



Inventory Information System for
Kim Garment Co., Ltd.

by
Ms. Atita Srivichean

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

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

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


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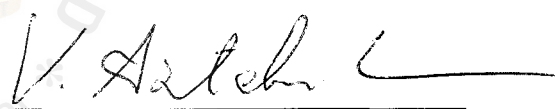
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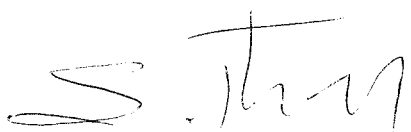
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ABSTRACT

Competing in today's business environment, information system becomes the tool to create more delivered value from company to its customers. Throughout this report, the study covers the analysis and design of computerized information system to improve efficiency in performance of productivity and attain company goals proportionately.

Since operation in the existing system is by the manual system, the movement of inventory is difficult to be controlled. The problems occurring from the existing system are too much to handle with many volumes on inventory and there are too many errors in the manual system. The study of this project begins with the required definition and analysis of the existing system.

The proposed system is suggested to be the computerized system in accordance with the system analysis and design techniques. It is designed to reduce time-consuming and errors occurring, while it provide the better control over the system transaction and management decision-making. The new system is implemented in Microsoft Access Programming and in user interface technology.

The newly automated system will enhance the capacity of the Inventory Control System of Kim Garment Co., Ltd. and facilitate entering and finding needed information and providing reports when it is requested. By implementing the new information system, the company would be able to increase productivity level, shorten the lead time of product delivery to its customers, create more customer service impressions, generate accurate customer analysis data, enhance the capacity of the inventory system, while the company costs can stay at the competitive level.

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I. INTRODUCTION

1.1 Background of the Project

The power of computer hardware and software has grown much more rapidly than the ability of organizations to apply and use this technology, as globalizations of the world's industrial economies greatly enhances the value of information to the firm and offers new opportunities to business. To stay competitive, many organizations actually need to be redesigned. The information technology needed to simplify communication and coordination, and eliminate unnecessary work.

The Kim Garment Co., Ltd. still operates manually to manage and control the inventory system. A computer-aided design system might support the operations of Kim Garment while it can be used to solve current problems and make the operation runs smoothly and efficiently.

1.2 Objectives of the Project

In today's running business, the Kim Garment Co., Ltd. is facing many problems. To overcome these problems, the computer system becomes the first key factor of problems to solution. The computer-based information project will enhance the capacity of every transaction in the firm. The core business like the Inventory Section gets the advantage for the management to manage the stock level and do planning by basing on history and forecasting information. Sales can be sure that they would have enough goods to sell and the inventory would have enough information to protect the inventory stock. The objectives of solution to problem are defined as the following:

- (1) To study the existing system and design the new system development for the firm.

- (2) To upgrade the system management of the organization from manual system to computerized system
- (3) To design a computer-based information system providing management with accurate information that will improve the efficiency and effectiveness to Inventory Section.
- (4) To improve the transaction of the inventory system as well as to make effective use of the computer-based information.
- (5) To compete in today's business or new economy, to gain more market share and become cost leadership in garment business.

1.3 Scope of the Project

To boundary the new system of Kim Garment Co., Ltd. is the main objective of this project. The Inventory Section plays an important role in this firm. Moreover, the operation is interrelated to Sales Section. To find the information for management was done with difficulty. In addition, salespersons must wait for the inventory staff for checking the stock on hand, which needs much more time to get the stock level. The process of purchasing the raw materials is not stable which causes non-updated information and lack the just-in time of the required information.

There are three core issues to capture the new system such as:

- (1) To generate the proper information to management.
- (2) To review the current routine of inventory management system.
- (3) To arrange and update inventory information.
- (4) To re-define the workflow of the firm in order to maintain the high benefit while the company goes through the new era of management.

1.4 Deliverables

A self-generated workflow of the management can reduce little by little to gain the improvement in running the business. Even if all transactions are correctly recorded, errors will occur. The deliverables of the project can be identified as follows:

- (1) Screen layout for Graphic User Interface (GUI):
 - (a) Main menu for transaction order
 - (b) Production status report
 - (c) Order information
 - (d) Document information
- (2) An application that is developed by Microsoft Access
- (3) Local Area Network (LAN)
- (4) Management Information System

II. THE EXISTING SYSTEM

2.1 Background of the Organization

The manufacturer under this study is in garment business as a production-factory. It has been established since 1992, which was named Kim Garment Co., Ltd. Mr. Kim Seng Chai who has settled down in Thailand for 20 years, is experienced from working as a low-hired clerk in Sampeng, the Chinese Business Area of Bangkok. The Kim Garment Co., Ltd. was operated under Mr. Kim's point of view. Its main operation is producing various kinds of knitted ropes. The machines spin the raw yarn by weaving the materials for producing the made-to-order knitted ropes. The major clients of Kim Garment Co., Ltd. are the well known manufacturer of sport clothing, shoes, T-shirt, kids clothing, paper bags such as Nike (Thailand) Co., Ltd., Nunyang Co., Ltd., and Wong Paitoon (Public) Co., Ltd. Most of its customers will order the knitted ropes in order to use as parts of their product lines for example shoe-rope, motorcycling rope, and paper bags handle.

All the operations are done manually since the first day beginning of the company. Generally, in business transactions, the core function is the inventory system. It is divided into two parts as:- raw materials and finished goods.

There are various kinds of raw materials utilized in productions which can be classified into four main groups as follows:-

- (1) TC
- (2) Spun
- (3) Cotton
- (4) Polyester

During the last three years, the Thai economy was still sluggish but it is now getting better and shows a good sign of recovery. Generally, the garment business in Thailand is well recognized as a significant industrial sector of the country. Due to the lower labor cost, Thai garments are very attractive to the foreign traders or buyers. Looking through Kim Garment Co., Ltd, it is advisable to take good advantage in this factor to reach its business goal. Moreover, the management cost plays an important role to maintain profit margin as well as to improve the quality and technology. Therefore, Kim Garment Co., Ltd. needs to go toward higher technology in production and marketing.

2.2 Existing Business Functions

The existing business data is controlled manually. The major system of Kim Garment Co., Ltd. is the Inventory Section. Its transaction begins when a customer presses order to salesperson. After salesperson receives the orders from customer, checks the selling price with the customer price sheet and fills the content of the sales order form. Then, take the sales order to Inventory Department to check whether there is stock on hand or not. In case there is stock on hand, he passes this order to Account Department. The Account Department checks the credit of the customers. If the balance on- hand is short, the Inventory Department determines the next production plan. If there is shortage, raw materials is purchased by Inventory Department. After the products are forwarded to customers, the salesperson will automatically collect the goods receiving evidence and complete the billing list report. The Accounting Department, at the end, finishes the finalized accounting process. Figure 2.1 below shows the organization chart of Kim Garment Co., Ltd. while Figure 2.2 will show the context diagram of existing Inventory Control System.

2.3 Current Problems And Area for Improvement

The existing operation controlled by manual system, which can occur some problems. Moreover, all these problems cause huge problems to Kim Garment Co., Ltd. To discuss about all transaction roughly, there should not have any problem for this firm. In contrast, concerning the way that the management manages the business, many tasks can not be exactly separated especially in the Inventory Department. Sales Department where the key part is to provide the income to the firm has to depend on the inventory control system. It is not only that problem but also the problem of the reliability on inventory control that shows how well they can maintain the level of both raw materials and finished goods stock. From the reasons above, the Inventory Department faces the problem of ineffectiveness and inefficiency in working process. They still have not had the computerized system and none of the good database system either.

The problems of the existing system of Kim Garment Co., Ltd., are mentioned below:

- (1) The system will take more lead-time in production line, longer time to deliver finished goods to customer and uses a lot of time in finding needed information.
- (2) The management can not get information as soon as they are willing to use it because of taking a lot of time ingathering information. The information is not correct, the result of the documents done in a rush process.
- (3) When salespersons deal with customers' orders, they can not know in advance whether they have any stock on hand to sale or not.
- (4) The effect is customer dissatisfaction with the sales performance and this will effect the process of dealing with Kim Garment Co., Ltd.

- (5) There occurred cost problem both tangible and intangible.
- (6) The inventory control, which is to be relied on, does not have much information to forecast or plan on the production and stock level.
- (7) All the data was kept appropriately in which cause a lot of data redundancy and data non-integrity.

By the way, as they realize that the profit is low because of high cost while they also need to expand the business, to cope with these problems is vital. The key solution is to provide good proper system to run along with the existing system instead of the traditional system.



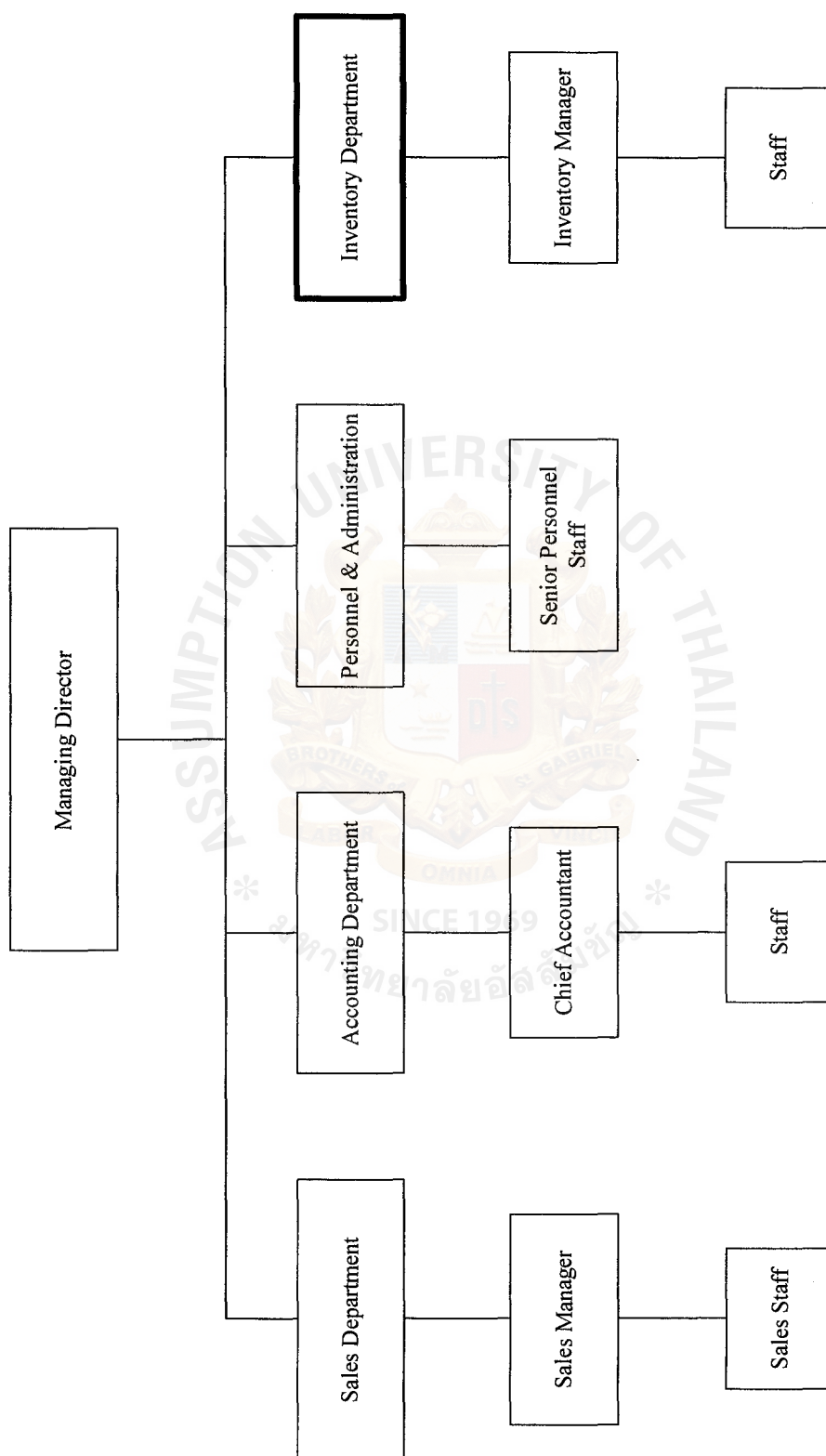


Figure 2.1. The Organization Chart of Kim Garment Co., Ltd.

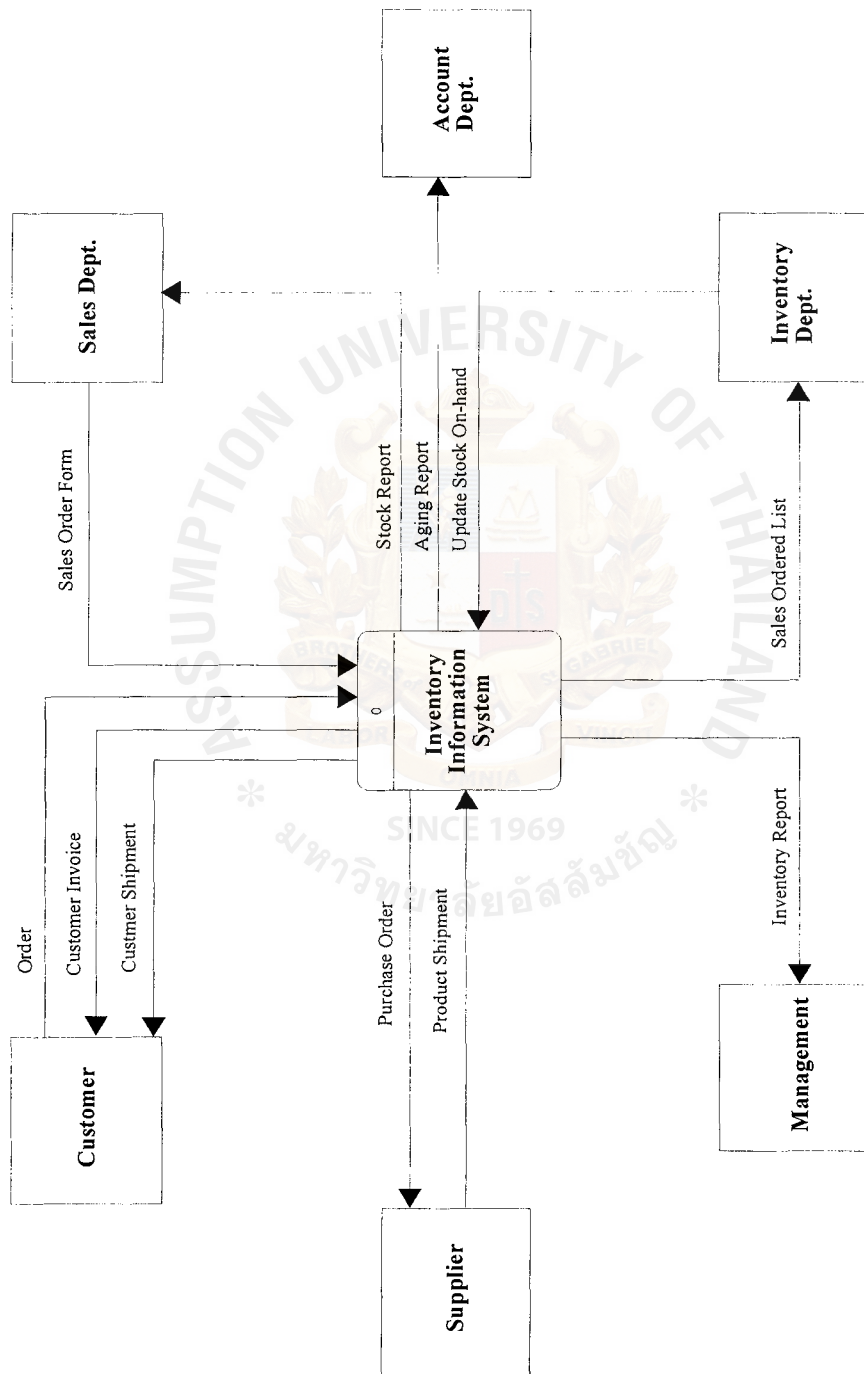


Figure 2.2. Context Diagram of Existing Inventory Information System.

III. THE PROPOSED SYSTEM

3.1 User Requirements

As the inventory control system is a necessary specification for Kim Garment, the new system must deliver to the organization in order to satisfy the users. The user requirement needs to be gathered correctly so it has been shown as listed in the following section.

- (1) The new system must be based on computers to handle the data and information that makes easy use to users. Moreover, this system should perform effectively and correctly
- (2) The new system must provide responsiveness to the organization when information is needed. Furthermore, it should take less time to retrieve reports or answers to any particular query with better performance.
- (3) The new system must provide updated and corrected information with the ability to organize the data more efficiently, eliminating the redundant data and provide the most up-to-date correct information.
- (4) The new system must have user friendly interface to interact with the users to ease up the needed information.
- (5) The new system can allow multiple users to access the database at the same time.
- (6) The new system can show historic data or tracking back information when an error is occurred.
- (7) The security is an important issue, and it must be concerned. So it is a must that the security is ensured since the information will be reached easier and faster.

3.2 System Design

The new system has the objectives as it can convert the user requirements to computer-based solution. The design of the proposed system begins by using identified system problems to develop objectives for the new system. The scope of activities in designing the new system has been introduced to improve the efficiency and effectiveness of the activities in the Inventory Control System. Context Diagram, Data Flow Diagram (DFD), and user requirements are used as bases for the development of the models of the proposed system.

3.2.1 Context Diagram

The Context Diagram defines the scope and boundary for the system and project. The first area of study is shown as round rectangle in the diagram. It interacts with other external entities, shown by rectangles on the context diagram. The external entities provide information to it and receive information from it. The data flow is shown by a line with arrowheads indicating the direction of the flow. Meanwhile the data that is received from the system are called input, and data it produced are called output.

Overview of the Context Diagram of the Proposed System.

There are six entities in the context diagram of the proposed system; each entity has a role in Inventory Control System as follows:

Customer:

- (1) Order the specifications products.
- (2) Request the product according to an order detail specifications.

Sales Department:

- (1) Get order from customer.

- (2) Check the selling price with the customer price sheet and fill contents in the sales order form.
- (3) Check available product from the stock (Inventory Section).

Inventory Department

- (1) Update stock on hand.
- (2) Generate new production.
- (3) Deliver ordered product to customer
- (4) Send report to Sales Department
- (5) Send report to Account Department
- (6) Send report to Managing Director.

Accounting Department

- (1) Check customer credit.
- (2) Send invoice to customer.
- (3) Approve reordered production.

Management Team

- (1) Accept Sales Report.
- (2) Accept Inventory Report.

Supplier

- (1) Accept purchase order.
- (2) Generate ordered product shipment.

3.2.2 Data Flow Diagram

A Data Flow Diagram (DFD) is a graphic presentation of the system that shows data flow and within the system, processing functions that change the data in some manner, and the storing of these data. As the level 0 diagram is the level of Data Flow

Diagram for the system, it shows all major processes, and major data flows from the area being studied in the context diagram. However, the data flow diagram is nothing more than a network of related system functions that indicate from where information is received and to where it is sent.

The Context Diagram of Kim Garment is shown in Figure 3.1 and Figure 3.2 shows the Data Flow Diagram as in level 1. And each process will be shown in Data Flow Diagram Level 2 in Appendix A. The Function Decomposition Diagram will be shown in Figure 3.3.



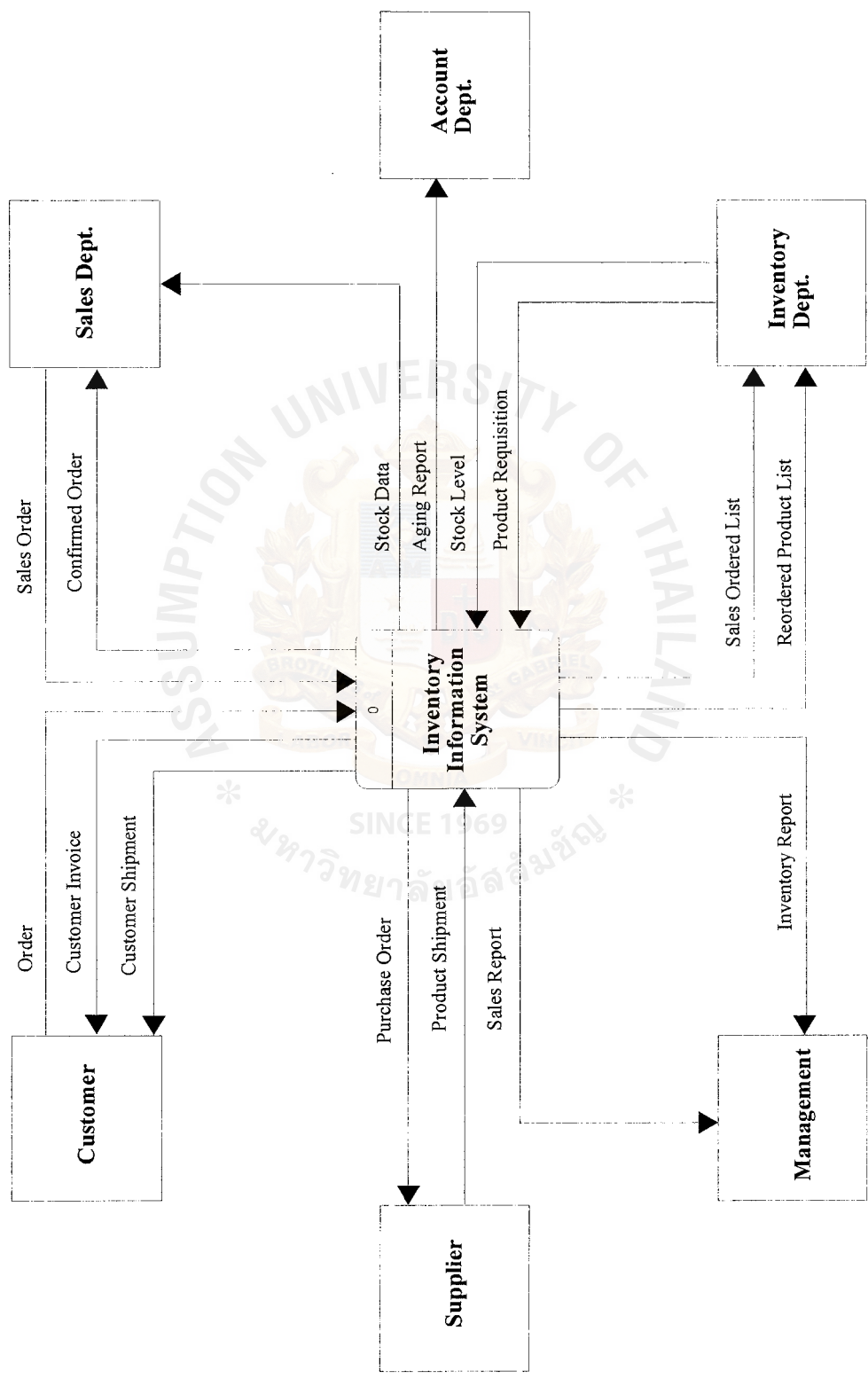


Figure 3.1. Context Diagram of The Proposed Inventory Information System.

