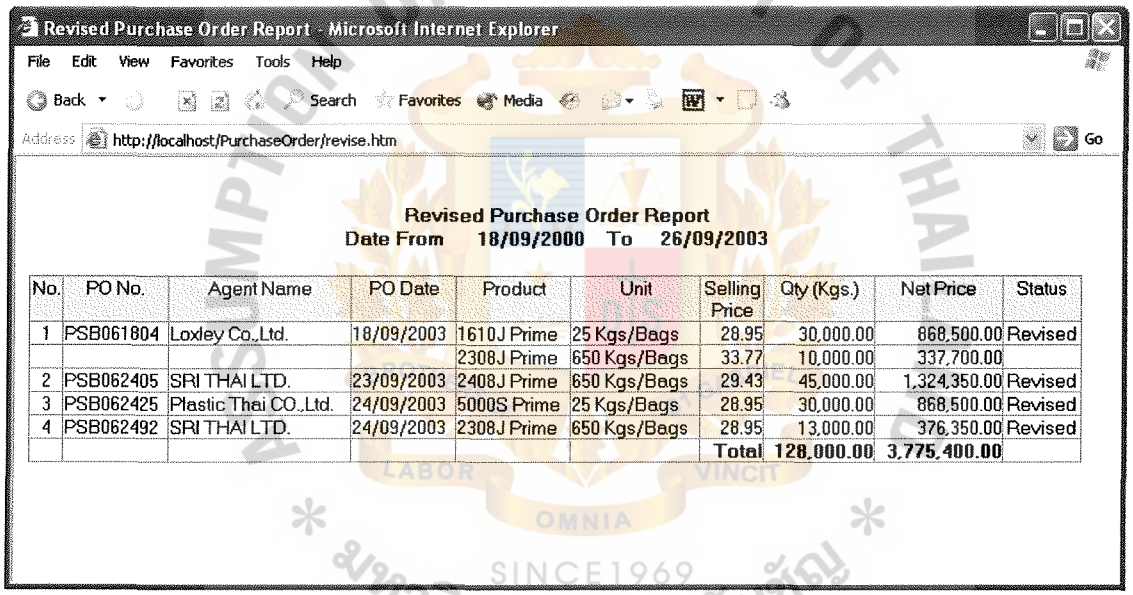


Figure I.7. Output Screen for Revised Purchase Order.

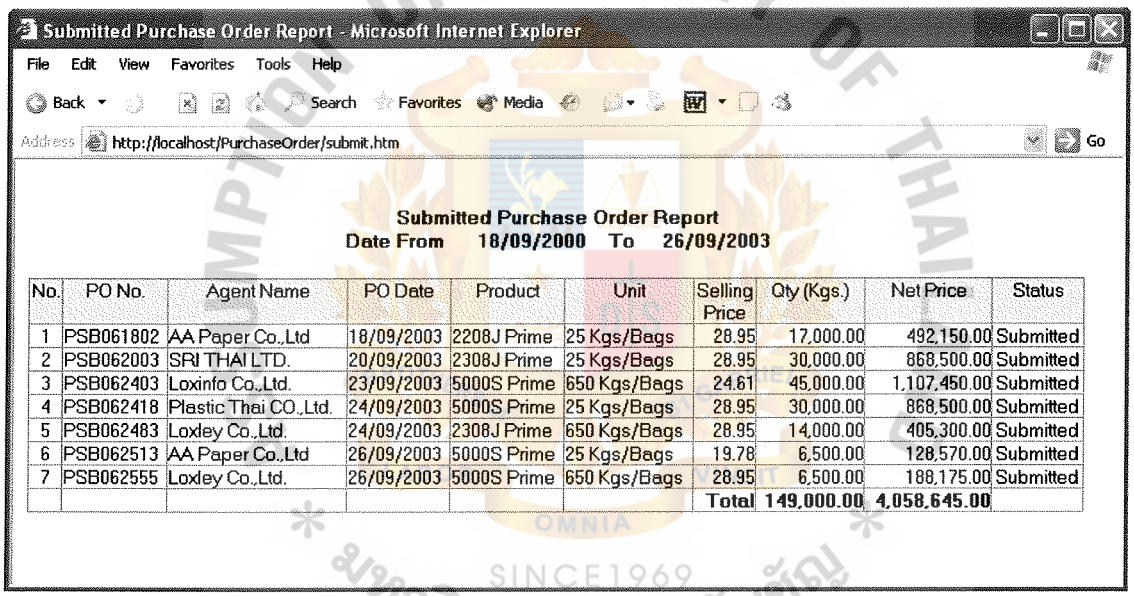


Figure I.8. Output Screen for Submitted Purchase Order.

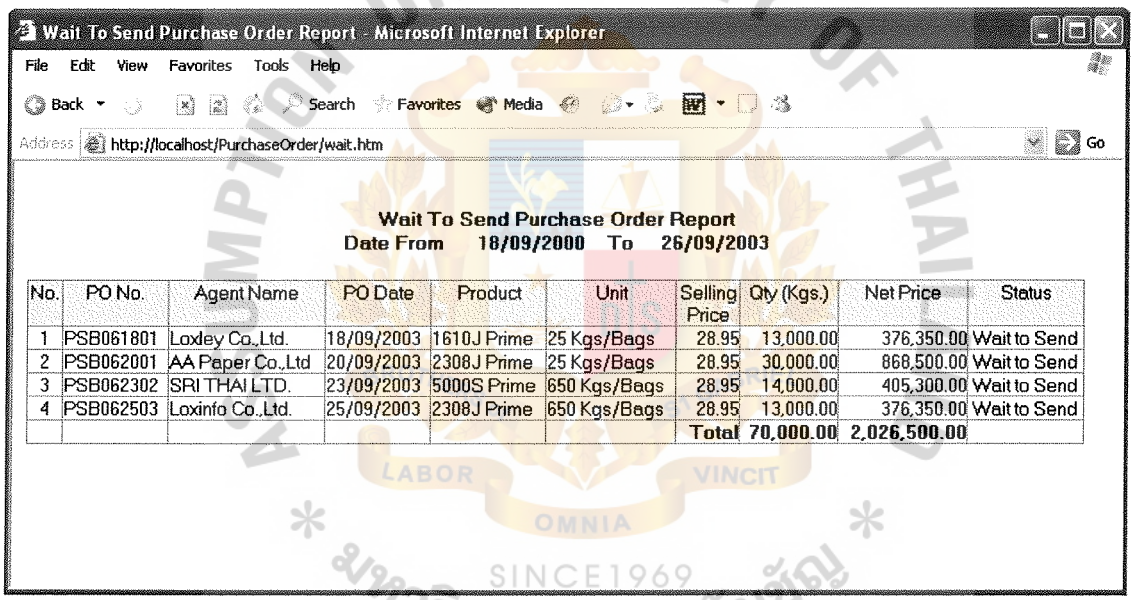
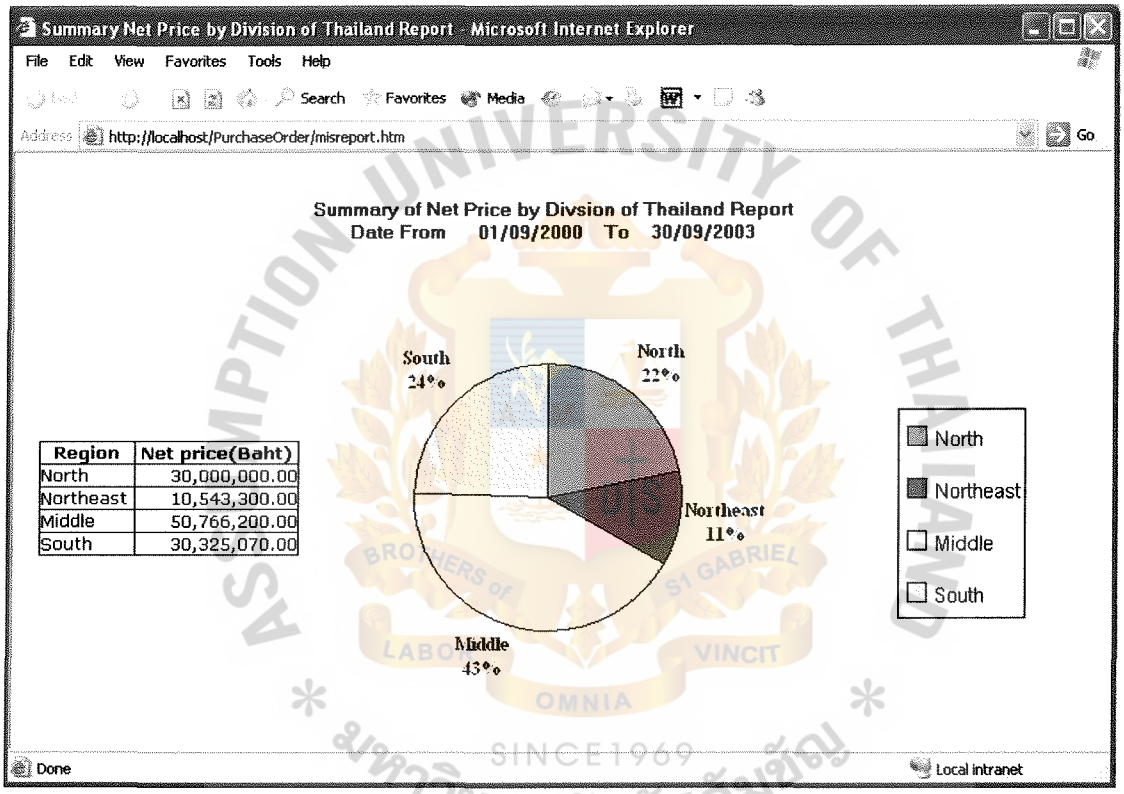


Figure I.9. Output Screen for Wait To Send Purchase Order.



Region	Net price(Baht)
North	30,000,000.00
Northeast	10,543,300.00
Middle	50,766,200.00
South	30,325,070.00

Figure I.10. Output Screen for Summary Net Price by Division of Thailand Report.

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