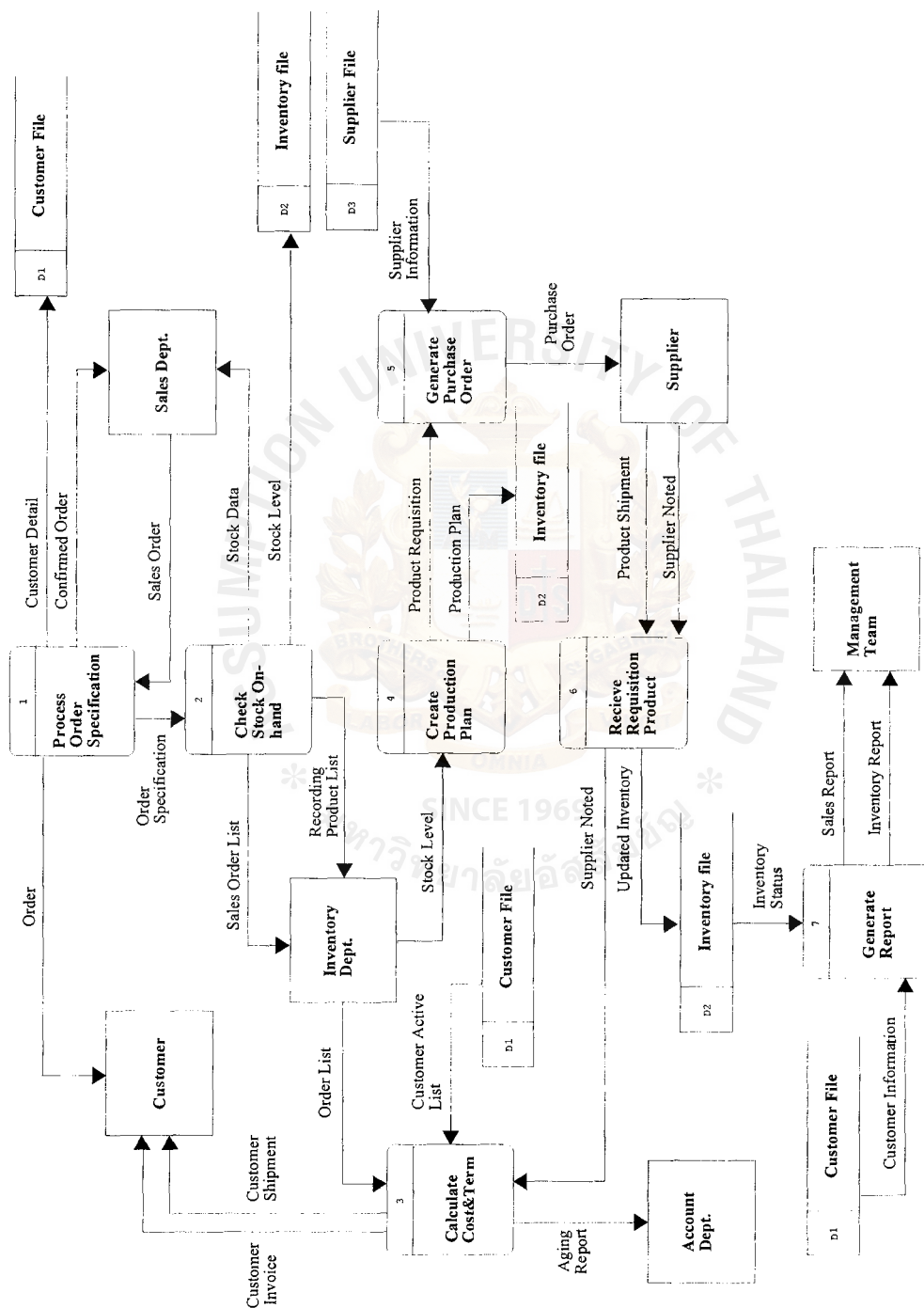


Figure 3.2. Data Flow Diagram Level 1 of Inventory Information System.

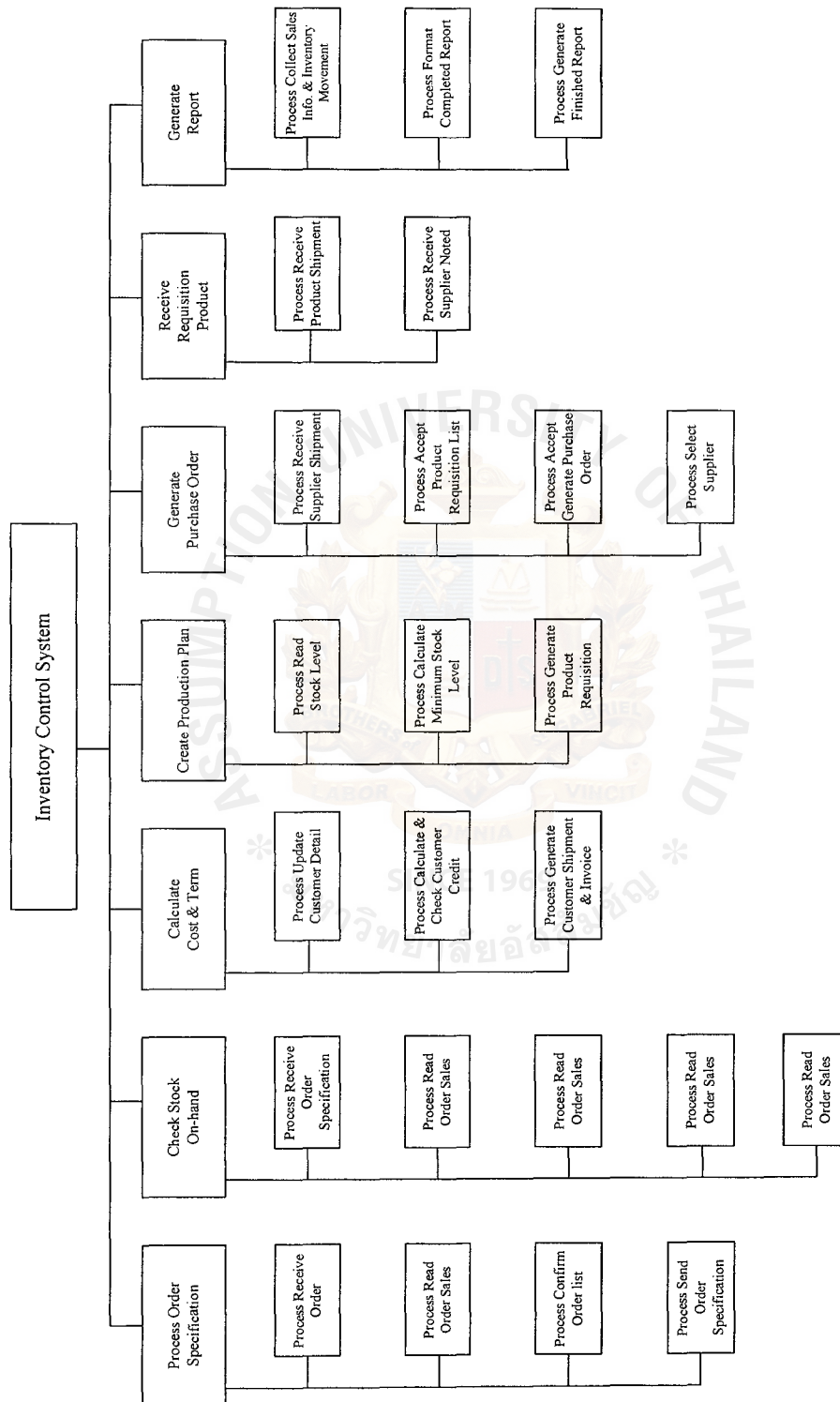


Figure 3.3. The Function Decomposition Diagram of The Proposed Inventory Information System.

3.3 Candidate Solutions

This is a useful tool for documenting the similarities and differences between candidate systems being considered. After the business requirements are established, we must identify alternative candidate solutions. Some candidate solutions will be posted by designing ideas and opinions from system owners and users, and then analyze those solutions for feasibility. This can greatly enhance the comparison and contrast of candidate system solution.

3.3.1 Candidate Solution Matrix

The purpose of this activity is to identify alternative candidate solutions to the business requirements defined during systems analysis. The amount of information describing the characteristics of any one candidate solution may become overwhelming. A matrix is a useful tool for effectively capturing, organizing, and communicating the characteristics for candidate solutions. In order to support the decision-making, there are comparisons of three candidates, which are shown in the tabular matrix. The explanation of each candidate solution is as follows:

(1) Candidate solution 1: MS Access as database

The LAN System with MS Access as database is very appropriate or suitable for Kim Garment Co., Ltd. because of its small type business organization. Therefore, the need for server is not worth investing at this moment. Talking to LAN System which is a data communication system that allows a number of independent devices to communicate directly with each other in a limited geographic area. LAN allows share and exchange data and resources among systems. This candidate solutions uses MS Access as storing database. The user runs an application that accesses data

from the MS Access database and presents it to the user in an understandable format. An access database file contains several different types of objects such as saved queries for organizing data, forms for interacting with the data on screen, and reports for printing results. It is undoubted that the LAN designs results in the benefits of low cost and easy configuration, which are the main issues for Kim Garment Co., Ltd.

(2) Candidate Solution 2: SQL Based Client/Server

Microsoft SQL Server is a Structured Query Language (SQL) based client/server relational database. When individuals need to use the resource, they connect over the network from their computers, or clients, to the server. In client/server database architecture, the database files and DBMS software reside on a server. A communications component is provided, so application can run on separate clients and communicate via Open Database Connectivity (ODBC) to the database server over a network.

SQL helps protect the data in a multi users networked environment. It does that by providing good reliability features such as data validation, referential integrity, rollback (undo transaction), automatic locking, and deadlock detection and resolution in a multi users LAN environment. SQL also enforces security and access control to database object.

(3) Candidate Solution 3: Software package

This is the same as candidate2, but the application will be Web platform on Internet Explorer by using Perl language programming instead of MS Access and ODBC. This looks similar to the concept of distributed presentation, which leads to less traffic transaction load.

- (a) The maintenance cost of integrity rule of storing application is lower than that of other solutions because it has the program to check condition. However, if the condition is not much, there is no need to have this program.
- (b) It requires to hire a specialist or well-trained staff in DBA (SQL), DeH, MS SQL Server and the Internet software.
- (c) Some part of this implementation is a proprietary system because the program in both client and server needs to communicate under the same environment (Matching software).
- (d) If there are more loads on the database server side, there is a need to upgrade database servers which is expensive, especially on a new DBMS.

3.3.2 Candidate System Matrix

The characteristics of candidate system matrix consists of portion of system computerization, benefits server and workstations, software tools needed, applications software, method of data processing, output devices and implementations, input devices and implications and storage devices and implications. The matrix allows us to compare candidate systems on the basis of several characteristics which is shown in Table 3.1.

Table 3.1. The Candidate System Matrix.

Characteristics	Candidate 1	Candidate 2	Candidate 3
Portion of System Computerized	Inventory Information System would be built to fit the requirement of inventory system.	Same as candidate 1.	Same as candidate 1.
Benefits	Fully support user required business process for Kim Garment. Plus more efficient interaction with sales and inventory staffs.	This solution is easy to implement because MS Access doesn't need high requirement.	Same as candidate 2.
Servers and Workstations	Technically architecture Windows NT Server, Pentium II/III, MS Windows 98	Pentium II, III, MS Windows NT Server and Pentium II, III, MS Windows 98 (Clients)	Same as candidate 2.
Software Tools Needed	MS Access 97	MS Access	Internet Explorer (Pearl)
Application Software	MS Office 97	Same as candidate 1.	Same as candidate 1.
Method of data processing	Resource sharing LAN	SQL-Based Client/Server	Messaged-Based Client/Server
Output Devices and Implications	HP Laserjet LJ1000	Same as candidate 1.	Same as candidate 1.
Input Devices and Implications	Keyboard & Mouse	Same as candidate 1.	Same as candidate 1.
Storage Devices and Implications	MS Access Act as data management	MS SQL Server DBMS with 60GB arrayed capability	Same as candidate 2.

3.3.3 Feasibility Analysis

A feasibility analysis is performed on each individual candidate without regard to the feasibility of other candidates. It is used to evaluate and rank candidate systems. Both the candidate systems matrix and the feasibility analysis matrix are useful for presenting the results of a feasibility analysis as part of a proposed system. This approach discourages the analyst and users from prematurely deciding which candidate is the best. There are four categories of feasibility analysis.

- (1) Operational Feasibility: A description as to what degree the candidate would benefit the organization and how well the system would work.
- (2) Technical Feasibility: An assessment of the maturity, availability (or ability to acquire), and desirability of the computer technology needed to support this candidate.
- (3) Economic Feasibility: the method that deals with Cost Analysis, Payback Period, Net Present Value and detailed calculations.
- (4) Schedule Feasibility: An assessment of how long the solution will take to design and implement.

Once the feasibility analysis has been completed for each candidate solution, a selected candidate solution is recommended. This candidate solution offers the best overall combination of technical, operation, economic and schedule feasibility. Table 3.2 shows the completed feasibility analysis matrix.

Table 3.2. The Feasibility Analysis Matrix.

Feasibility Criteria	Weight	Candidate 1	Candidate 2	Candidate 3
Operational Feasibility	30%	Support User Required functionality. Low maintenance cost. Score: 80	Fully support user required functionality. Score: 90	Same as Candidate 2 Score: 80
Technical feasibility -Technology - Expertise	30%	This solution has many traffics of data transaction and security is very low, however this solution uses Ms Access, which is user friendly and easy to understand. Moreover, it reduces software and training cost. Score: 80	Using Access, ODBC base on SQL client server. This solution decreases transactions and high security however it requires to hire and train SQL, Ms-access, MS-SQL expertise and any changing integrity rule of store application will be increased maintenance cost. Score: 90	Same as candidate 2, but it use Internet Explorer instead of MS access and ODBC. But it more loads on the database server, need to upgrade server (Cost of server is very high, furthermore it requires to hire expertise / training SQL, Dell file, MS-SQL server and Internet software.) Score: 70
Economic Feasibility -Cost of develop -Payback Period (discounted) -Detailed Calculations	30%	Approximately 425,000 baht Approximately 3 years Approximately 223,900 baht Score: 100	Approximately 574,000 baht Approximately 4.7 years Approximately 38,850 baht Score: 70	Approximately 564,000 baht Approximately 4.7 years Approximately 32,692 baht Score: 80
Schedule Feasibility	10%	2 - 3 months Score: 100	4 - 6 months Score: 90	8 months Score: 80
Ranking	100%	87	83	79

3.4 Hardware and Software Requirement

The proposed system uses the Microsoft Access as the major database; therefore the server must have the hardware specification, which can serve many users at the same time. Talking about the software specification, it is designed to operate based on Windows NT Server and also shared data resources together.

3.4.1 Hardware Specification

- | | |
|---|--------|
| (1) File Server Pentium IV 1.6 GHz | 1 Set |
| (2) Workstation | 5 Sets |
| (a) CPU Intel Celeron Processor 1.7 GHz | |
| (b) RAM 128 Mbytes | |
| (c) Hard disk 10.2 GB | |
| (d) Disk Drive 1.44 MB | |
| (e) VGA SIS6323 8Mb RAM | |
| (f) Mini Tower Case & Power 250Watts | |
| (g) Monitor 17" Low radiation | |
| (h) Keyboard & Mouse support Windows 98 | |
| (3) Printer | |
| (a) HP Laserjet LJ1000 | 2 Sets |
| (b) HP Scanjet SJ3500C | 1 Set |
| (4) UPS (Uninterruptible Power Supply) | 1 Set |
| (a) APC 500VA | |
| (5) Network Peripheral | |
| (a) Ethernet Switch Hub 10/100 8 port | 2 Sets |
| (b) UTP Cable 300 Meter | 1 Box |
| (c) Plug RJ 45 | |

3.4.2 Software Specification

- (1) Microsoft Windows NT Server 4.0
- (2) Microsoft Windows 98
- (3) Microsoft office 97
- (4) Norton Anti Virus

Figure 3.4 shows the physical network designs.



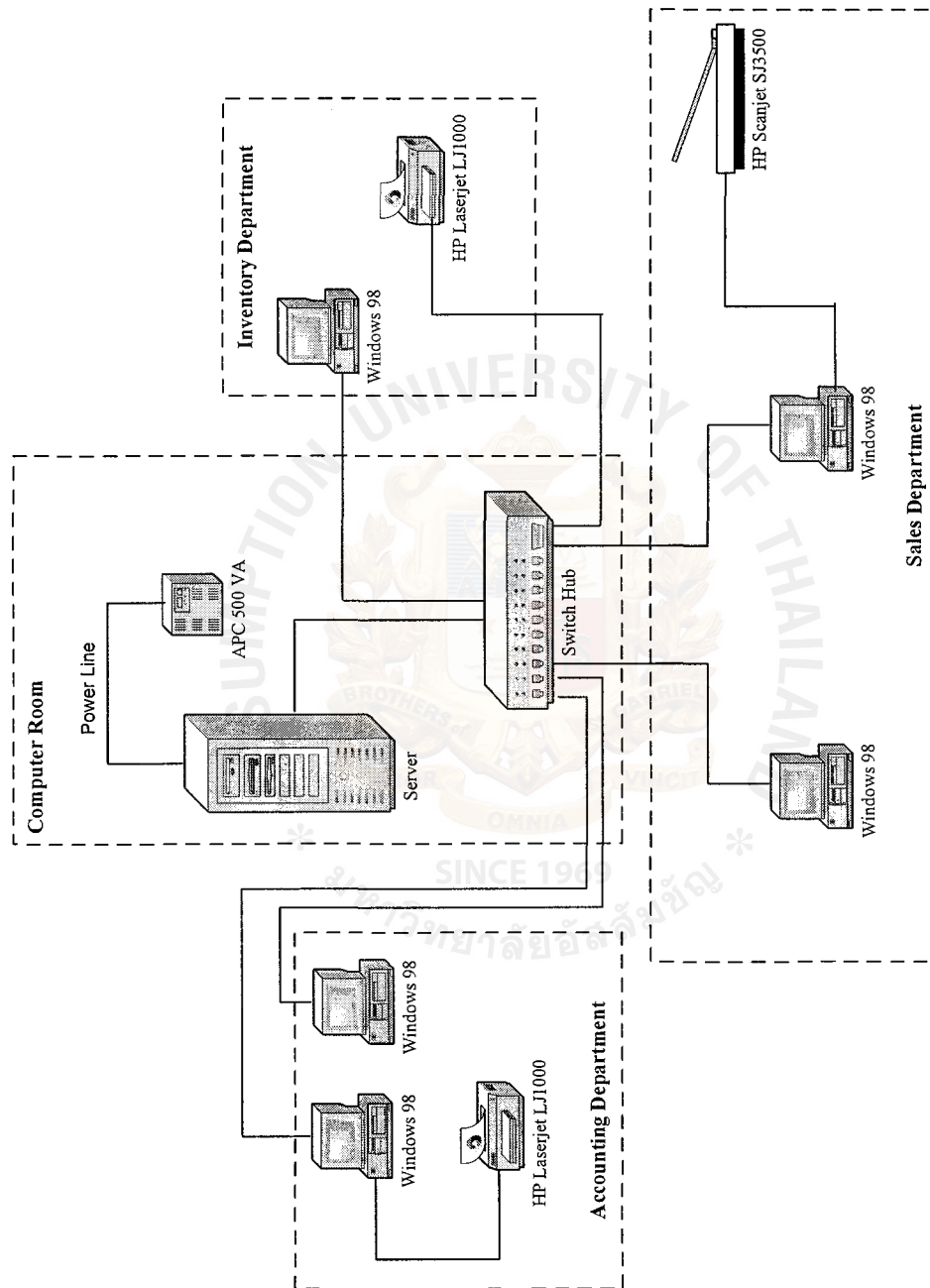


Figure 3.4. Computer Network of the Proposed System.

3.5 System Cost Analysis

3.5.1 Cost Analysis

Cost-benefit Analysis is a measure of the cost-effectiveness of a project. Types of cost to be taken into consideration are:

(1) Costs of Computer

(a) Hardware Cost

1 Set of Computer Server (1@52,000)	52,000.00 Baht
5 Sets of Workstation (5@30,000)	150,000.00 Baht
1 Set of HP Scanners	6,590.00 Baht
2 Sets of Printers	21,980.00 Baht
2 Sets of Switch Hub & Port	9,980.00 Baht
1 Set of UPS 500VA	3,220.00 Baht
UTP Cable 300 Meters and Connector	4,500.00 Baht
Total Hardware Cost	248,270.00 Baht

(b) Software Cost

MS Windows NT Server 4.0	30,000.00 Baht
MS Windows 98 SE (OEM)	45,000.00 Baht
MS Office 97	42,500.00 Baht
Norton Anti Virus	27,000.00 Baht
Total Software Cost	144,500.00 Baht

(c) Development Costs

Network Setup Cost	28,000.00 Baht
Training	35,000.00 Baht
Total Development Cost	63,000.00 Baht
Total Investment Cost	455,770.00 Baht

(2) Annual Operating Cost

(a) Paper (950 Baht per month)	11,400.00 Baht
(b) Utility (5,500 Baht per month)	66,000.00 Baht
(c) Miscellaneous (per year)	18,000.00 Baht
Total Annual Operating Cost	95,400.00 Baht

3.5.2 Benefit Analysis

Tangible benefit

(1) Personnel

The existing system has 7 personnel officers to run and operate the Inventory Department with the cost estimated monthly as 70,000 Baht (1 person @ 10,000). The proposed system cuts down the personnel cost by hiring only 5 officers, which costs 50,000 monthly (1 person @ 10,000). Therefore, in the first year, the proposed system can save the monthly salary of the officers cost up to 20,000 Baht per month and the organization can save the personnel officers cost drastically in the following years.

Reduce cost of human labor

(12 @ 20,000 Baht/month) 240,000 Baht/year

(2) Operational

The existing system uses paper for transactions and keeps the production records, requisition forms, with costs estimated as 5,100 Baht (1 pack @ 85 Baht) for paper.

Meanwhile the proposed system can store transaction record in terms of data, which is kept in the computerized system, the costs of paper instead of using computer, which costs 3,400 Baht (1 pack @ 85 Baht).

(a)	Reduce paper usage and office supplies	
	(12 @ 3,400 Baht/month)	40,800 Baht/year
(b)	Reduce cost of overtime	
	(12 @ 5,000 Baht/month)	60,000 Baht/year
	Total Annual Tangible Benefits	340,800 Baht

Intangible Benefit

- (1) Reduce work load of personnel staff and reduce the stressful environment
- (2) Provide data accuracy and faster access for decision making
- (3) Improve response time and improve the quality of the personnel work
- (4) Data is correct and up-to-date ready to serve the routine and ad-hoc demand.
- (5) Data is well organized with less redundancy
- (6) Improve job satisfaction
- (7) The overall performance of the department satisfies the organization
- (8) Decrease the level of error

3.5.3 Calculations of Break Even Point

Comparing the cost of two systems, the current system and the proposed system are summarized and the implementation of break-even analysis was shown in Figure 3.5. We have seen the different costs between two systems in full view. These represent the time when the benefit is equal to the investment cost. There is one factor that reflected cost; that is time value of money. Some of the costs of the system will be accrued after implementation and the benefits of the new system will be accrued in the future; so that should be adjusted in both costs and benefits to current Baht. The break-even point is 1 year and 2 months. From the point of 1 year onward, the new system will be more economical than the existing system because of labor savings and operating cost saving.

3.5.4 Cost of Existing System and Proposed System

The cost comparison of the existing system and the proposed system are summarized on the Table 3.3.

Table 3.3. Cost comparison between the Existing System and Proposed System, Baht.

Cost Items	Years				
	1	2	3	4	5
<u>Existing System:</u>					
Staff (increase 5% per year)	840,000	882,000	926,100	972,405	1,021,025
Operating Cost (increase 5% per year)	85,000	89,250	93,713	98,398	103,318
Utility Cost (increase 5% per year)	45,000	47,250	49,613	52,093	54,698
Total Cost	970,000	1,018,500	1,069,425	1,122,896	1,179,041
Cumulative Cost	970,000	1,988,500	3,057,925	4,180,821	5,359,862
<u>Proposed System:</u>					
Hardware Cost	248,270	-	-	-	-
Software Cost	144,500	-	-	-	-
Development Cost	63,000	-	-	-	-
Staff (increase 5% per year)	600,000	630,000	661,500	694,575	729,304
Operating Cost (increase 5% per year)	95,400	100,170	105,179	110,437	115,959
Utility Cost (increase 5% per year)	66,000	69,300	72,765	76,403	80,223
Total Cost	1,217,170	799,470	839,440	881,415	925,486
Cumulative Cost	1,217,170	2,016,640	2,856,084	3,737,499	4,662,986

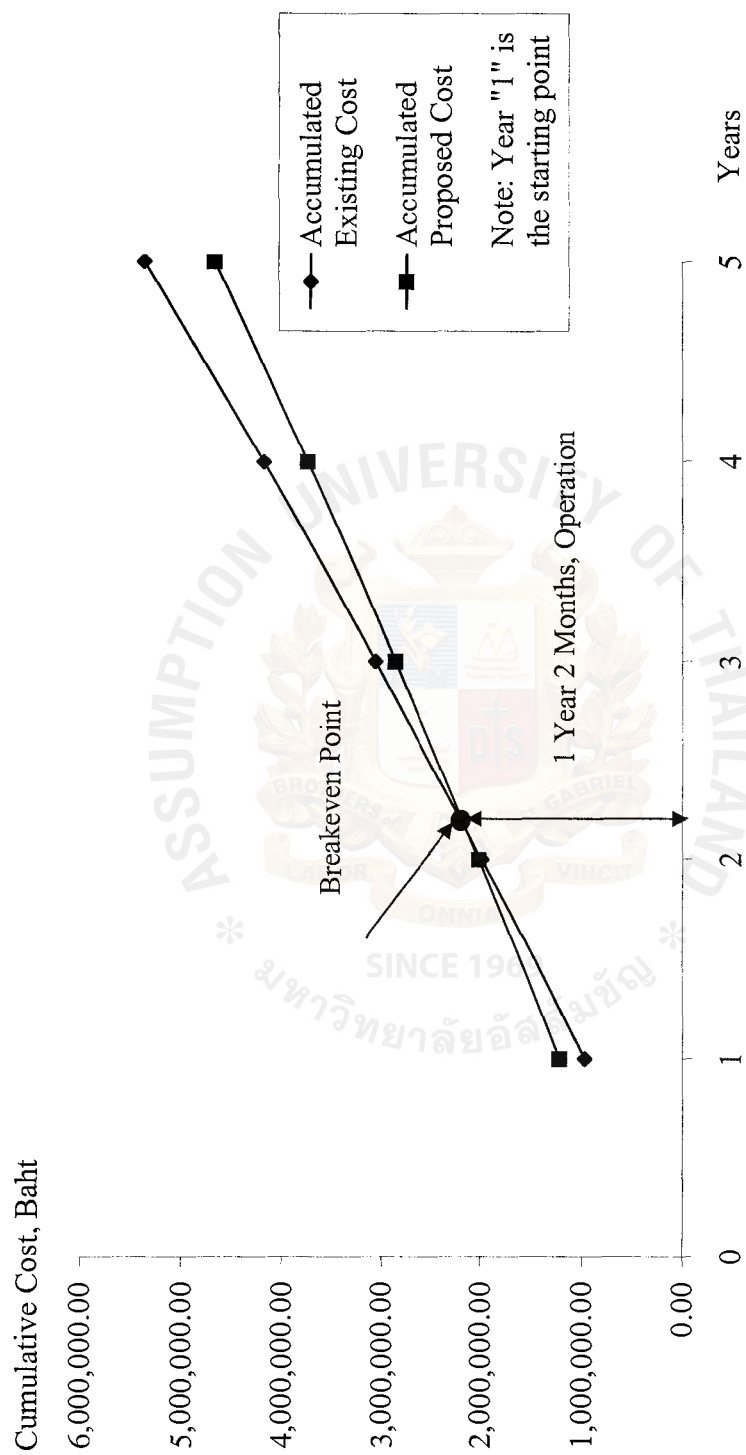


Figure 3.5. Cost Comparison between Existing System and Proposed System.

3.5.5 Payback Analysis

The payback period is determined from original investment divided by annual net cash inflow as formula is shown below. The number of years or how much time will lapse before accrued benefits overtake accrued and continuing cost. After implementation, you will incur additional operating expenses that must be recovered.

$$\text{Number of years to payback} = \frac{\text{Original investment}}{\text{Annual net cash inflow}}$$

The payback period of the proposed system is 2 years and 4 months. It will take about 2 years and 4 months to pay back the initial investment. Figure 3.6 will show Payback Chart Analysis and payback period calculation will be shown in Table 3.4.

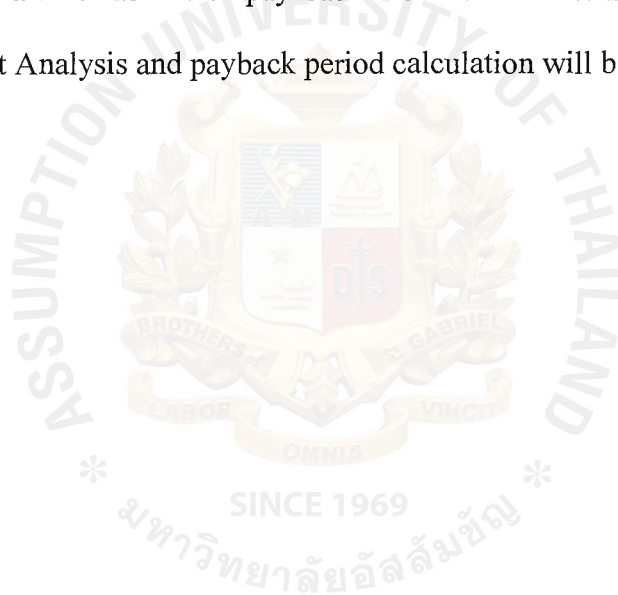


Table 3.4. Payback Analysis, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development cost:	-455,770					
Operation & maintenance cost:		-95,400	-100,170	-105,179	-110,438	-115,960
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted costs (adjusted to present value):	-455,770	-85,192	-79,835	-74,887	-70,239	-65,749
Cumulative time-adjusted costs over lifetime:	-455,770	-540,962	-620,797	-695,684	-765,922	-831,671
Benefits derived from operation of new system:	0	340,800	357,840	375,732	394,519	414,245
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted benefits (adjusted to present value):	0	304,334	285,198	267,521	250,914	234,877
Cumulative time-adjusted benefits over lifetime:	0	304,334	589,532	857,054	1,107,967	1,342,844
Cumulative life time-adjusted costs + benefits:	-455,770	-236,628	-31,265	161,370	342,045	511,173

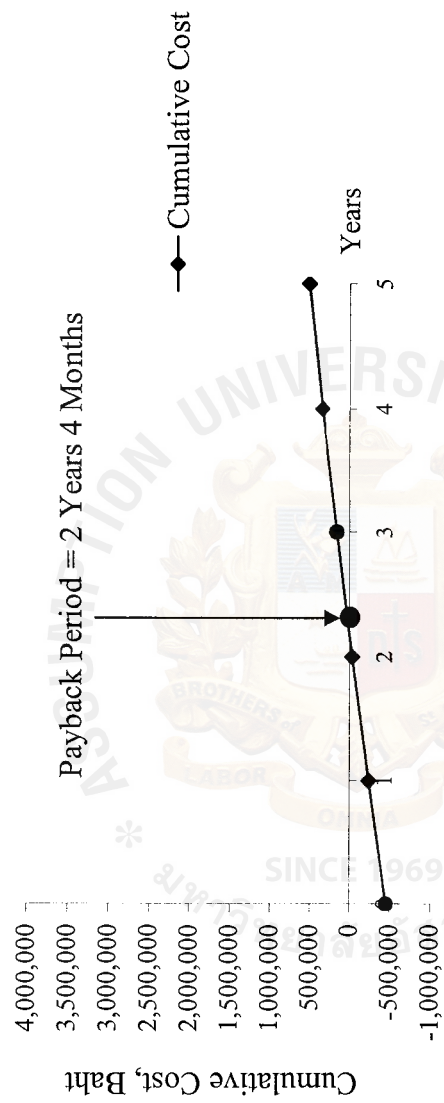


Figure 3.6. Payback Period for Proposed System.

3.5.6 Net Present Value (NPV)

Net Present Value is a sophisticated capital budgeting technique, which is calculated by subtracting the project's initial investment cost from the present value of cash inflows discounted at a rate of the firm's cost of capital. The formula for net present value is:

$$\text{Net present value} = \text{Present value of expected cash flows} - \text{Initial investment cost}$$

The Net Present Value calculation will be shown in Table 3.5.

If NPV is more than zero, the project should be accepted. If NPV is less than zero, the project should be rejected. After NPV calculation, it is positively valued at 511,137 Baht and therefore, the proposed system should be accepted.

Table 3.5. Net Present Value Analysis, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Development cost:	-455,770						
Operation & maintenance cost:		-95,400	-100,170	-105,179	-110,438	-115,960	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual costs:	-455,770	- 85,192	- 79,835	- 74,887	- 70,239	- 65,749	
Total present value of lifetime costs:							-831,671
Benefits derived from operation of new system	0	340,800	357,840	375,732	394,519	414,245	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual benefits:	0	304,334	285,198	267,521	250,914	234,877	
Total present value of lifetime benefits:							1,342,844
Net Present Value:							511,173

IV. PROJECT IMPLEMENTATION

4.1 Project Implementation Plan

The implementation of the proposed system is initiated by surveying the current existing system. Gantt Chart is used to depict project tasks against a calendar including analysis, design, and implementation, which are shown in figure 4.1. Installation of the new system may be an instantaneous affair, but it is often a major task.

The next step is to design the system. The purposes are to build and test a functional system that fulfills business and design requirements. And to implement the interfaces between the new system and existing production systems. After several iterations of the design or construction loop, we will have built the functional system to be implemented. These include building and testing the network, software, databases, and program.

The last step, we construct and test the system prototype to find any possible difficulties and errors that might arise from the proposed system. We also need to train the users to comprehend the newly installed test system. And if there is no problem found after running the production test to search for obstacles, we can officially inaugurate this new system to the department.

4.2 Testing Plan and Result

We summarize in-depth underlying problems of the current existing manual system, and we use that information in preparing the project. We study the flow of the data along with the basic processes of the organization and we additionally obtain the user requirements. After that we deliver the new system and put it into the operation which its purpose of the delivery phase is to smoothly convert from the old one to the new system. These include conducting system tests, preparing conversion plans, training system users, and converting to the new system.

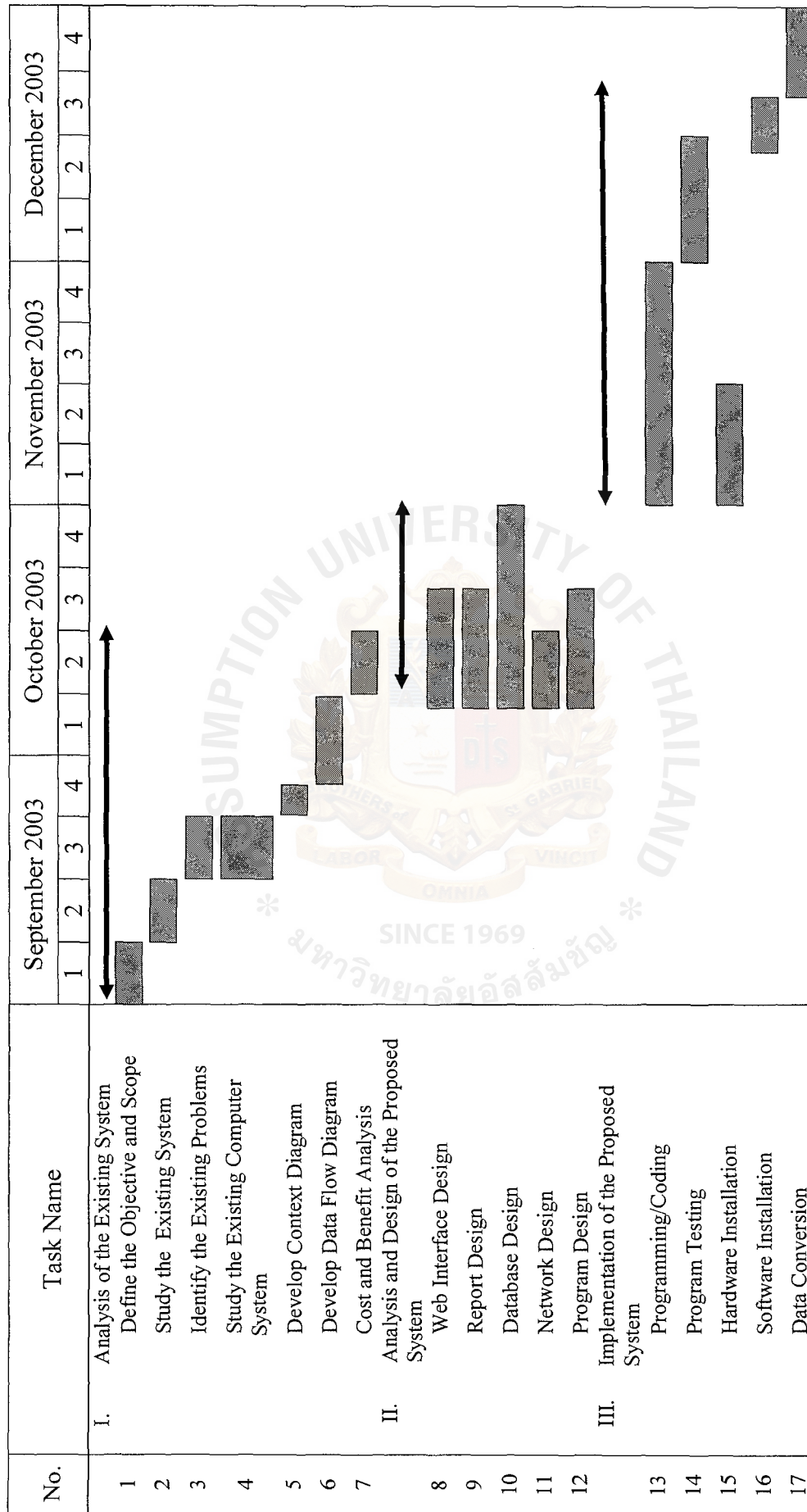


Figure 4.1. Project Plan of Inventory Control System.

The testing procedure for analyzing and evaluating the overall performance of the system is essential for quality assurance. We must commit the test thoroughly in order to obtain a complete summary of the test program.

To complete the proposed system, we have to create a real program, which is compatible with the user requirements and given environment.

The tools that we select create user-friendly interface and make a linkage to the database. With flexibility features of Microsoft Access, users can send queries, making reports, easily and effectively organizing the entire information.

After creating a program, hardware, software and office components are put together to demonstrate the real coding environment and construct a prototype system. We run the test to check whether the proposed system is running smoothly with the entire environment. Program Testing consists of running a new or modified program, which appears to be working correctly with sample data. The sample data should be enough to cover all the conditions the program will encounter in its foreseeable future. Manager and users should play a vital key role in the development of test data.

Module testing, this test is demonstrated to check the performance of each module of the program. After the entire individual modules are tested and assessed so that they are working properly, they are combined so that program testing can start. This often consists of ensuring that interfaces between modules work, as they should and that these individual modules do not have an adverse effect on one another.

When we assemble every module of the program to function as a complete set, this test is demonstrated to check the system integrity. System testing ensures that all the programs that make up the new system work together as they should. Acceptance evaluates the extent to which the new system meets user requirements under normal

operation condition. Then we determine how the system performs under the peak load job circumstance, recovery test, storage test, human performance test.

In order to maximize the overall performance after the inauguration of system, it is very important to ensure that users are sufficiently knowledgeable to manage the system. It is obligatory that users be familiar with the new system before operating full function. The training will last one-week so if there are any unexpected errors found, they can be resolved in time.

Program Conversion, parallel conversion will be designed; it is the strategy where the existing system and the proposed system are implemented simultaneously for a certain period of time. This plan is organized and operated to ensure that the new system would be flawless by the time the organization deploys the new system to its full extent.

According to the fact that the existing is manual, it is not likely to be such an easy process in converting the existing system into a fully computerized one. The routine activities and personnel officers need to be well prepared. Additionally, there might occur some unforeseen damage, so it is suggested to implement a conversion plan. This is to prepare the users for a smooth transition to the new system.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The study of this system development project is to analyze, design, develop, and implement the Inventory Control System for Kim Garment Co., Ltd. This study applies the structured analysis and design technique for better control. Therefore, the proposed system has been designed to solve these problems. In order to analyze the major factors that have affected the process, cost-benefit analysis and uncertainty events should be examined. All of the processes in the proposed system are implemented for the Inventory Control System by using developed computerized processes. So the information data can be retrieved correctly and be less time consuming.

The existing manual system in Inventory Department is becoming unlikely to be practical and productive as the information has been swelling and even more complex than before. Inventory Officers are having such a difficult time to go through the files in hard copy format looking for a particularly needed information. While the process takes a lot of time to complete, errors also arise easily.

The Context Diagram and Data Flow Diagram of the proposed system demonstrate the system. This new computerized system is designed to perform its activities, which are suitable for all the user's requirement at a reasonable cost.

Table 5.1. shows the comparison of usage time between existing manual system and computerized system. According to the table, each process that is handled by existing manual system is more time consuming than the process which is handled by the computerized system. The completely computerized system can eliminate unnecessary steps in a process and because of its efficiency to reduce time consuming.

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

Process	Existing System	Proposed System
Customer Response Process	20 Hours	2 Minutes
Update Process	30 Hour	3 Minutes
Process Generate Report	40 Minutes	3 Minutes
Query	15 Minutes	1 Minute

Usually, the existing manual system is responsible for handling much more data such as Customer Information, Stock On-hand Report, Inventory Data and Accountant Data. Each process is involved with an enormous amount of paper. Inventory officers find it strenuous in keeping all this information up-to-date. Evidently, for instance, in processing query a stock on-hand information and delivery & shipment activities, the data must be accurate and current for proper data analysis in determining the appropriate transaction to customers.

Introduced problems as mentioned above can be figured out by establishing the newly proposed system. With the hand of computerization, errors are finally eradicated and operating every function will be improved, comfortable and less troublesome. The proposed system can manage the bulk of data very well since the data will be kept in the database and users feel free to retrieve the data any time they wish.

Keeping the data up-to-date will be no longer a laborious task to do so. Users will find it easily and less time consuming in updating the data in the database through the user-friendly interface. To give an example, Customer Information data and Stock On-hand Report are gathered everyday, the ability to retrieve data directly from the computerized system, will cut off the excessive effort in collecting those data in the existing manual system. Every function will be automated, therefore, data processing

will have yielded very less response time, when compared to the existing manual system, which enables the highly effective overall performance to happen.

5.2 Recommendations

It takes time before Inventory officers can be familiar and able to operate the new system smoothly so prior training is needed along with intensive monitoring in the very beginning of the new system. And as we designed the parallel conversion, it needs to keep conducting the manual system until the new system is running well all the whole operation.

The capable new system is able to utilize the information for periodic analysis, future reference and report. In expecting that in the very near future, the company will expand and, to have the entire process running effectively at the bigger frame, the company should prepare the plan on increasing the computer usage. The company can also consider adopting a computerized system by the other departments.

The company also has to take care of regarding the issue of system security in terms of authorization and electricity failure. The system must be highly secure, so the password authentication policy is undecated. Also consideration of the policy of system back up at an appropriate period of time.

APPENDIX A

DATA FLOW DIAGRAM OF PROPOSED SYSTEM



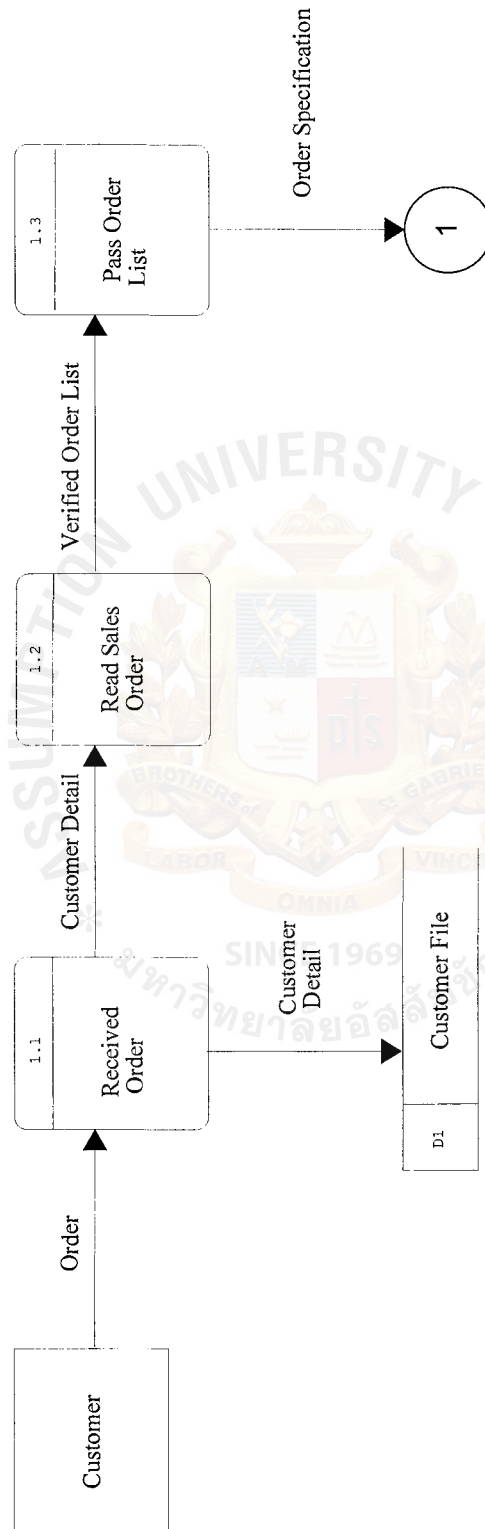


Figure A.1. DFD Level 2 of Process Order Specification.

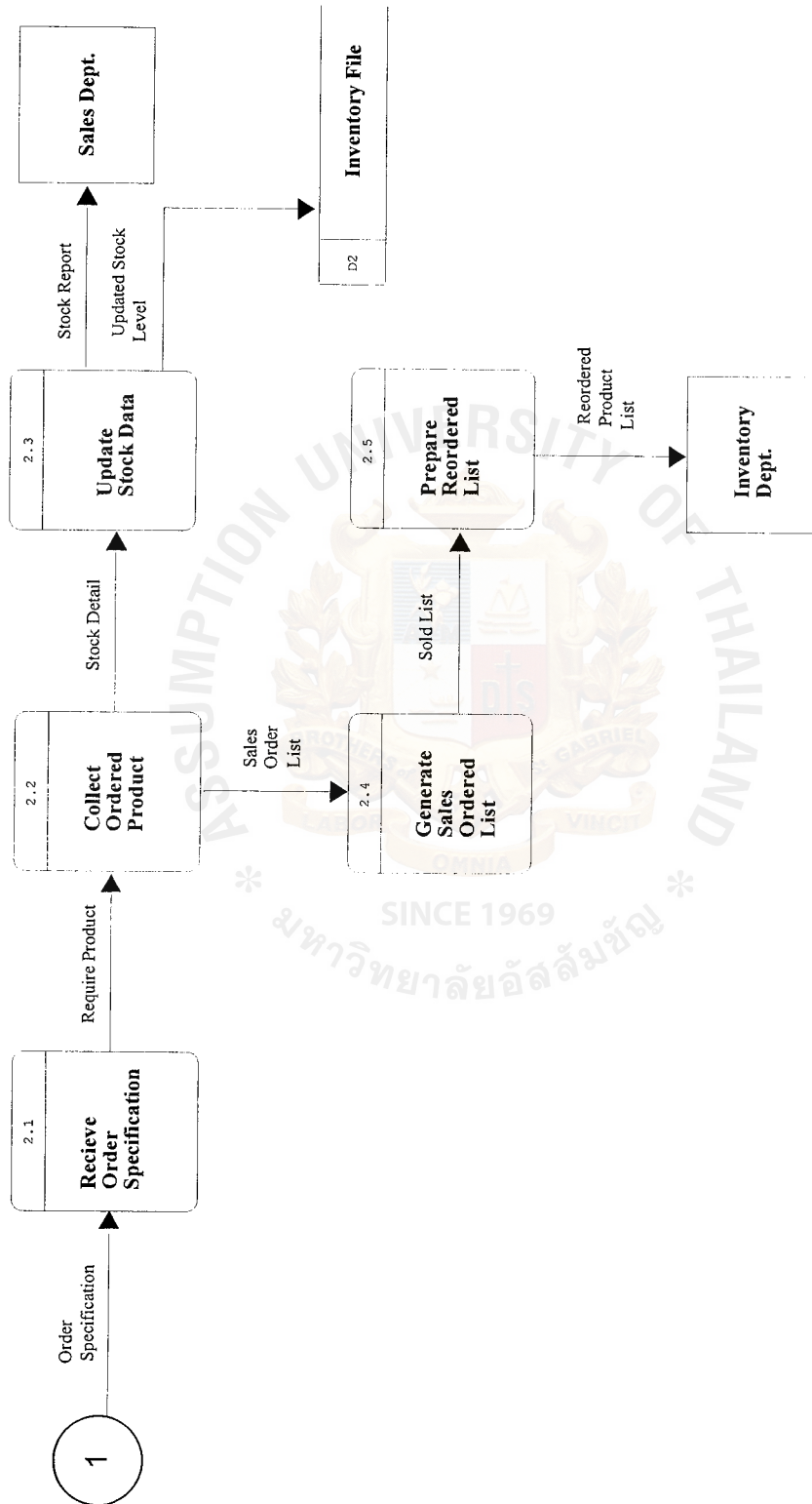


Figure A.2. DFD Level 2 of Process Check Stock On-hand.

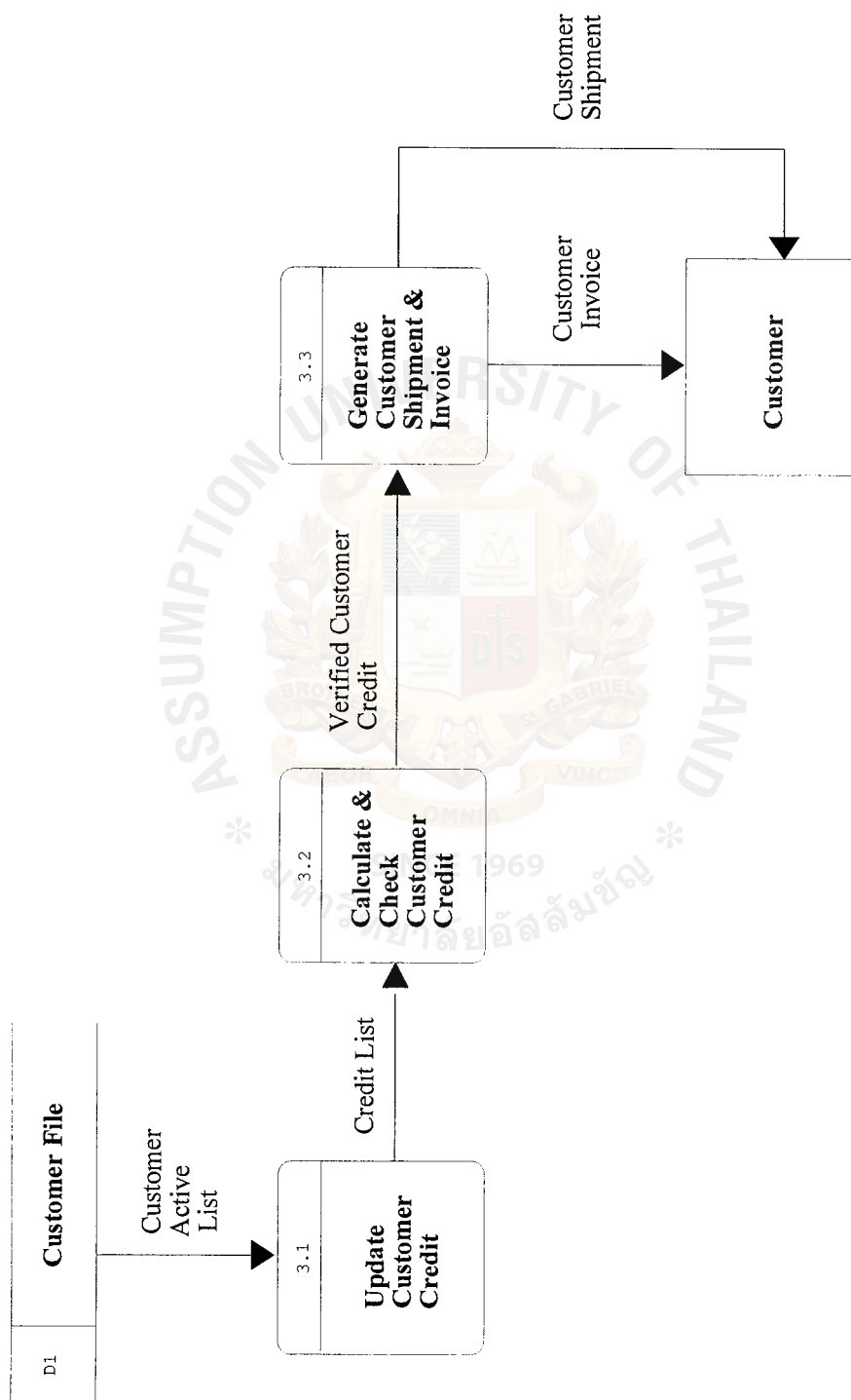


Figure A.3. DFD Level 2 of Process Calculate Cost & Term.

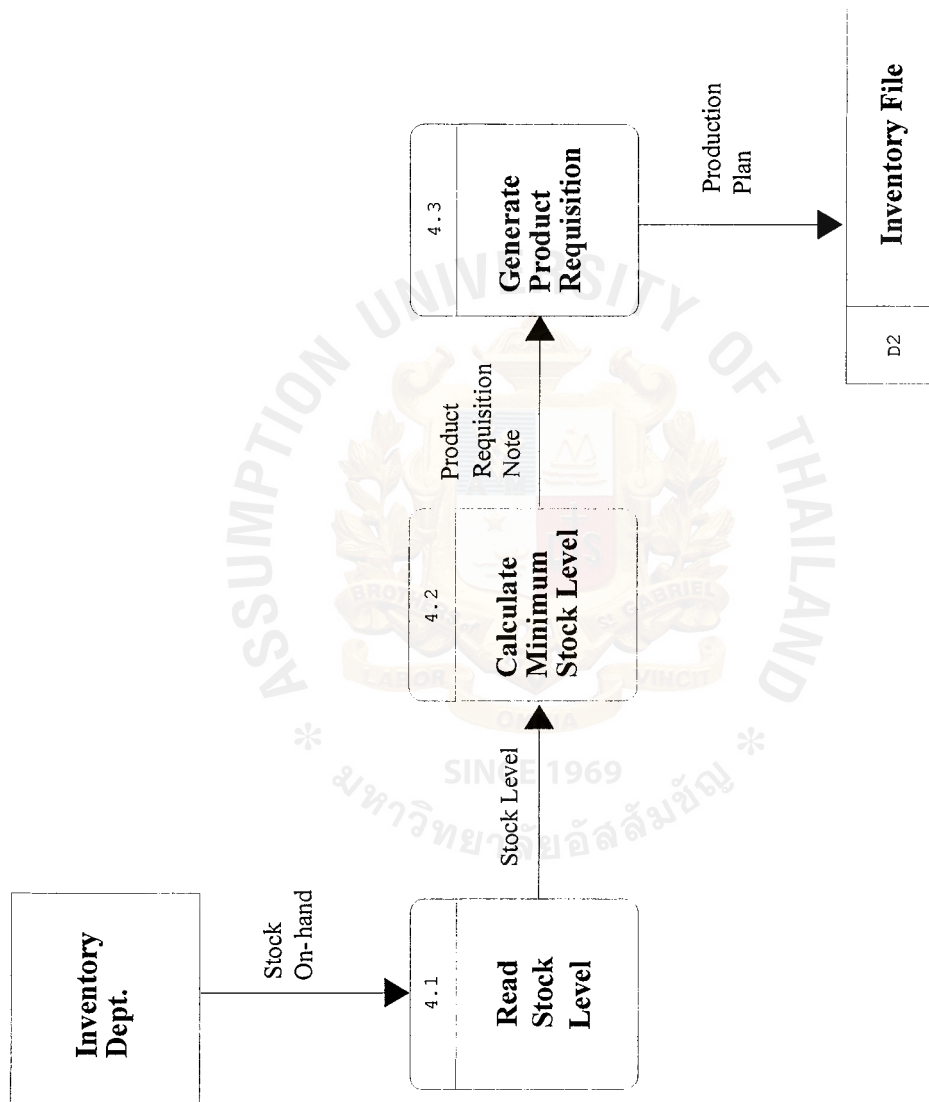


Figure A.4. DFD Level 2 of Process Create Production Plan.

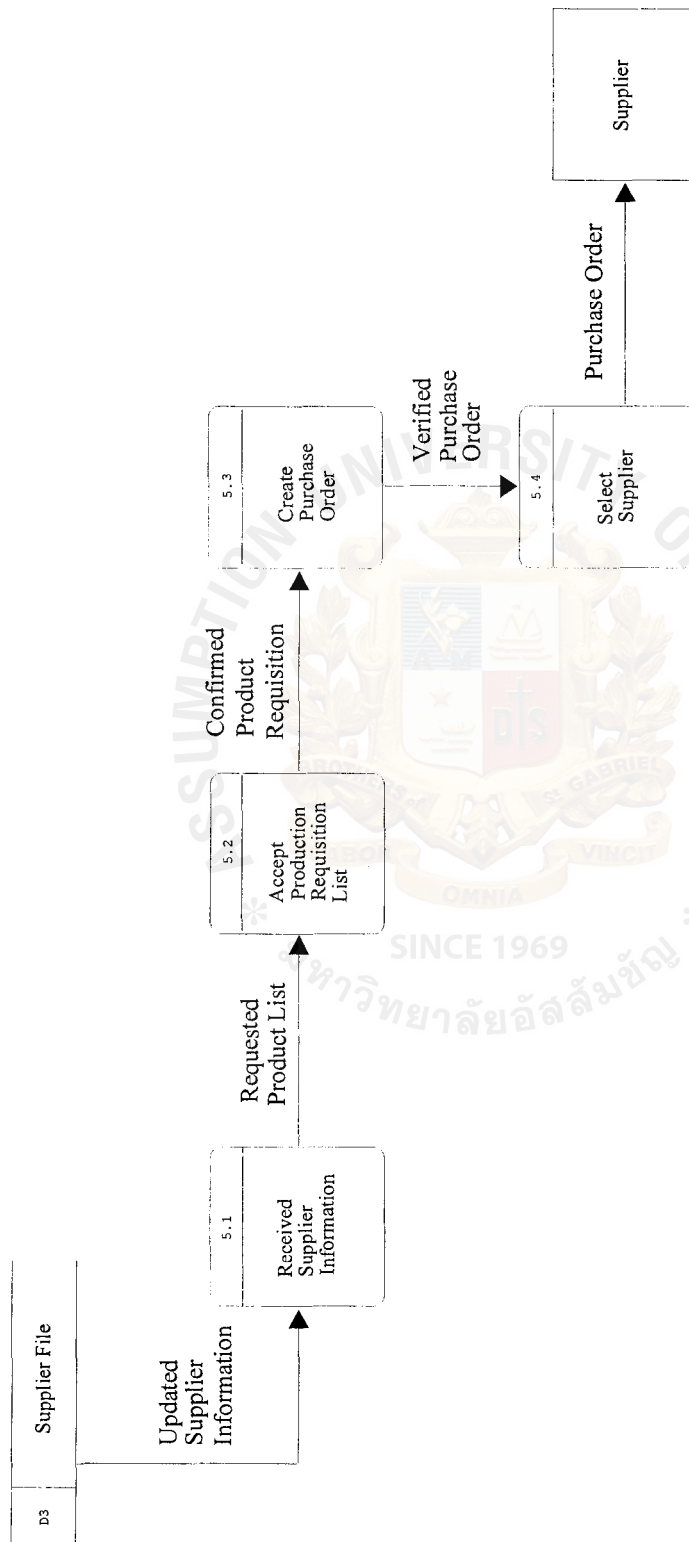


Figure A.5. DFD Level 2 of Process Generate Purchase Order.

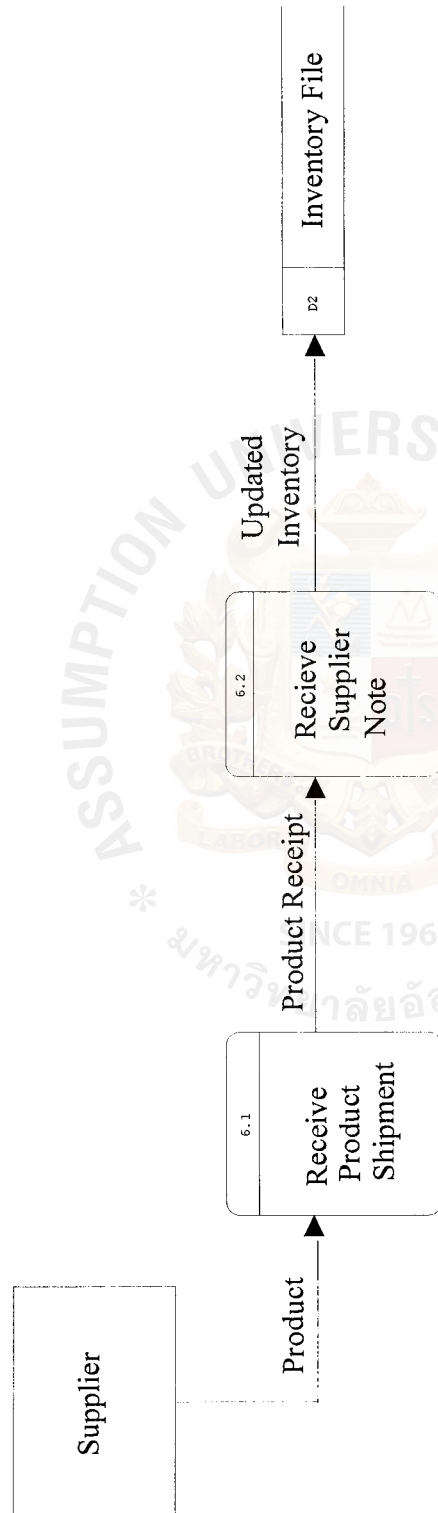


Figure A.6. DFD Level 2 of Process Receive Requisition Product.

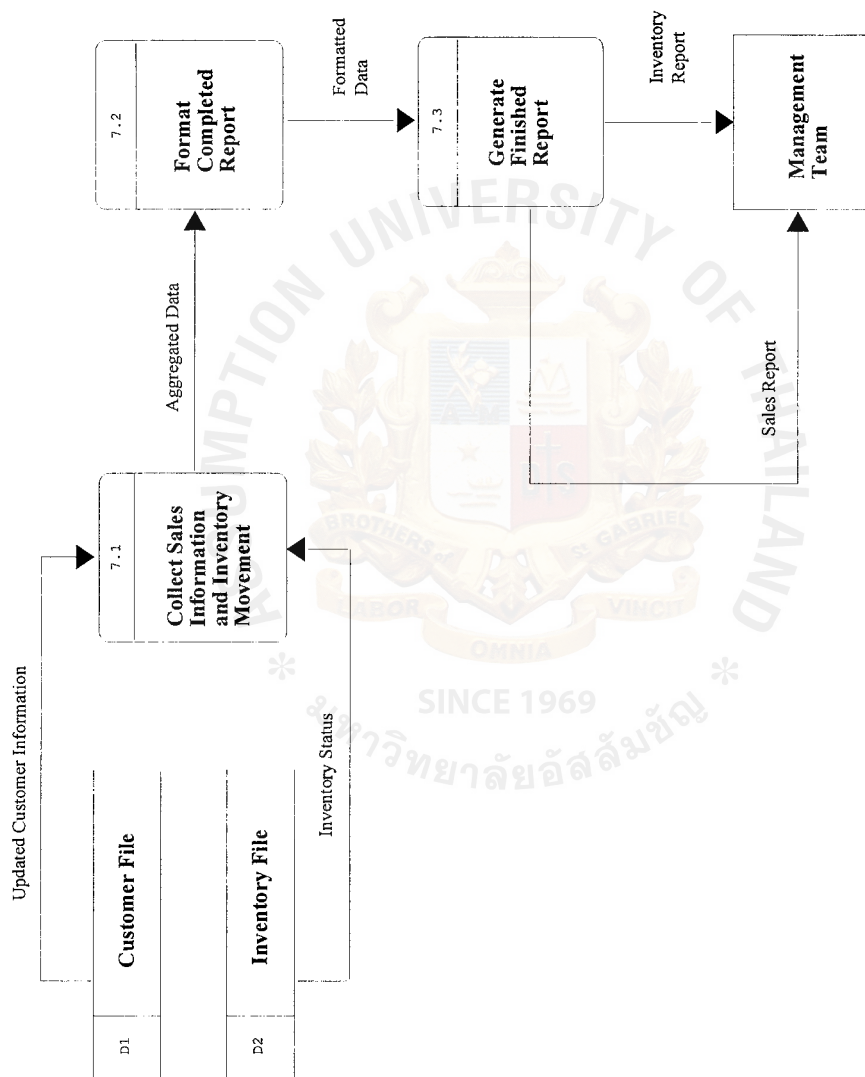


Figure A.7. DFD Level 2 of Process Generate Report.

APPENDIX B
STRUCTURE CHART



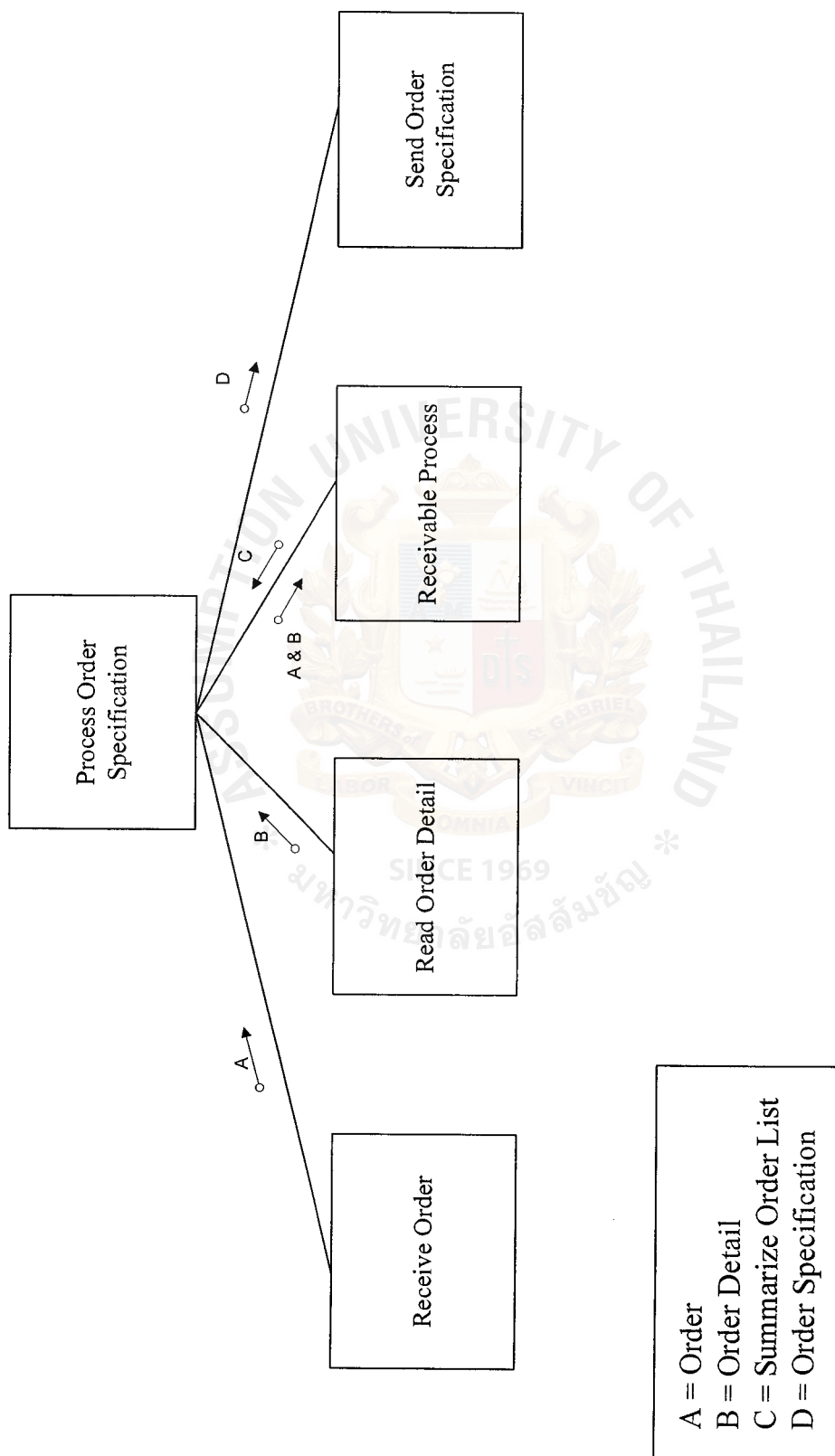


Figure B.1. Structure Chart of Process Order Specification.

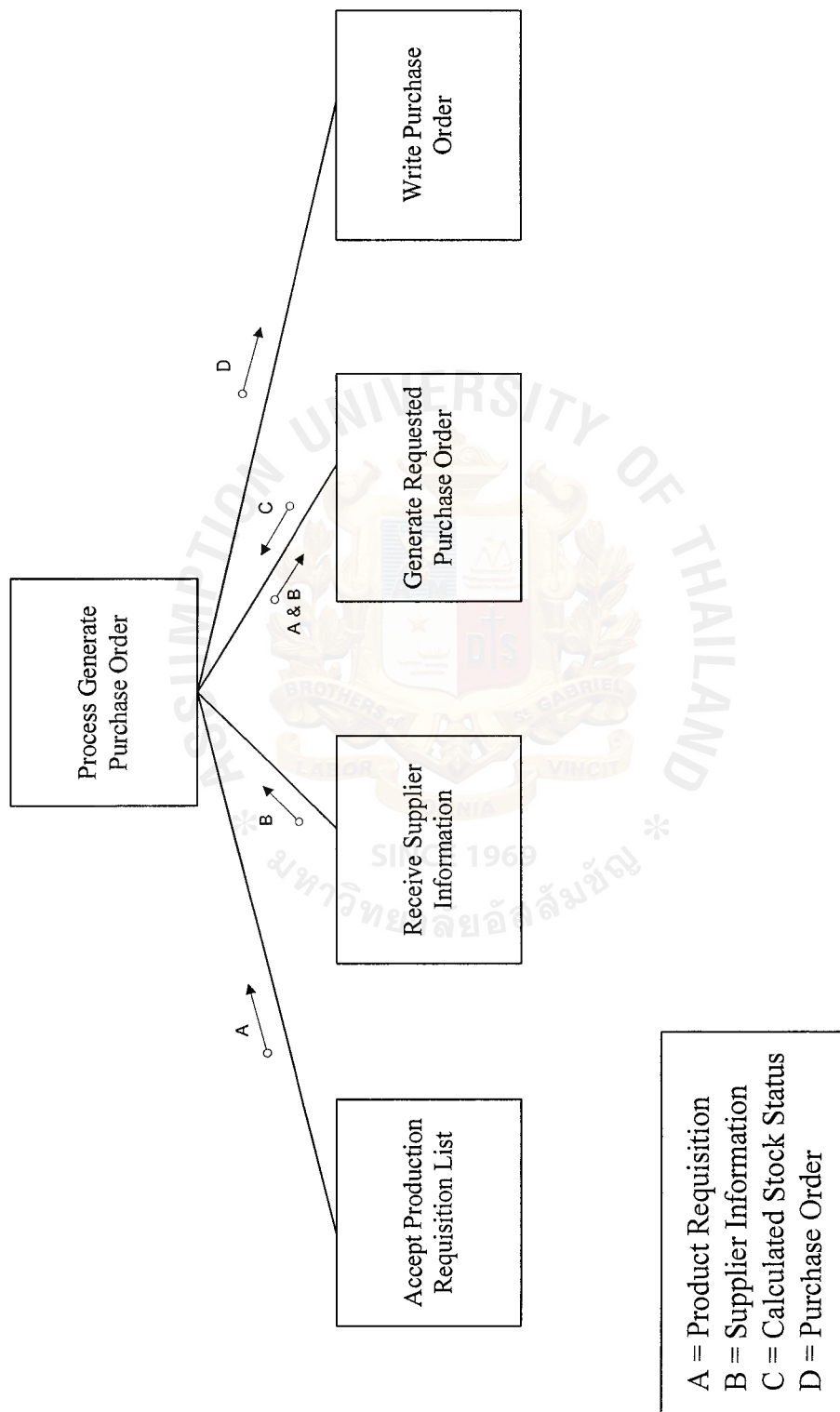


Figure B.2. Structure Chart of Process Generate Purchase Order.



APPENDIX C
DATABASE DESIGN

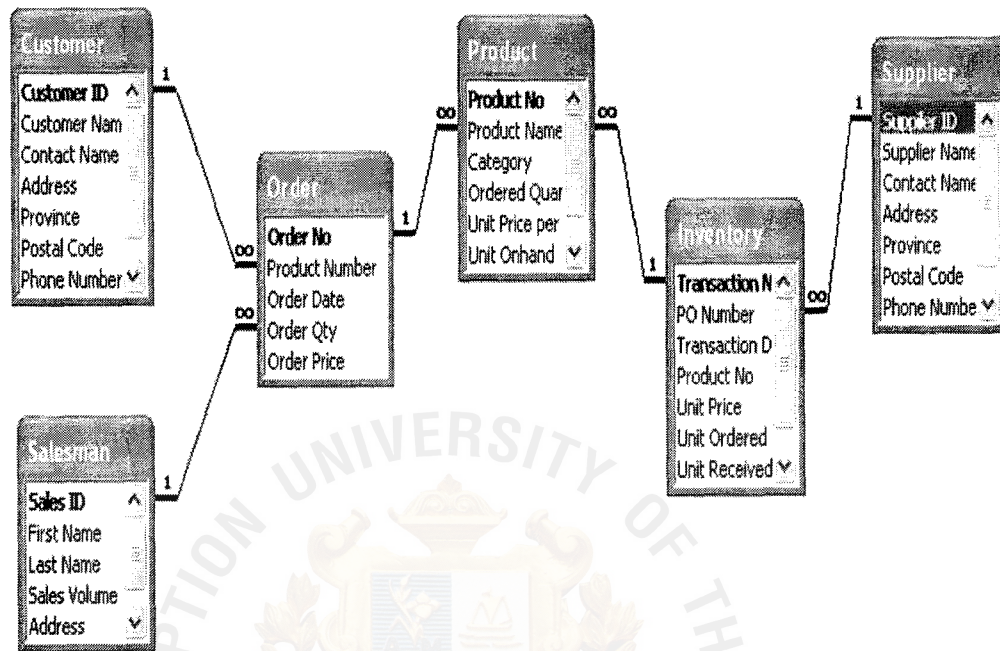


Figure C.1. Database Design of Inventory Control System.

Product Detail : Table

Field Name	Data Type	Description
Product No	Text	
Product Name	Text	
Category	Text	
Ordered Quantity	Number	
Unit Price per Yard	Number	
Unit Onhand	Number	
Reorder Level	Number	

Field Properties

General | **Lookup**

Field Size: 50

Format:

Input Mask:

Caption:

Default Value:

Validation Rule:

Validation Text:

Required: No

Allow Zero Length: Yes

Indexed: Yes (No Duplicates)

Unicode Compression: Yes

IME Mode: No Control

IME Sentence Mode: None

The data type determines the kind of values that users can store in the field. Press F1 for help on data types.

Figure C.2. Properties of "Product Detail" Table.

Customer Master File : Table

Field Name	Data Type	Description
<input checked="" type="checkbox"/> Customer ID	Text	
<input type="checkbox"/> Customer Name	Text	
<input type="checkbox"/> Contact Name	Text	
<input type="checkbox"/> Address	Text	
<input type="checkbox"/> Province	Text	
<input checked="" type="checkbox"/> Postal Code	Number	
<input type="checkbox"/> Phone Number	Number	
<input type="checkbox"/> Fax Number	Number	

Field Properties

General | Lookup

Field Size: Long Integer

Format:

Decimal Places: Auto

Input Mask:

Caption:

Default Value: 0

Validation Rule:

Validation Text:

Required: No

Indexed: Yes (Duplicates OK)

The data type determines the kind of values that users can store in the field. Press F1 for help on data types.

Figure C.3. Properties of "Customer Master File" Table.

Supplier Master File : Table

Field Name	Data Type	Description
Supplier ID	Text	
Supplier Name	Text	
Contact Name	Text	
Address	Text	
Province	Text	
Postal Code	Number	
Phone Number	Number	
Fax Number	Number	

Field Properties

General | Lookup

Field Size: 50

Format:

Input Mask:

Caption:

Default Value:

Validation Rule:

Validation Text:

Required: No

Allow Zero Length: Yes

Indexed: No

Unicode Compression: Yes

IME Mode: No Control

IME Sentence Mode: None

The data type determines the kind of values that users can store in the field. Press F1 for help on data types.

Figure C.4. Properties of "Supplier Master File" Table.

Order Detail : Table

Field Name	Data Type	Description
Order ID	Text	
Product Number	Text	
Order Date	Text	
Order Qty	Text	
Order Price	Number	

Field Properties

General | Lookup

Field Size: 50

Format:

Input Mask:

Caption:

Default Value:

Validation Rule:

Validation Text:

Required: No

Allow Zero Length: Yes

Indexed: No

Unicode Compression: Yes

IME Mode: No Control

IME Sentence Mode: None

The data type determines the kind of values that users can store in the field. Press F1 for help on data types.

Figure C.5. Properties of "Order Detail" Table.

Inventory Detail : Table

Field Name	Data Type	Description
Transaction No	Text	
PO Number	Text	
Transaction Date	Date/Time	
Product No	Text	
Unit Price	Text	
Unit Ordered	Text	
Unit Received	Text	
Unit Solds	Text	

Field Properties

General | Lookup

Field Size: 50

Format:

Input Mask:

Caption:

Default Value:

Validation Rule:

Validation Text:

Required: No

Allow Zero Length: Yes

Indexed: Yes (No Duplicates)

Unicode Compression: Yes

IME Mode: No Control

IME Sentence Mode: None

The data type determines the kind of values that users can store in the field. Press F1 for help on data types.

Figure C.6. Properties of "Inventory Detail" Table.



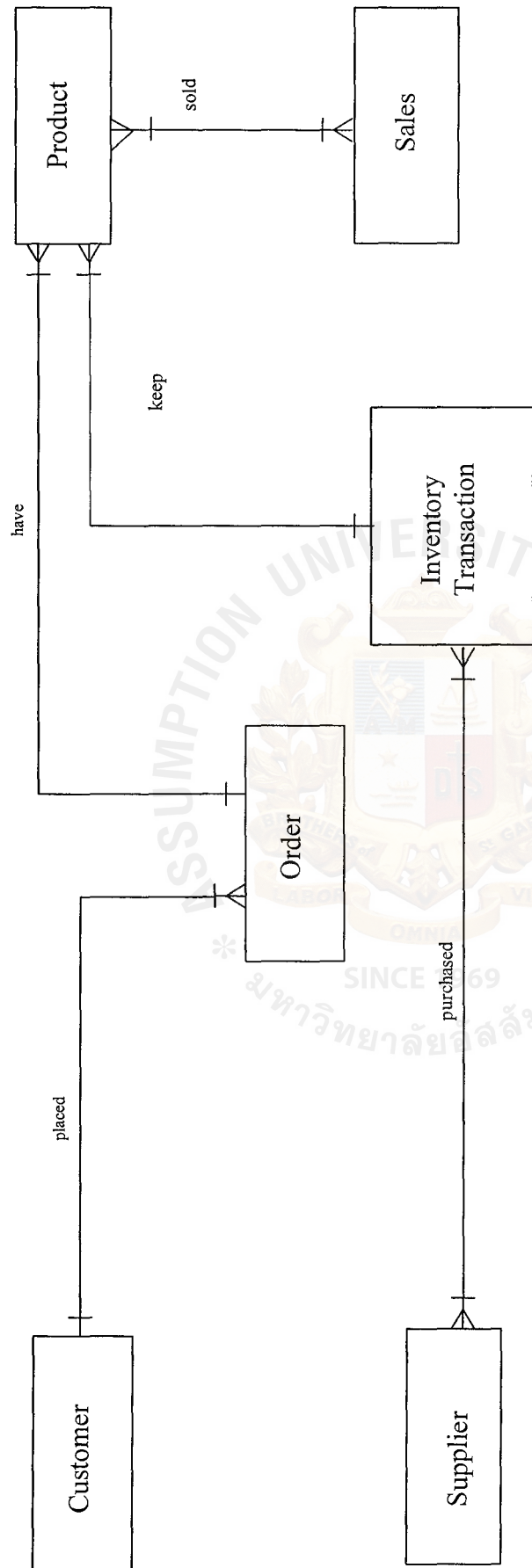


Figure D.1.1. Context Data Model.

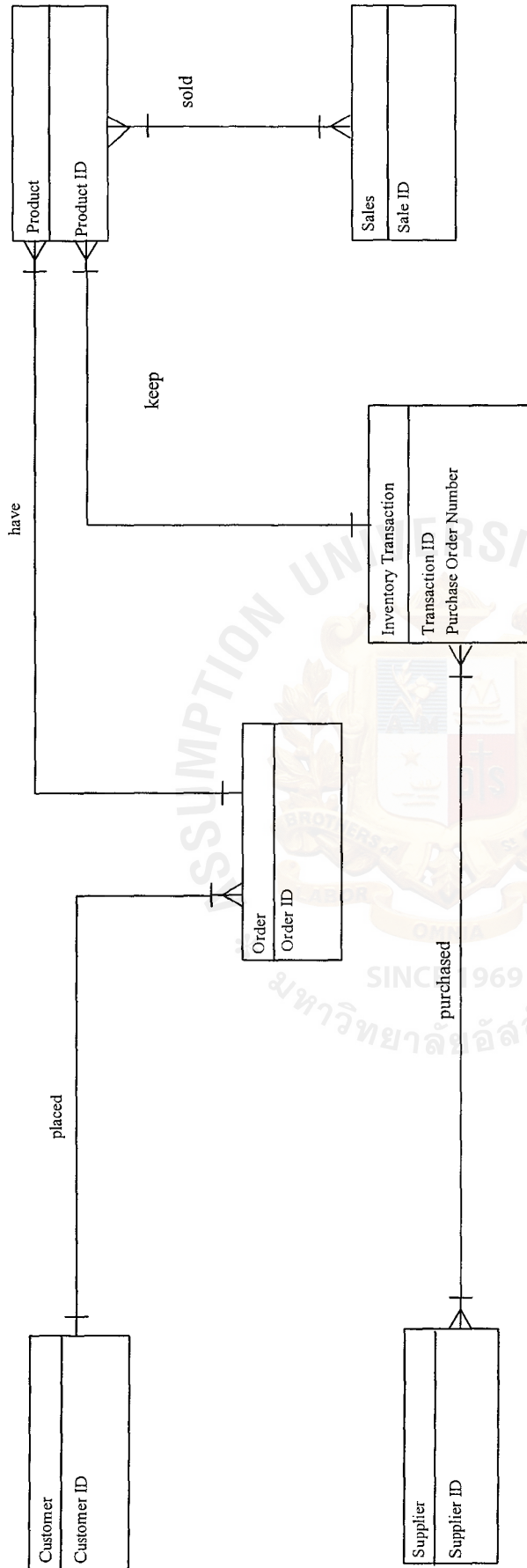


Figure D.2. Key-Based Data Model.

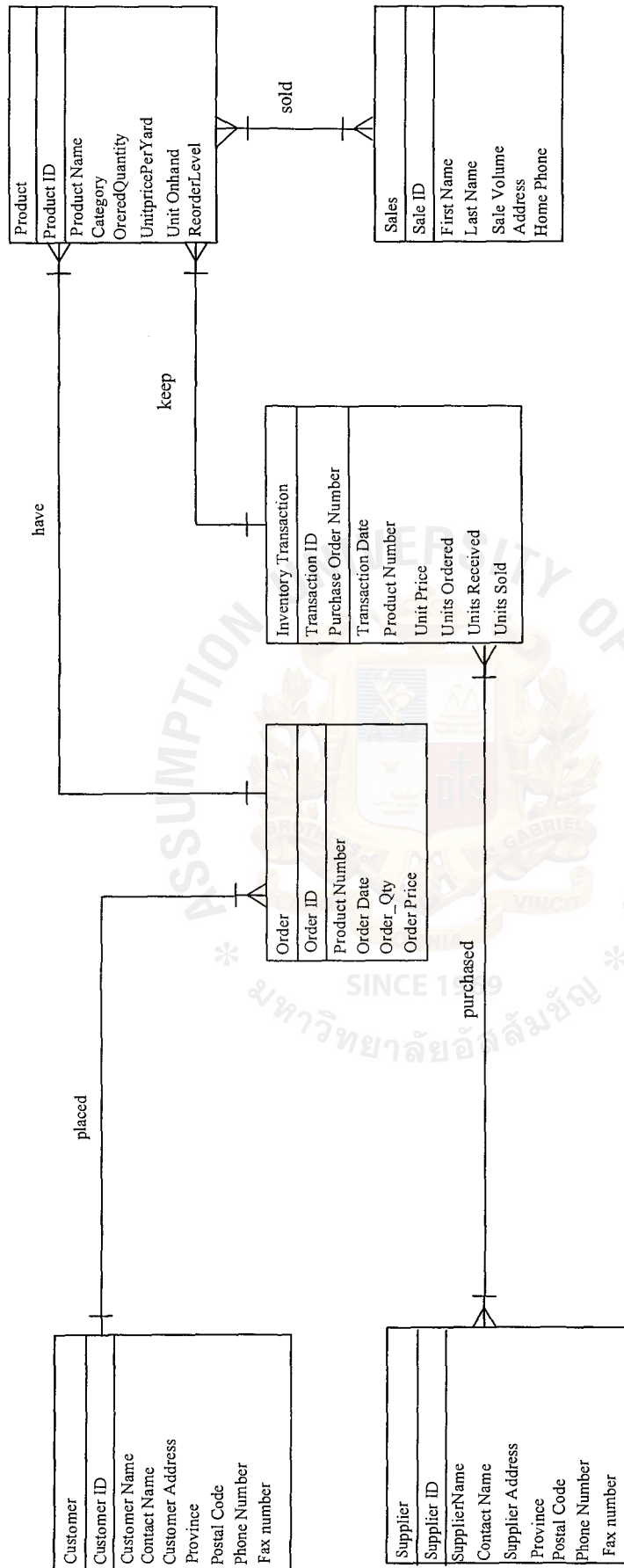


Figure D.3. Fully Attributed Data Model.

APPENDIX E
USER INTERFACE DESIGN



LOGIN : Form

KIM GARMENT CO., LTD

USER NAME

PASSWORD

Record: 1 of 1

Figure E.1. Interface Design of Login.

Login Screen

Purpose : To verify user name and valid password from user oriented access control.

: Gateway to login to Inventory Control System.

Required Input

User must type user name and password.

Command buttons

OK = To confirm the input data and allow system to work.

EXIT = To log off from system.

MAIN MENU : Form

MAIN MENU

ORDER ENTRY

CUSTOMER MASTER FILE

ORDER LIST REPORT

SUPPLIER MASTER FILE

INVENTORY FILE

SALES REPORT

Record: 1 of 1

Figure E.2. Interface Design of Main Menu.

Main Menu Screen

Purpose : Present all services systems for user accessing to required data.

Require Input : Clicking on required serviced button.

Command buttons

ORDER ENTRY FORM	= Access into Order Form.
ORDER LIST REPORT	= Access into Order List Report.
INVENTORY FILE	= Access into Inventory File.
CUSTOMER MASTER FILE	= Access into Customer Master File.
SUPPLIER MASTER FILE	= Access into Supplier Master File.
SALES REPORT	= Access into Sales Report.

The screenshot shows a window titled "Customer Master File" with a standard Windows-style title bar (minimize, maximize, close buttons). The window contains a form with the following fields and values:

Customer ID	C0001
Customer Name	Nunyang Co., Ltd.
Contact Name	Ms. Jarunee S.
Address	44/25 Petchkasem R.d., Bangkhuntien
Province	Bangkok
Postal Code	10500
Phone Number	8924720
Fax Number	8924715

Below the form fields is a row of five icons: a right arrow with an asterisk, a right arrow with an 'X', a floppy disk, a printer, and a right arrow with a double asterisk. At the bottom of the window is a record navigation bar that reads "Record: 1 of 3" with navigation buttons (back, forward, first, last, etc.).

Figure E.4. Interface Design of Customer Master File.

Customer Master File Screen

Purpose : To show the detail of each customer. To add new customer as well as to delete unneeded customer.

Requires Input

User must create the code for each of new customer and type in all block of detail. In case of existing customer, user can key in only customer code, then all detail will be automatically shown up.

Command Buttons

- ADD** = To record new customer file.
- DELETE** = To move out unneeded customer file.
- SAVE** = To update revised information of customer.
- EXIT** = To go to Main Menu.
- PRINT** = To print this customer detail for document purpose.

Supplier Master File

Supplier ID	S1111
Supplier Name	Vision Garment Co., Ltd.
Contact Name	Ms. Peraporn M.
Address	12 Sunthornkosa Road, Klongtoey
Province	Bangkok
Postal Code	10110
Phone Number	2400666
Fax Number	2400667

Record: 1 of 1

Figure E.5. Interface Design of Supplier Master File.

Supplier Master File Screen

Purpose : To show the detail of each supplier. To add new supplier as well as to delete unneeded supplier.

Requires Input

User must create the code for each of new supplier and type in all block of detail. In case of existing supplier, user can key in only supplier ID, then all detail will be automatically shown up.

Command Buttons

- ADD** = To record new supplier file.
- DELETE** = To move out unneeded supplier file.
- SAVE** = To update revised information of supplier.
- EXIT** = To go to Main Menu.
- PRINT** = To print this supplier detail for document purpose.

APPENDIX F
OUTPUT DESIGN



KIM GARMENT CO., LTD.

481/203 Sukhumvit Rd., Km. 33, Bangpoomai
Muang, Samutprakarn 10280 Thailand
Tel: (662)3483940-4 Fax: (662)3483945

PRODUCT DETAIL REPORT

Customer ID : C0012						
PRODUCT ID	PRODUCT NAME	CATEGORY	QUANTITY (YARDS)	UNIT PRICE/YARD	UNIT ON-HAND	REORDER LEVEL
CT 43	Cotton	Green	7,000	5	20,000	5,000
CT 45	Cotton	Yellow	5,000	5	18,000	5,000
SP 14	Spun	Red	5,000	10	2,500	1,000
TC 31	TC	Black	10,000	9	15,000	2,000
TC 32	TC	Blue	3,000	9	8,000	2,000
TC 35	TC	Yellow	3,000	9	6,000	2,000
TC 36	TC	White	10,000	9	15,000	2,000
PL 26	Polyester	White	1,200	7	2,000	3,000

Figure F.1. Product Detail Report.

KIM GARMENT CO., LTD.
 481/203 Sukhumvit Rd., Km. 33, Bangpoomai
 Muang, Samutprakarn 10280 Thailand
 Tel: (662)3483940-4 Fax: (662)3483945

PRODUCT DETAIL REPORT

Customer ID : C0008						
PRODUCT ID	PRODUCT NAME	CATEGORY	QUANTITY (YARDS)	UNIT PRICE/YARD	UNIT ON-HAND	REORDER LEVEL
CT 41	Cotton	Black	2,500	5	20,000	5,000
CT 45	Cotton	Yellow	5,000	5	13,000	5,000
PL 25	Polyester	Yellow	1,200	7	800	3,000
TC 32	TC	Blue	2,000	9	6,000	2,000
TC 33	TC	Green	5,000	9	10,000	2,000
TC 35	TC	Yellow	4,500	9	1,500	2,000
TC 36	TC	White	10,000	9	5,000	2,000

Figure F.2. Product Detail Report (Continued).

KIM GARMENT CO., LTD.
 481/203 Sukhumvit Rd., Km. 33, Bangpoomai
 Muang, Samutprakarn 10280 Thailand
 Tel: (662)3483940-4 Fax: (662)3483945

CUSTOMER MASTER FILE

ID	CUSTOMER NAME	CONTACT NAME	ADDRESS	PROVINCE	POSTAL CODE	PHONE NUMBER	FAX NUMBER
C0001	Nanyang Co., Ltd.	Ms. Jarunee S.	44/2 Petchkasem Road, Bangkhunthien	Bangkok	10500	0-2892-4720	0-2892-4715
C0002	Wongpaitoon PLC Co., Ltd.	Ms. Pornprapa A.	173/2-5 Akekachai Road, Bangbon	Bangkok	10150	0-2415-0000	0-2415-0010-11
C0003	T & Sons Holdings	Mr. Mani J.	161 Moo 5 Sukhumvit Km. 20, Taiban	Samutprakarn	10280	0-2388-0226-9	0-2388-0215
C0004	Nike (Thailand) Co., Ltd.	Ms. Arunee P.	23 Rajanakarn Building, 21st Fl., Sathorn	Bangkok	10250	0-2679-5100	0-2679-5120
C0005	D.P. Garment Limited	Ms. Jidapa S.	23 Taiban Road, Klongtoey	Bangkok	10110	0-2240-2721	0-2240-2728

Figure F.3. Customer Mater File Report.

KIM GARMENT CO., LTD.
 481/203 Sukhumvit Rd., Km. 33, Bangpoomai
 Muang, Samutprakarn 10280 Thailand
 Tel: (662)3483940-4 Fax: (662)3483945

CUSTOMER MASTER FILE

ID	CUSTOMER NAME	CONTACT NAME	ADDRESS	PROVINCE	POSTAL CODE	PHONE NUMBER	FAX NUMBER
C0006	IJL Co., Ltd.	Ms. Voracha H.	68/40-42 Soi Nganduplee, Sathorn	Bangkok	10250	0-2222-4136-9	0-2222-4135
C0007	Taveesap Holdings	Mr. Manit D.	318/10-12 Sukhumvit Road, Sathorn	Bangkok	10250	0-2381-8381-2	0-2381-8384
C0008	Silp Charoen Co., Ltd.	Mr. Sanchai J.	222 St. Louise III, Sathorn	Bangkok	10250	0-2332-4542-4	0-2332-4545
C0009	Chaicharoen Knitting & Partners	Mr. Teeradej S.	182/12 St. Louise III, Sathorn	Bangkok	10250	0-2636-1400	0-2636-1436-38
C0010	Taveeporn Co., Ltd.	Mr. Chengchai V.	44/25 Sathorn Nua, Bangrak	Bangkok	10250	0-2679-6236-9	0-2679-6234

Figure F.4. Customer Mater File Report (Continued).

KIM GARMENT CO., LTD.
 481/203 Sukhumvit Rd., Km. 33, Bangpoomai
 Muang, Samutprakarn 10280 Thailand
 Tel: (662)3483940-4 Fax: (662)3483945

CUSTOMER MASTER FILE

ID	COMPANY NAME	CONTACT NAME	ADDRESS	PROVINCE	POSTAL CODE	PHONE	FAX
C0011	Tong Hend Huad Ltd. Part	Ms. Amorn F.	465 Sukhumvit 24, Klongtoey	Bangkok	10110	0-2240-0921	0-2400-0921
C0012	F.Y. Trading Plus Co., Ltd.	Ms. Kanokporn W.	66/2523 Soi Nganduplee, Sathorn	Bangkok	10250	0-2638-8300	0-2638-8303
C0013	Decha Rope & Knitting Limited	Ms. Wimon K.	182/135 Moo 2, Samrong Nua	Samutprakarn	10280	0-2395-1235-7	0-235-1233
C0014	Yong Heng Huad Ltd. Part	Mr. Weerasak T.	3362 Moo 7, Phuttaraksa Road, Taiban	Samutprakarn	10280	0-2703-4562-3	0-2703-4450
C0015	FR Fabric Co., Ltd.	Ms. Kanoknit F.	681/7-9 Moo2, Soi Pasuk, Bangbon III	Bangkok	10150	0-2415-0076	0-2415-0050

Figure F.5. Customer Mater File Report (Continued).

KIM GARMENT CO., LTD.

481/203 Sukhumvit Rd., Km. 33, Bangpoomai
Muang, Samutprakarn 10280 Thailand
Tel: (662)3483940-4 Fax: (662)3483945

SUPPLIER MASTER FILE

ID	SUPPLIER NAME	CONTACT NAME	ADDRESS	PROVINCE	POSTAL CODE	PHONE NUMBER	FAX NUMBER
S1111	Vision Garment Co., Ltd.	Ms. Peraporn M.	12 Sunthornkosa Road, Klongtoey	Bangkok	10110	0-2240-0666	0-2240-0667
S1112	Chaw Panich Co., Ltd.	Ms. Vimalina A.	89/9 Rama IV Road, Klongtoey	Bangkok	10110	0-2244-8778-9	0-2244-8775
S1113	Reincharoen Limited Partnership	Mr. Pongtep T.	38/9 Sukhumvit 105	Samutprakarn	10240	0-2394-5026-7	0-2394-5030
S1114	Sasilp Knitting Co., Ltd.	Ms. Weeraporn H.	233/78-9 Sukhumvit 101, Bangna	Bangkok	10260	0-2637-9888	0-2637-8080
S1115	Saha Union Limited	Mr. Teerachai P.	21/2 Akekamai 16, Wattana	Bangkok	10110	0-2744-4200-2	0-2744-4110

Figure F.6. Supplier Mater File Report.

KIM GARMENT CO., LTD.

481/203 Sukhumvit Rd., Km. 33, Bangpoomai
 Muang, Samutprakarn 10280 Thailand
 Tel: (662)3483940-4 Fax: (662)3483945

CUSTOMER MASTER FILE

ID	SUPPLIER NAME	CONTACT NAME	ADDRESS	PROVINCE	POSTAL CODE	PHONE NUMBER	FAX NUMBER
S1116	Minor Tradings Ltd.	Ms. Weraporn Y.	75-76/2 Vipavadee Rangsit, Donmueng	Bangkok	10210	0-2928-0344-9	0-2928-0333
S1117	Saengcharoen Spinning Co., Ltd.	Ms. Chantana T.	156/7 Praram II, Bangmod	Bangkok	10270	0-2415-0076	0-2415-0110
S1118	T. T.N. Enterprise Co., Ltd.	Mr. Wanchai K.	28/5 Sathorn, Bangrak	Bangkok	10250	0-679-2224	0-2679-2244
S1119	Chaicharoen Knitting & Partners	Mr. Kokeit S.	87/2-5 Sampeng	Bangkok	10210	0-2632-2237-9	0-2632-2220
S1110	Rungsaptawee Co., Ltd.	Mr. Viboon V.	89 Moo4 Soi Yingcharoen, Banmai	Bangkok	10270	0-2742-4125	0-2742-4126

Figure F.7. Supplier Mater File Report (Continued).

KIM GARMENT CO., LTD.

481/203 Sukhumvit Rd., Km. 33, Bangpoomai
Muang, Samutprakarn 10280 Thailand
Tel: (662)3483940-4 Fax: (662)3483945

PURCHASE ORDER FORM**Purchase Order: PO2003/006**

DATE: 17/11/2003.

SUPPLIER: ID S1113
SUPPLIER NAME: Reincharoen Limited Partnership
CONTACT NAME: Mr. Pongtep T.
PHONE NUMBER: 0-2394-5026-7
FAX NUMBER: 0-2394-5030

NO.	DETAIL	QUANTITY (Carton)	UNIT PRICE (Carton)	TOTAL
1	Spun	8	3,200.00	25,600.00
2	Cotton	5	2,300.00	11,500.00
NET PRICE				37,100.00
VAT 7 %				2,597.00
GRAND TOTAL				39,697.00

(Verified By)

(Inventory Manager)
KIM GARMENT CO.,LTD.

Figure F.8. Purchase Order Report.

KIM GARMENT CO., LTD.

481/203 Sukhumvit Rd., Km. 33, Bangpoomai

Muang, Samutprakarn 10280 Thailand

Tel: (662)3483940-4 Fax: (662)3483945

PURCHASE ORDER FORM**Purchase Order: PO2003/007**

DATE: 17/11/ 2003.

SUPPLIER: ID S1118
SUPPLIER NAME: T.T.N. Enterprise Co., Ltd.
CONTACT NAME: Mr. Wanchai K.
PHONE NUMBER: 0-2679-2224
FAX NUMBER: 0-2679-2244

NO.	DETAIL	QUANTITY (Carton)	UNIT PRICE (Carton)	TOTAL
1	TC	3	2,800.00	8,400.00
2	Polyester	5	2,700.00	13,500.00
3	Cotton	1	2,500.00	2,500.00
NET PRICE				24,400.00
VAT 7 %				1,708.00
GRAND TOTAL				26,108.00

(Verified By)-----
(Inventory Manager)
KIM GARMENT CO.,LTD.

Figure F.9. Purchase Order Report (Continued).



Table G.1. Estimated Costs and Benefits for Candidate Solution 1, Baht.

Cost and Benefits	Years				
	1	2	3	4	5
Costs					
Fixed Cost					
Hardware Cost:					
Computer Server 1 @ 52,000	52,000.00	52,000.00	52,000.00	52,000.00	52,000.00
Workstation 5 @ 30,000	150,000.00	150,000.00	150,000.00	150,000.00	150,000.00
HP Scanner 1 @ 6,590	6,590.00	6,590.00	6,590.00	6,590.00	6,590.00
Printer 2 @ 10,990	21,980.00	21,980.00	21,980.00	21,980.00	21,980.00
UPS 1 @ 3,220	3,220.00	3,220.00	3,220.00	3,220.00	3,220.00
HUB 2 @ 4,990	9,980.00	9,980.00	9,980.00	9,980.00	9,980.00
UTP CAT 5 1 Package	4,500.00	4,500.00	4,500.00	4,500.00	4,500.00
Total Hardware Cost	248,270.00	248,270.00	248,270.00	248,270.00	248,270.00
Software Cost:					
MS Window NT Server 4.0	30,000.00	30,000.00	30,000.00	30,000.00	30,000.00
MS Window 98	45,000.00	45,000.00	45,000.00	45,000.00	45,000.00
MS Office 97	42,500.00	42,500.00	42,500.00	42,500.00	42,500.00
Norton Anti Virus	27,000.00	27,000.00	27,000.00	27,000.00	27,000.00
Total Software Cost	144,500.00	144,500.00	144,500.00	144,500.00	144,500.00
Implementation Cost:					
Advanced Training Cost	35,000.00	-	-	-	-
Set up Cost	28,000.00	-	-	-	-
Total Implementation Cost	63,000.00	-	-	-	-
Maintenance Cost:					
Maintenance Cost	-	-	-	18,000.00	18,000.00
Total Development Cost	455,770.00	392,770.00	392,770.00	410,770.00	410,770.00
Operating Cost					
People -Ware cost:					
Officer Staff 5 person @ 10,000	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Total Monthly Salary Cost	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Total Annual Salary Cost	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
Office Supplies & Miscellaneous Cost:					
Paper 950 per month	11,400.00	11,400.00	11,400.00	11,400.00	11,400.00
Utility 5,500 per month	66,000.00	66,000.00	66,000.00	66,000.00	66,000.00
Miscellaneous	18,000.00	18,000.00	18,000.00	18,000.00	18,000.00
Annual Office Supplies & Miscellaneous Cost	95,400.00	95,400.00	95,400.00	95,400.00	95,400.00
Total Operating Cost	695,400.00	695,400.00	695,400.00	695,400.00	695,400.00
Total Computerized System Cost	1,151,170.00	1,088,170.00	1,088,170.00	1,106,170.00	1,106,170.00
Benefits					
- Reduce cost of human labor 20,000 per month	240,000.00	240,000.00	240,000.00	240,000.00	240,000.00
- Reduce paper usage & Office Supplies 3,400 per month	40,800.00	40,800.00	40,800.00	40,800.00	40,800.00
- Reduce cost of overtime 5,000 per month	60,000.00	60,000.00	60,000.00	60,000.00	60,000.00
Total Annual Benefits	340,800.00	340,800.00	340,800.00	340,800.00	340,800.00

Table G.2. Estimated Costs and Benefits for Candidate Solution 2, Baht.

Cost and Benefits	Years				
	1	2	3	4	5
Costs					
Fixed Cost					
Hardware Cost:					
Computer Server 1 @ 52,000	52,000.00	52,000.00	52,000.00	52,000.00	52,000.00
Workstation 5 @ 30,000	150,000.00	150,000.00	150,000.00	150,000.00	150,000.00
HP Scanner 1 @ 6,590	6,590.00	6,590.00	6,590.00	6,590.00	6,590.00
Printer 2 @ 10,990	21,980.00	21,980.00	21,980.00	21,980.00	21,980.00
UPS 1 @ 3,220	3,220.00	3,220.00	3,220.00	3,220.00	3,220.00
HUB 2 @ 4,990	9,980.00	9,980.00	9,980.00	9,980.00	9,980.00
UTP CAT 5 1 Package	4,500.00	4,500.00	4,500.00	4,500.00	4,500.00
Total Hardware Cost	248,270.00	248,270.00	248,270.00	248,270.00	248,270.00
Software Cost:					
MS SQL Server	64,000.00	64,000.00	64,000.00	64,000.00	64,000.00
MS SQL Client Access	42,000.00	42,000.00	42,000.00	42,000.00	42,000.00
MS Window NT 4.0	32,000.00	32,000.00	32,000.00	32,000.00	32,000.00
MS Window 98	45,000.00	45,000.00	45,000.00	45,000.00	45,000.00
MS Office 97	40,500.00	40,500.00	40,500.00	40,500.00	40,500.00
Norton Anti-Virus	31,500.00	31,500.00	31,500.00	31,500.00	31,500.00
Total Software Cost	255,000.00	255,000.00	255,000.00	255,000.00	255,000.00
Implementation Cost:					
Programmer (80 hours @ 650 Baht)	50,000.00	-	-	-	-
Advanced Training Cost	55,000.00	-	-	-	-
Set up Cost	45,000.00	-	-	-	-
Total Implementation Cost	150,000.00	-	-	-	-
Maintenance Cost:					
Maintenance Cost	-	-	-	20,000.00	20,000.00
Total Development Cost	653,270.00	503,270.00	503,270.00	523,270.00	523,270.00
Operating Cost					
People - Ware cost:					
Officer Staff 10 person @ 10,000	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Total Monthly Salary Cost	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Total Annual Salary Cost	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
Office Supplies & Miscellaneous Cost:					
Paper 1,200 per month	14,400.00	14,400.00	14,400.00	14,400.00	14,400.00
Utility 7,000 per month	84,000.00	84,000.00	84,000.00	84,000.00	84,000.00
Miscellaneous	28,000.00	28,000.00	28,000.00	28,000.00	28,000.00
Annual Office Supplies & Miscellaneous Cost	126,400.00	126,400.00	126,400.00	126,400.00	126,400.00
Total Operating Cost	726,400.00	726,400.00	726,400.00	726,400.00	726,400.00
Total Computerized System Cost	1,379,670.00	1,229,670.00	1,229,670.00	1,249,670.00	1,249,670.00
Benefits					
- Reduce cost of human labor 20,000 per month	240,000.00	240,000.00	240,000.00	240,000.00	240,000.00
- Reduce paper usage & Office Supplies 3,400 per month	40,800.00	40,800.00	40,800.00	40,800.00	40,800.00
- Reduce cost of overtime 6,000 per month	72,000.00	72,000.00	72,000.00	72,000.00	72,000.00
Total Annual Benefits	352,800.00	352,800.00	352,800.00	352,800.00	352,800.00

Table G.3. Estimated Costs and Benefits for Candidate Solution 3, Baht.

Cost and Benefits	Years				
	1	2	3	4	5
Costs					
<u>Fixed Cost</u>					
Hardware Cost:					
Computer Server 1 @ 52,000	52,000.00	52,000.00	52,000.00	52,000.00	52,000.00
Workstation 5 @ 30,000	150,000.00	150,000.00	150,000.00	150,000.00	150,000.00
HP Scanner 1 @ 6,590	6,590.00	6,590.00	6,590.00	6,590.00	6,590.00
Printer 2 @ 10,990	21,980.00	21,980.00	21,980.00	21,980.00	21,980.00
UPS 1 @ 3,220	3,220.00	3,220.00	3,220.00	3,220.00	3,220.00
HUB 2 @ 4,990	9,980.00	9,980.00	9,980.00	9,980.00	9,980.00
UTP CAT 5 1 Package	4,500.00	4,500.00	4,500.00	4,500.00	4,500.00
Total Hardware Cost	248,270.00	248,270.00	248,270.00	248,270.00	248,270.00
Software Cost:					
MS SQL Server	40,000.00	40,000.00	40,000.00	40,000.00	40,000.00
MS SQL Client Access	16,000.00	16,000.00	16,000.00	16,000.00	16,000.00
MS Office Standard	10,000.00	10,000.00	10,000.00	10,000.00	10,000.00
Delphi	18,000.00	18,000.00	18,000.00	18,000.00	18,000.00
Norton AntiVirus 2002	28,000.00	28,000.00	28,000.00	28,000.00	28,000.00
Total Software Cost	112,000.00	112,000.00	112,000.00	112,000.00	112,000.00
Implementation Cost:					
Advanced Training Cost	42,500.00	-	-	-	-
Set up Cost	37,500.00	-	-	-	-
Total Implementation Cost	80,000.00	-	-	-	-
Maintenance Cost:					
Maintenance Cost	-	-	-	17,000.00	17,000.00
Total Development Cost	457,270.00	360,270.00	360,270.00	377,270.00	377,270.00
<u>Operating Cost</u>					
People - Ware cost:					
Officer Staff 10 person @ 10,000	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Total Monthly Salary Cost	50,000.00	50,000.00	50,000.00	50,000.00	50,000.00
Total Annual Salary Cost	600,000.00	600,000.00	600,000.00	600,000.00	600,000.00
Office Supplies & Miscellaneous Cost:					
Paper 3,500 per month	42,000.00	24,000.00	24,000.00	24,000.00	24,000.00
Utility 5,000 per month	60,000.00	42,000.00	42,000.00	42,000.00	42,000.00
Miscellaneous	55,000.00	25,000.00	25,000.00	25,000.00	25,000.00
Annual Office Supplies & Miscellaneous Cost	157,000.00	91,000.00	91,000.00	91,000.00	91,000.00
Total Operating Cost	691,000.00	691,000.00	691,000.00	691,000.00	691,000.00
Total Computerized System Cost	1,148,270.00	1,051,270.00	1,051,270.00	1,068,270.00	1,068,270.00
<u>Benefits</u>					
- Reduce cost of human labor 20,000 per month	240,000.00	240,000.00	240,000.00	240,000.00	240,000.00
- Reduce paper usage & Office Supplies 3,000 per month	36,000.00	36,000.00	36,000.00	36,000.00	36,000.00
- Reduce cost of overtime 3,500 per month	42,000.00	42,000.00	42,000.00	42,000.00	42,000.00
Total Annual Benefits	318,000.00	318,000.00	318,000.00	318,000.00	318,000.00

Table G.4. Payback Analysis for Candidate Solution 1, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development cost:	-455,770					
Operation & maintenance cost:		-95,400	-100,170	-105,179	-110,438	-115,960
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted costs (adjusted to present value):	-455,770	-85,192	-79,835	-74,887	-70,239	-65,749
Cumulative time-adjusted costs over lifetime:	-455,770	-540,962	-620,797	-695,684	-765,922	-831,671
Benefits derived from operation of new system:	0	340,800	357,840	375,732	394,519	414,245
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted benefits (adjusted to present value):	0	304,334	285,198	267,521	250,914	234,877
Cumulative time-adjusted benefits over lifetime:	0	304,334	589,532	857,054	1,107,967	1,342,844
Cumulative life time-adjusted costs + benefits:	-455,770	-236,628	-31,265	161,370	342,045	511,173

Table G.5. Payback Analysis for Candidate Solution 2, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development cost:	-653,270					
Operation & maintenance cost:		-126,400	-132,720	-139,356	-146,324	-153,640
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted costs (adjusted to present value):	-653,270	-112,875	-105,778	-99,221	-93,026	-87,114
Cumulative time-adjusted costs over lifetime:	-653,270	-729,354	-835,135	-934,353	-1,027,415	-1,114,529
Benefits derived from operation of new system:	0	352,800	370,440	388,962	408,410	428,831
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted benefits (adjusted to present value):	0	315,050	295,241	276,941	259,749	243,147
Cumulative time-adjusted benefits over lifetime:	0	315,050	610,291	887,232	1,146,981	1,390,128
Cumulative life time-adjusted costs + benefits:	-653,270	-414,304	-224,844	-47,121	119,566	275,599

Table G.6. Payback Analysis for Candidate Solution 3, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5
Development cost:	- 457,270					
Operation & maintenance cost:		-157,000	- 164,850	- 173,093	- 181,747	- 190,834
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted costs (adjusted to present value):	- 457,270	- 140,201	- 131,385	- 123,242	- 115,591	- 108,203
Cumulative time-adjusted costs over lifetime:	- 457,270	- 597,471	- 728,856	- 852,098	- 968,008	-1,076,211
Benefits derived from operation of new system:	0	318,000	333,900	350,595	368,125	386,531
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567
Time-adjusted benefits (adjusted to present value):	0	283,974	266,118	249,624	234,127	219,163
Cumulative time-adjusted benefits over lifetime:	0	283,974	520,944	770,568	1,004,695	1,223,858
Cumulative life time-adjusted costs + benefits:	- 457,270	- 313,497	- 207,912	- 81,530	36,687	147,647

Table G.7. Net Present Value Analysis for Candidate Solution 1, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Development cost:	-455,770						
Operation & maintenance cost:		-95,400	-100,170	-105,179	-110,438	-115,960	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual costs:	-455,770	- 85,192	- 79,835	- 74,887	- 70,239	- 65,749	
Total present value of lifetime costs:							-831,671
Benefits derived from operation of new system	0	340,800	357,840	375,732	394,519	414,245	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual benefits:	0	304,334	285,198	267,521	250,914	234,877	
Total present value of lifetime benefits:							1,342,844
Net Present Value:							511,173

Table G.8. Net Present Value Analysis for Candidate Solution 2, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Development cost:	- 653,270						
Operation & maintenance cost:		- 126,400	- 132,720	- 139,356	- 146,324	- 153,640	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual costs:	- 653,270	- 112,875	- 105,778	- 99,221	- 93,026	- 87,114	
Total present value of lifetime costs:							-1,151,284
Benefits derived from operation of new system	0	352,800	370,440	388,962	408,410	428,831	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual benefits:	0	315,050	295,241	276,941	259,749	243,147	
Total present value of lifetime benefits:							1,390,128
Net Present Value:							238,844

Table G.9. Net Present Value Analysis for Candidate Solution 3, Baht.

Cost Items	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Development cost:	- 457,270						
Operation & maintenance cost:		- 157,000	- 164,850	- 173,093	- 181,747	- 190,834	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual costs:	- 457,270	- 140,201	- 131,385	- 123,242	- 115,910	- 108,203	
Total present value of lifetime costs:							-1,076,211
Benefits derived from operation of new system	0	318,000	333,900	350,595	368,125	386,531	
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.636	0.567	
Present value of annual benefits:	0	283,974	266,118	249,624	234,127	219,163	
Total present value of lifetime benefits:							1,253,006
Net Present Value:							206,795

Table G.10. Cost Comparison between the Existing System and Candidate Solution 1, Baht.

Cost Items	Years				
	1	2	3	4	5
<u>Existing System:</u>					
Staff					
(increase 5% per year)	840,000	882,000	926,100	972,405	1,021,025
Operating Cost					
(increase 5% per year)	85,000	89,250	93,713	98,398	103,318
Utility Cost					
(increase 5% per year)	45,000	47,250	49,613	52,093	54,698
Total Cost	970,000	1,018,500	1,069,425	1,122,896	1,179,041
Cumulative Cost	970,000	1,988,500	3,057,925	4,180,821	5,359,862
<u>Proposed System:</u>					
Hardware Cost	248,270	-	-	-	-
Software Cost	144,500	-	-	-	-
Development Cost	63,000	-	-	-	-
Staff	600,000	630,000	661,500	694,575	729,304
(increase 5% per year)					
Operating Cost	95,400	100,170	105,179	110,437	115,959
(increase 5% per year)					
Utility Cost	66,000	69,300	72,765	76,403	80,223
(increase 5% per year)					
Total Cost	1,217,170	799,470	839,444	881,416	925,486
Cumulative Cost	1,217,170	2,016,640	2,856,084	3,737,499	4,662,986

Table G.11. Cost Comparison between the Existing System and Candidate Solution 2, Baht.

Cost Items	Years				
	1	2	3	4	5
<u>Existing System:</u>					
Staff (increase 5% per year)	840,000	882,000	926,100	972,405	1,021,025
Operating Cost (increase 5% per year)	85,000	89,250	93,713	98,398	103,318
Utility Cost (increase 5% per year)	45,000	47,250	49,613	52,093	54,698
Total Cost	970,000	1,018,500	1,069,425	1,122,896	1,179,041
Cumulative Cost	970,000	1,988,500	3,057,925	4,180,821	5,359,862
<u>Proposed System:</u>					
Hardware Cost	248,270	-	-	-	-
Software Cost	255,000	-	-	-	-
Development Cost	150,000	-	-	-	-
Staff (increase 5% per year)	600,000	630,000	661,500	694,575	729,304
Operating Cost (increase 5% per year)	126,400	132,720	139,356	146,324	153,640
Utility Cost (increase 5% per year)	84,000	88,200	92,610	97,241	102,103
Total Cost	1,463,670	850,920	893,466	938,139	985,046
Cumulative Cost	1,463,670	2,314,590	3,208,056	4,146,195	5,131,242

Table G.12. Cost Comparison between the Existing System and Candidate Solution 3, Baht.

Cost Items	Years				
	1	2	3	4	5
<u>Existing System:</u>					
Staff (increase 5% per year)	840,000	882,000	926,100	972,405	1,021,025
Operating Cost (increase 5% per year)	85,000	89,250	93,713	98,398	103,318
Utility Cost (increase 5% per year)	45,000	47,250	49,613	52,093	54,698
Total Cost	970,000	1,018,500	1,069,425	1,122,896	1,179,041
Cumulative Cost	970,000	1,988,500	3,057,925	4,180,821	5,359,862
<u>Proposed System:</u>					
Hardware Cost	248,270	-	-	-	-
Software Cost	112,000	-	-	-	-
Development Cost	80,000	-	-	-	-
Staff (increase 5% per year)	600,000	630,000	661,500	694,575	729,304
Operating Cost (increase 5% per year)	157,000	164,850	173,093	181,747	190,834
Utility Cost (increase 5% per year)	60,000	63,000	66,150	69,458	72,930
Total Cost	1,257,270	857,850	900,743	945,780	993,069
Cumulative Cost	1,257,270	2,115,120	3,015,863	3,961,642	4,954,711

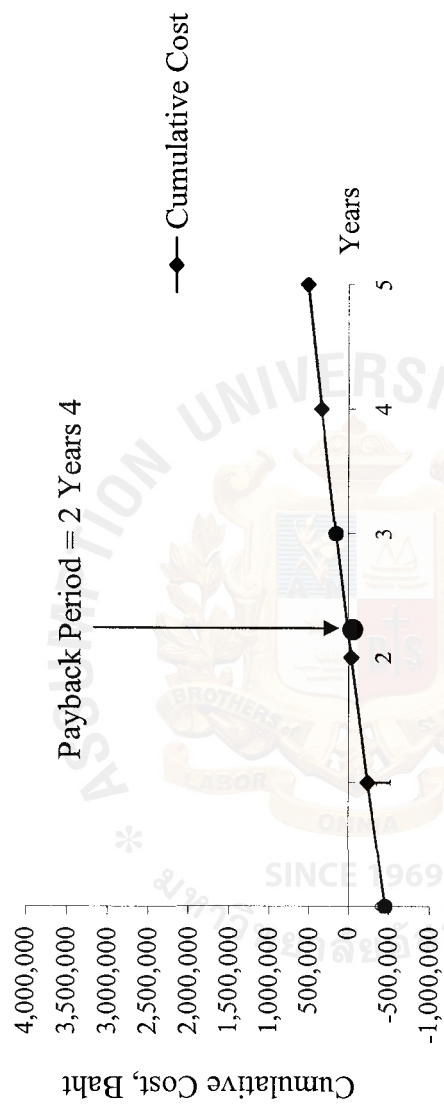


Figure G.1. Payback Period for Candidate Solution 1.

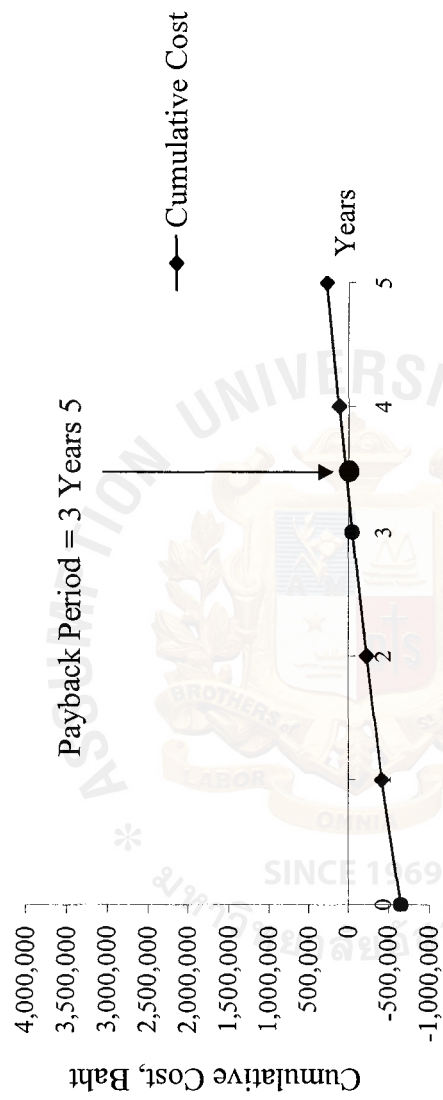


Figure G.2. Payback Period For Candidate Solution 2.

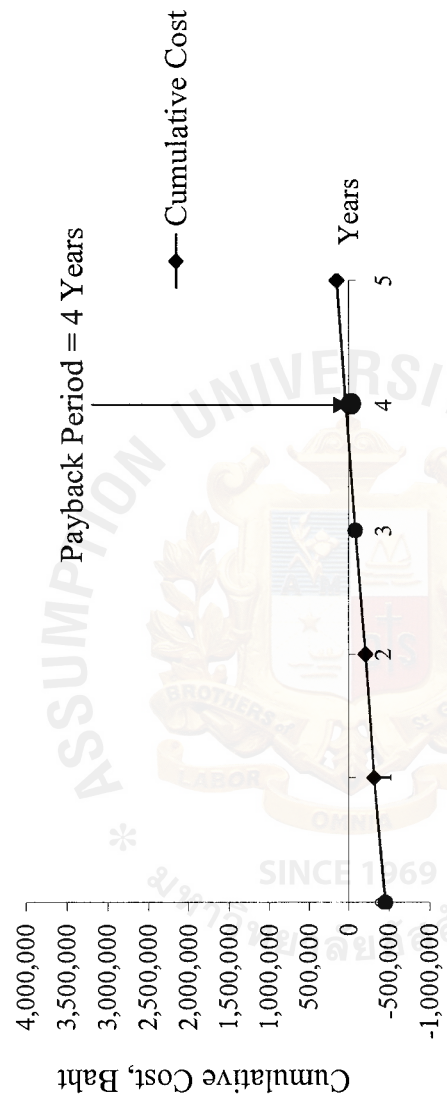


Figure G.3. Payback Period for Candidate Solution 3.

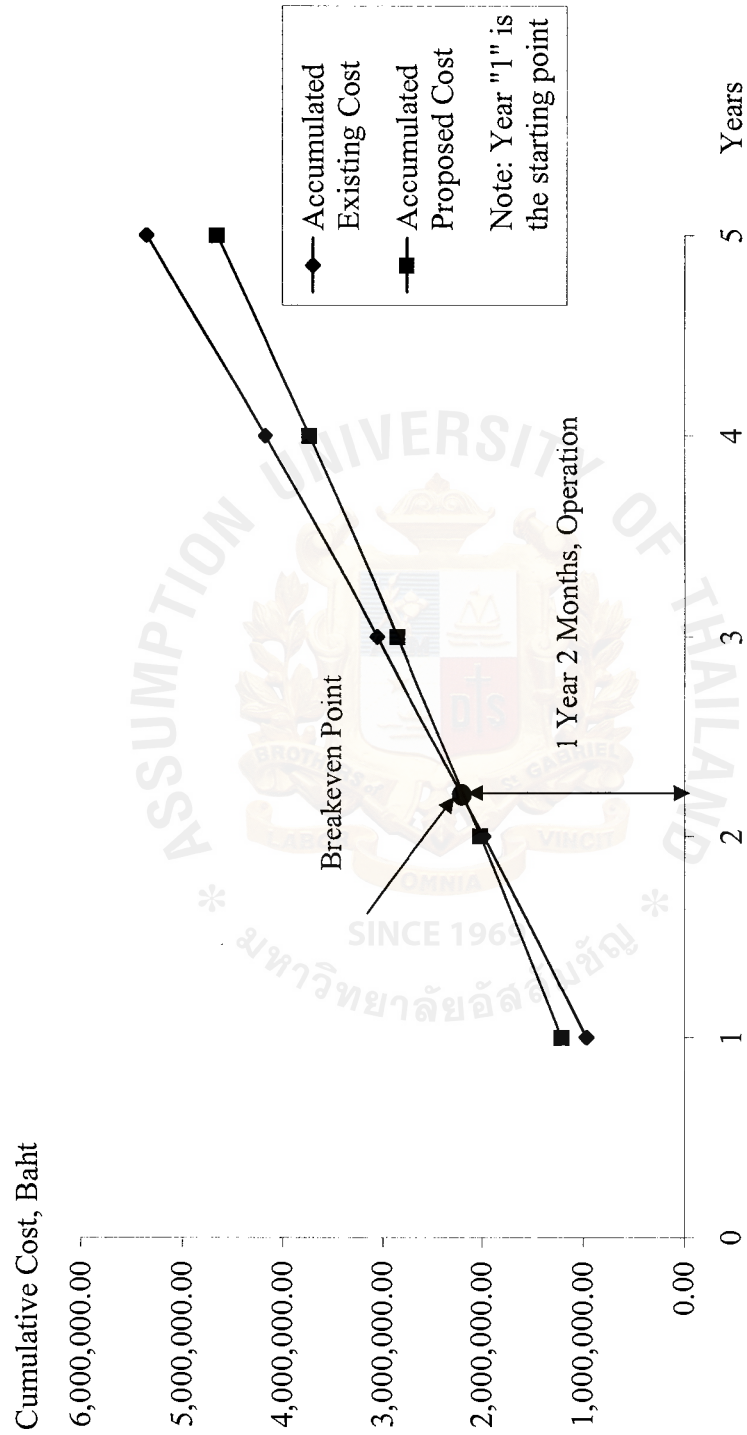


Figure G.4. Cost Comparison between the Existing System and Candidate Solution 1.

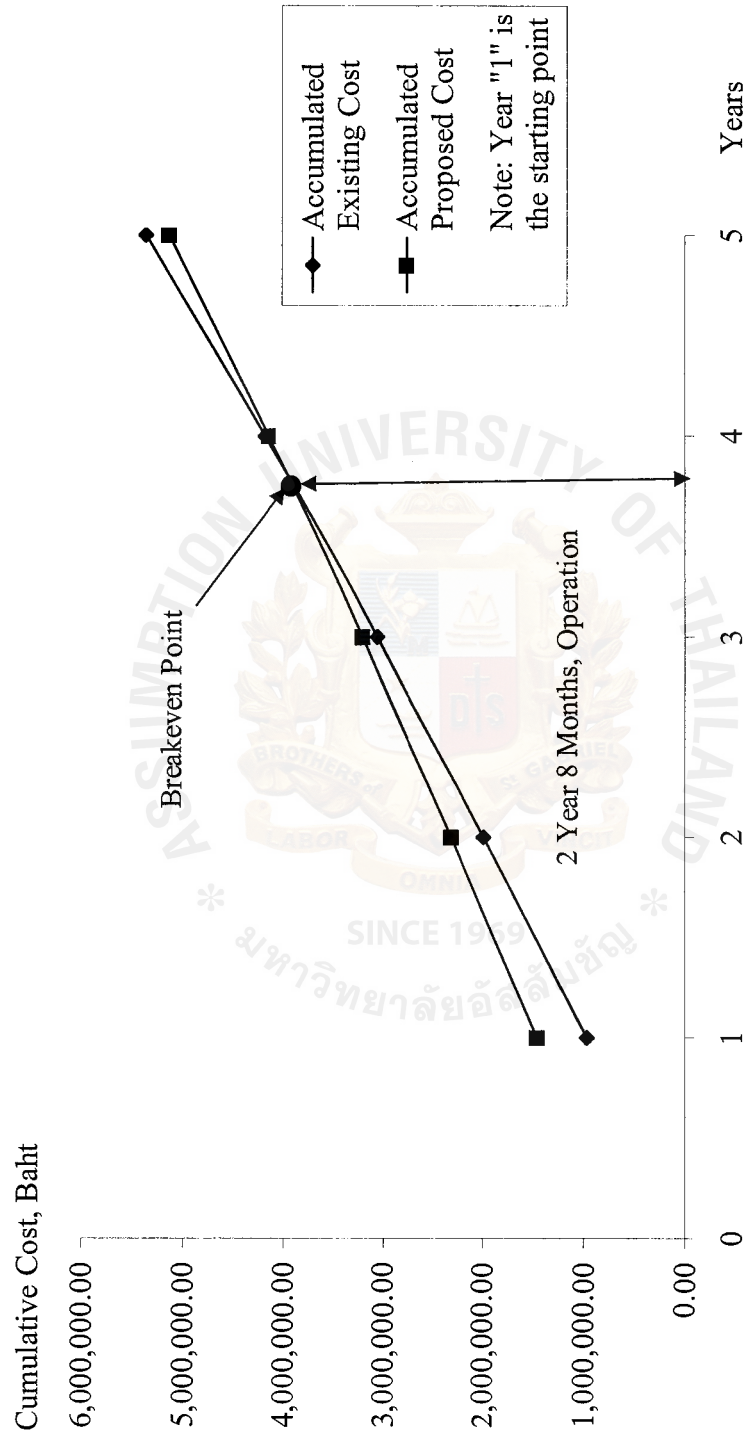


Figure G.5. Cost Comparison between the Existing System and Candidate Solution 2.

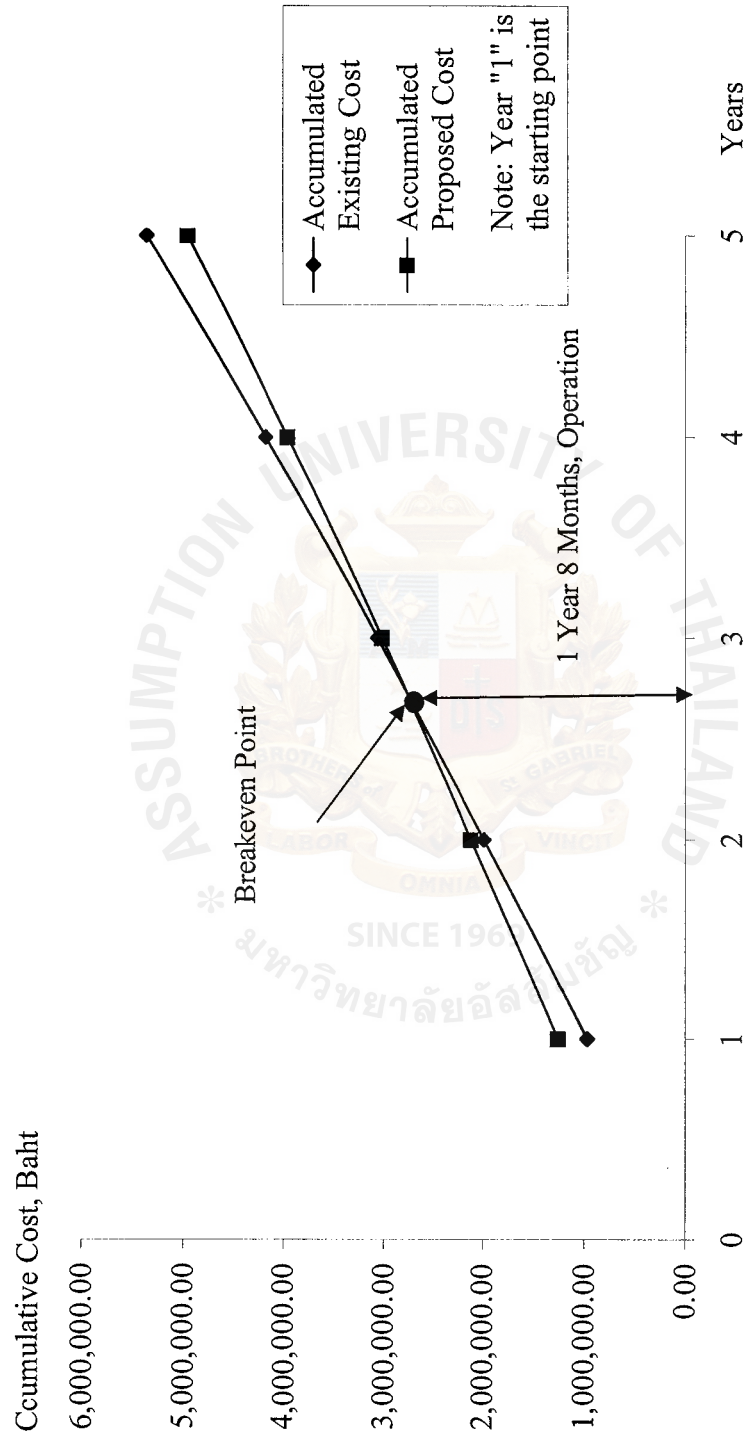


Figure G.6. Cost Comparison between the Existing System and Candidate Solution 3.

APPENDIX H

DATA DICTIONARY



Date: 9/14/2003

Project: **The Proposed Inventory Information System**

Page: 1

Time: 9:05:18 AM

Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Accept Production Requisition List

Process

Process #: 5.2

Location:

Generate Purchase Order (5)

Input Flows:

Requested Product List

Output Flows:

Confirmed Product Requisition

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Account Dept.

External Entity

Location:

The Proposed Inventory Control System

(CONTEXT)

Input Flows:

Aging Report

Inventory Control System (0)

Input Flows:

Aging Report

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Aggregated Data

Data Flow

Location:

Generate Report (7)

Source: Collect Sales Information and Inventory Movement

(Process)

Dest: Format Completed Report (Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Aging Report

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Account Dept. (External Entity)

Inventory Control System (0)

Source: Calculate Cost&Term (Process)

Dest: Account Dept. (External Entity)

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Calculate & Check Customer Credit

Process

Process #: 3.2

Location:

Calculate Cost&Term (3)

Input Flows:

Credit List

Output Flows:

Verified Customer Credit

Date Last Altered: 9/10/2003

Date Created: 9/10/2003

Calculate Cost&Term

Process

Process #: 3

Location:

Inventory Control System (0)

Input Flows:

Order List

Customer Active List

Supplier Noted

Output Flows:

Customer Shipment

Customer Invoice

Aging Report

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Project: **The Proposed Inventory Information System**

Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Calculate Minimum Stock Level

Process

Process #: 4.2

Location:

Create Production Plan (4)

Input Flows:

Stock Level

Output Flows:

Product Requisition Noted

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Check Stock On-hand

Process

Process #: 2

Location:

Inventory Control System (0)

Input Flows:

Order Specification

Output Flows:

Stock Data

Stock Level

Sales Order List

Reordered Product List

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Collect Ordered Product

Process

Process #: 2.2

Location:

Check Stock On-hand (2)

Input Flows:

Require Product

Output Flows:

Stock Detail

Sales Order List

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Project: **The Proposed Inventory Information System**

Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Collect Sales Information and Inventory Movement

Process

Process #: 7.1

Location:

Generate Report (7)

Input Flows:

Updated Customer Information

Inventory Status

Output Flows:

Aggregated Data

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Confirmed Order

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Sales Dept. (External Entity)

Inventory Control System (0)

Source: Process Order Specification (Process)

Dest: Sales Dept. (External Entity)

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Confirmed Product Requisition

Data Flow

Location:

Generate Purchase Order (5)

Source: Accept Production Requisition List (Process)

Dest: Create Purchase Order (Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Create Production Plan

Process

Process #: 4

Location:

Inventory Control System (0)

Input Flows:

Stock Level

Output Flows:

Product Requisition

Production Plan

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Create Purchase Order

Process

Process #: 5.3

Location:

Generate Purchase Order (5)

Input Flows:

Confirmed Product Requisition

Output Flows:

Verified Purchase Order

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Credit List

Data Flow

Location:

Calculate Cost&Term (3)

Source: Update Customer Credit (Process)

Dest: Calculate & Check Customer Credit (Process)

Date Last Altered: 9/10/2003

Date Created: 9/10/2003

Date: 9/14/2003

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Detailed Listing -- Alphabetically
All Entries -- Data Flow Diagrams

Custmer Shipment Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Customer (External Entity)

Date Last Altered: 9/7/2003 *Date Created:* 9/7/2003

Customer External Entity

Location:

The Proposed Inventory Control System (CONTEXT)

Input Flows:

Custmer Shipment

Customer Invoice

Output Flows:

Order

Inventory Control System (0)

Input Flows:

Order

Customer Shipment

Customer Invoice

Process Order Specification (1)

Output Flows:

Order

Calculate Cost&Term (3)

Input Flows:

Customer Invoice

Customer Shipment

Date Last Altered: 9/7/2003 *Date Created:* 9/7/2003

Customer Active List Data Flow

Location:

Inventory Control System (0)

Date: 9/14/2003

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Detailed Listing -- Alphabetically
All Entries -- Data Flow Diagrams

Source: Customer File (Data Store)

Dest: Calculate Cost&Term (Process)

Calculate Cost&Term (3)

Source: Customer File (Data Store)

Dest: Update Customer Credit (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Customer Detail

Data Flow

Location:

Inventory Control System (0)

Source: Process Order Specification (Process)

Dest: Customer File (Data Store)

Process Order Specification (1)

Source: Recieved Order (Process)

Dest: Read Sales Order (Process)

Source: Recieved Order (Process)

Dest: Customer File (Data Store)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Customer File

Data Store

Data Store #: D1

Location:

Inventory Control System (0)

Input Flows:

Customer Detail

Output Flows:

Customer Active List

Output Flows:

Customer Information

Process Order Specification (1)

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Input Flows:

Customer Detail

Calculate Cost&Term (3)

Output Flows:

Customer Active List

Generate Report (7)

Output Flows:

Updated Customer Information

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Customer Information

Data Flow

Location:

Inventory Control System (0)

Source: Customer File (Data Store)

Dest: Generate Report (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Customer Invoice

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Customer (External Entity)

Inventory Control System (0)

Source: Calculate Cost&Term (Process)

Dest: Customer (External Entity)

Calculate Cost&Term (3)

Source: Generate Customer Shipment & Invoice

(Process)

Dest: Customer (External Entity)

Date Last Altered: 9/7/2003

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Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Customer Shipment

Data Flow

Location:

Inventory Control System (0)

Source: Calculate Cost&Term (Process)

Dest: Customer (External Entity)

Calculate Cost&Term (3)

Source: Generate Customer Shipment & Invoice

(Process)

Dest: Customer (External Entity)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Format Completed Report

Process

Process #: 7.2

Location:

Generate Report (7)

Input Flows:

Aggregated Data

Output Flows:

Formatted Data

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Formatted Data

Data Flow

Location:

Generate Report (7)

Source: Format Completed Report (Process)

Dest: Generate Finished Report (Process)

Date Last Altered:

9/11/2003

Date Created: 9/11/2003

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Generate Customer Shipment & Invoice

Process

Process #: 3.3

Location:

Calculate Cost&Term (3)

Input Flows:

Verified Customer Credit

Output Flows:

Customer Invoice

Customer Shipment

*Date Last Altered:*9/10/2003

Date Created: 9/10/2003

Generate Finished Report

Process

Process #: 7.3

Location:

Generate Report (7)

Input Flows:

Formatted Data

Output Flows:

Inventory Report

Sales Report

*Date Last Altered:*9/11/2003

Date Created: 9/11/2003

Generate Product Requisition

Process

Process #: 4.3

Location:

Create Production Plan (4)

Input Flows:

Product Requisition Noted

Output Flows:

Production Plan

*Date Last Altered:*9/11/2003

Date Created: 9/11/2003

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Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Generate Purchase Order Process

Process #: 5

Location:

Inventory Control System (0)

Input Flows:

Supplier Information

Product Requisition

Output Flows:

Purchase Order

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Generate Report Process

Process #: 7

Location:

Inventory Control System (0)

Input Flows:

Inventory Status

Customer Information

Output Flows:

Sales Report

Inventory Report

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Generate Sales Ordered List Process

Process #: 2.4

Location:

Check Stock On-hand (2)

Input Flows:

Sales Order List

Output Flows:

Sold List

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Inventory Control System

Process

Process #: 0

Location:

The Proposed Inventory Control System (CONTEXT)

Input Flows:

Order

Sales Order

Stock Level

Product Requisition

Product Shipment

Output Flows:

Custmer Shipment

Customer Invoice

Confirmed Order

Stock Data

Aging Report

Purchased Order

Sales Report

Inventory Report

Reordered Product List

Sales Ordered List

*Date Last Altered:*9/7/2003

Date Created: 9/7/2003

Inventory Dept.

External Entity

Location:

The Proposed Inventory Control System

(CONTEXT)

Input Flows:

Reordered Product List

Sales Ordered List

Output Flows:

Stock Level

Product Requisition

Inventory Control System (0)

Input Flows:

Sales Order List

Reordered Product List

Output Flows:

Stock Level

Order List

Create Production Plan (4)

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Output Flows:

Stock On-hand

Check Stock On-hand (2)

Input Flows:

Reordered Product List

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Inventory file

Data Store

Data Store #: D2

Location:

Inventory Control System (0)

Input Flows:

Stock Level

Input Flows:

Production Plan

Input Flows:

Updated Inventory

Output Flows:

Inventory Status

Create Production Plan (4)

Input Flows:

Production Plan

Recieve Requisition Product (6)

Input Flows:

Updated Inventory

Generate Report (7)

Output Flows:

Inventory Status

Check Stock On-hand (2)

Input Flows:

Updated Stock Level

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Inventory Report

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Management Team (External Entity)

Inventory Control System (0)

Source: Generate Report (Process)

Dest: Management Team (External Entity)

Generate Report (7)

Source: Generate Finished Report (Process)

Dest: Management Team (External Entity)

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Inventory Status

Data Flow

Location:

Inventory Control System (0)

Source: Inventory file (Data Store)

Dest: Generate Report (Process)

Generate Report (7)

Source: Inventory file (Data Store)

Dest: Collect Sales Information and Inventory

Movement (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Management Team

External Entity

Location:

The Proposed Inventory Control System

(CONTEXT)

Input Flows:

Sales Report

Inventory Report

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Inventory Control System (0)

Input Flows:

Sales Report

Inventory Report

Generate Report (7)

Input Flows:

Inventory Report

Sales Report

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Order

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Customer (External Entity)

Dest: Inventory Control System (Process)

Inventory Control System (0)

Source: Process Order Specification (Process)

Dest: Customer (External Entity)

Process Order Specification (1)

Source: Customer (External Entity)

Dest: Recieved Order (Process)

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Order List

Data Flow

Location:

Inventory Control System (0)

Source: Inventory Dept. (External Entity)

Dest: Calculate Cost&Term (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Detailed Listing -- Alphabetically

All Entries -- Data Flow Diagrams

Order Specification

Data Flow

Location:

Inventory Control System (0)

Source: Process Order Specification (Process)

Dest: Check Stock On-hand (Process)

Process Order Specification (1)

Source: Pass Order List (Process)

Dest: *** Not on Diagram ***

Check Stock On-hand (2)

Source: *** Not on Diagram ***

Dest: Recieve Order Specification (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Pass Order List

Process

Process #: 1.3

Location:

Process Order Specification (1)

Input Flows:

Verified Order List

Output Flows:

Order Specification

Date Last Altered: 9/10/2003

Date Created: 9/10/2003

Prepare Reordered List

Process

Process #: 2.5

Location:

Check Stock On-hand (2)

Input Flows:

Sold List

Output Flows:

Reordered Product List

Date: 9/14/2003

Project: **The Proposed Inventory Information System**

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Process Order Specification

Process

Process #: 1

Location:

Inventory Control System (0)

Input Flows:

Sales Order

Output Flows:

Customer Detail

Confirmed Order

Order Specification

Order

Date Last Altered: 9/9/2003

Date Created: 9/9/200

Product

Data Flow

Location:

Recieve Requisition Product (6)

Source: Supplier (External Entity)

Dest: Recieve Product Shipment (Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Product Receipt

Data Flow

Location:

Recieve Requisition Product (6)

Source: Recieve Product Shipment (Process)

Dest: Recieve Supplier Note (Process)

Date Last Altered: 9/11/2003

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Date: 9/14/2003

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Product Requisition

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Dept. (External Entity)

Dest: Inventory Control System (Process)

Inventory Control System (0)

Source: Create Production Plan (Process)

Dest: Generate Purchase Order (Process)

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Product Requisition Noted

Data Flow

Location:

Create Production Plan (4)

Source: Calculate Minimum Stock Level (Process)

Dest: Generate Product Requisition (Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Product Shipment

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Supplier (External Entity)

Dest: Inventory Control System (Process)

Inventory Control System (0)

Source: Supplier (External Entity)

Dest: Recieve Requisition Product (Process)

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Production Plan

Data Flow

Location:

Inventory Control System (0)

Source: Create Production Plan (Process)

Dest: Inventory file (Data Store)

Create Production Plan (4)

Source: Generate Product Requisition (Process)

Dest: Inventory file (Data Store)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Purchase Order

Data Flow

Location:

Inventory Control System (0)

Source: Generate Purchase Order (Process)

Dest: Supplier (External Entity)

Generate Purchase Order (5)

Source: Select Supplier (Process)

Dest: Supplier (External Entity)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Purchased Order

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Supplier (External Entity)

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Read Sales Order

Process

Process #: 1.2

Location:

Process Order Specification (1)

Input Flows:

Customer Detail

Output Flows:

Verified Order List

Date Last Altered: 9/10/2003

Date Created: 9/10/2003

Read Stock Level

Process

Process #: 4.1

Location:

Create Production Plan (4)

Input Flows:

Stock On-hand

Output Flows:

Stock Level

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Received Order Specification

Process

Process #: 2.1

Location:

Check Stock On-hand (2)

Input Flows:

Order Specification

Output Flows:

Require Product

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All Entries -- Data Flow Diagrams

Receive Product Shipment Process

Process #: 6.1

Location:

Receive Requisition Product (6)

Input Flows:

Product

Output Flows:

Product Receipt

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Receive Requisition Product Process

Process #: 6

Location:

Inventory Control System (0)

Input Flows:

Product Shipment

Supplier Noted

Output Flows:

Supplier Noted

Updated Inventory

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Recieve Supplier Information Process

Process #: 5.1

Location:

Generate Purchase Order (5)

Input Flows:

Updated Supplier Information

Output Flows:

Requested Product List

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Receive Supplier Note Process

Process #: 6.2

Location:

Receive Requisition Product (6)

Input Flows:

Product Receipt

Output Flows:

Updated Inventory

*Date Last Altered:*9/11/2003

Date Created: 9/11/2003

Received Order

Process

Process #: 1.1

Location:

Process Order Specification (1)

Input Flows:

Order

Output Flows:

Customer Detail

Customer Detail

*Date Last Altered:*9/10/2003

Date Created: 9/10/2003

Reordered Product List

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Inventory Dept. (External Entity)

Check Stock On-hand (2)

Source: Prepare Reordered List (Process)

Dest: Inventory Dept. (External Entity)

Inventory Control System (0)

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Source: Check Stock On-hand (Process)

Dest: Inventory Dept. (External Entity)

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Date Created: 9/7/2003

Requested Product List

Data Flow

Location:

Generate Purchase Order (5)

Source: Recieve Supplier Information (Process)

Dest: Accept Production Requisition List (Process)

*Date Last Altered:*9/11/2003

Date Created: 9/11/2003

Require Product

Data Flow

Location:

Check Stock On-hand (2)

Source: Recieve Order Specification (Process)

Dest: Collect Ordered Product (Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Sales Dept. External Entity

Location:

The Proposed Inventory Control System (CONTEXT)

Input Flows:

Confirmed Order

Stock Data

Output Flows:

Sales Order

Inventory Control System (0)

Input Flows:

Confirmed Order

Stock Data

Output Flows:

Sales Order

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Check Stock On-hand (2)

Input Flows:

Stock Report

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Date Created: 9/7/2003

Sales Order Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Sales Dept. (External Entity)

Dest: Inventory Control System (Process)

Inventory Control System (0)

Source: Sales Dept. (External Entity)

Dest: Process Order Specification (Process)

Date Last Altered: 9/9/2003

Date Created: 9/7/2003

Sales Order List Data Flow

Location:

Inventory Control System (0)

Source: Check Stock On-hand (Process)

Dest: Inventory Dept. (External Entity)

Check Stock On-hand (2)

Source: Collect Ordered Product (Process)

Dest: Generate Sales Ordered List (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Sales Ordered List

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

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Source: Inventory Control System (Process)

Dest: Inventory Dept. (External Entity)

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Date Created: 9/7/2003

Sales Report

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Management Team (External Entity)

Inventory Control System (0)

Source: Generate Report (Process)

Dest: Management Team (External Entity)

Generate Report (7)

Source: Generate Finished Report (Process)

Dest: Management Team (External Entity)

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Select Supplier

Process

Process #: 5.4

Location:

Generate Purchase Order (5)

Input Flows:

Verified Purchase Order

Output Flows:

Purchase Order

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Sold List

Data Flow

Location:

Check Stock On-hand (2)

Source: Generate Sales Ordered List (Process)

Dest: Prepare Reordered List (Process)

Date Last Altered:

9/11/2003

Date Created: 9/11/2003

Stock Data

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

Source: Inventory Control System (Process)

Dest: Sales Dept. (External Entity)

Inventory Control System (0)

Source: Check Stock On-hand (Process)

Dest: Sales Dept. (External Entity)

Date Last Altered: 9/9/2003

Date Created: 9/7/2003

Stock Detail

Data Flow

Location:

Check Stock On-hand (2)

Source: Collect Ordered Product (Process)

Dest: Update Stock Data (Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Stock Level

Data Flow

Location:

The Proposed Inventory Control System (CONTEXT)

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All Entries -- Data Flow Diagrams

Source: Inventory Dept. (External Entity)

Dest: Inventory Control System (Process)

Inventory Control System (0)

Source: Check Stock On-hand (Process)

Dest: Inventory file (Data Store)

Source: Inventory Dept. (External Entity)

Dest: Create Production Plan (Process)

Create Production Plan (4)

Source: Read Stock Level (Process)

Dest: Calculate Minimum Stock Level (Process)

Date Last Altered: 9/9/2003

Date Created: 9/7/2003

Stock On-hand

Data Flow

Location:

Create Production Plan (4)

Source: Inventory Dept. (External Entity)

Dest: Read Stock Level (Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Stock Report

Data Flow

Location:

Check Stock On-hand (2)

Source: Update Stock Data (Process)

Dest: Sales Dept. (External Entity)

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All Entries -- Data Flow Diagrams

Supplier

External Entity

Location:

The Proposed Inventory Control System

(CONTEXT)

Input Flows:

Purchased Order

Output Flows:

Product Shipment

Inventory Control System (0)

Input Flows:

Purchase Order

Output Flows:

Product Shipment

Supplier Noted

Generate Purchase Order (5)

Input Flows:

Purchase Order

Date Last Altered: 9/7/2003

Date Created: 9/7/2003

Supplier File

Data Store

Data Store #: D3

Location:

Inventory Control System (0)

Output Flows:

Supplier Information

Generate Purchase Order (5)

Output Flows:

Updated Supplier Information

Date Last Altered: 9/9/2003

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Supplier Information

Data Flow

Location:

Inventory Control System (0)

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Source: Supplier File (Data Store)

Dest: Generate Purchase Order (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Supplier Noted

Data Flow

Location:

Inventory Control System (0)

Source: Supplier (External Entity)

Dest: Recieve Requisition Product (Process)

Source: Recieve Requisition Product (Process)

Dest: Calculate Cost&Term (Process)

Date Last Altered: 9/9/2003

Date Created: 9/9/2003

Supplier

External Entity

Location:

Recieve Requisition Product (6)

Output Flows:

Product

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Update Customer Credit

Process

Process #: 3.1

Location:

Calculate Cost&Term (3)

Input Flows:

Customer Active List

Output Flows:

Credit List

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Update Stock Data

Process

Process #: 2.3

Location:

Check Stock On-hand (2)

Input Flows:

Stock Detail

Output Flows:

Stock Report

Updated Stock Level

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Updated Customer Information

Data Flow

Location:

Generate Report (7)

Source: Customer File (Data Store)

Dest: Collect Sales Information and Inventory Movement

(Process)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Updated Inventory

Data Flow

Location:

Inventory Control System (0)

Source: Recieve Requisition Product (Process)

Dest: Inventory file (Data Store)

Recieve Requisition Product (6)

Source: Recieve Supplier Note (Process)

Dest: Inventory file (Data Store)

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Updated Stock Level

Data Flow

Location:

Check Stock On-hand (2)

Source: Update Stock Data (Process)

Dest: Inventory file (Data Store)

Date Last Altered: 9/11/2003

Date Created: 9/11/2003

Updated Supplier Information

Data Flow

Location:

Generate Purchase Order (5)

Source: Supplier File (Data Store)
Dest: Recieve Supplier Information (Process)
Date Last Altered:9/11/2003 Date Created: 9/11/2003

Verified Customer Credit Data Flow

Location:

Calculate Cost&Term (3)

Source: Calculate & Check Customer Credit (Process)

Dest: Generate Customer Shipment & Invoice

(Process)

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Verified Order List Data Flow

Location:

Process Order Specification (1)

Source: Read Sales Order (Process)

Dest: Pass Order List (Process)

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Verified Purchase Order Data Flow

Location:

Generate Purchase Order (5)

Source: Create Purchase Order (Process)

Dest: Select Supplier (Process)

Date Last Altered:9/11/2003 Date Created: 9/11/2003

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