Practical Development of Information System in Business Context: Material Planning and Inventory System for Lian Hua Company Limited

PROJECT WRITE-UP

Prepared by

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Submitted in Partial Fulfillment
of the Course BIS 4995 Information System Development
Bachelor's Degree of Business Administration
in Business Information Systems Program
Assumption University

September, 2004

Project Name:	Material Planning and Inventory Management System for Lian Hua Company Limited	
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Academic Year:	2004	

The Department of Business Information Systems, ABAC School of Management has approved the aforementioned project, which includes complete Project Write-up and System submitted in fulfillment of the 3-credit course BIS 4995 Information System Development towards the requirements for the Bachelor's Degree of Business Administration in Business Information Systems

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ACKNOWLEDGEMENT

This project is completed with the contributions of several persons. Our group would like to take this opportunity to thank A. Pattaneeya Chaikirtisak, the advisor of this project, for her valuable guidance and suggestion through this project.

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1.1 Organization's Profile

Lian Hua Textile Company Limited produces spun yarn such as cotton, rayon, T/C,T/R with more than 500 shuttles. The company was established in 1962. Currently the company manufactures various types of yarn. The company is now preparing for ISO9001 Certification.

The company have 2 types of customers

1. Manufacturer
2. Wholesaler

Supplier

The company uses 3 main raw materials which are rayon from ThaiRayon, polyester from Tuntex Company Ltd, and cotton through agent in Thailand.

1.2 Organization's Location

The company is located in 216 Moo 10 Tambon Naiklong – Bangplakod, Phrasautjedee District, Pracharutit Road, Samutprakarn 10290 Thailand.

Lian Hua Textile has two warehouses. The first warehouse keeps raw material from supplier such as cotton, rayon and polyester fibers and the second warehouse stores finished products from manufacturing process waiting for delivery to customers.

1.3 Organization's Structure

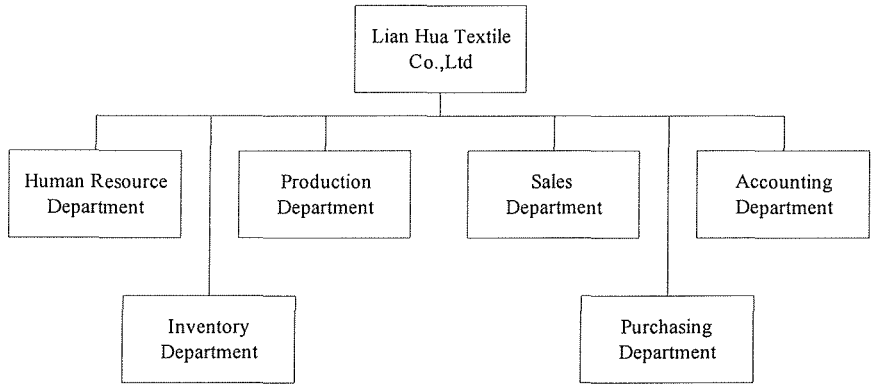


Figure 1.1 Organization Chart of Lian Hua Textile Company limited

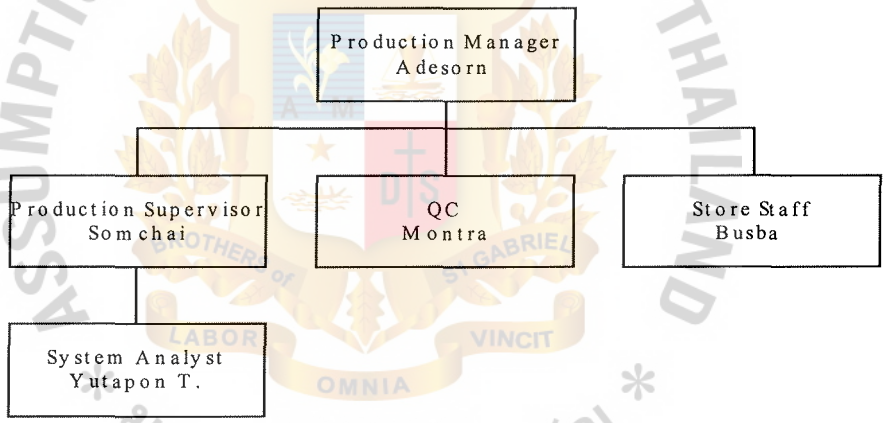


Figure 1.2 Production Department Chart of Lian Hua Textile Company limited

Production Department

The department will produce finished goods from the lists of customer order and production schedule. The department will receive production order from Sales department, the department will produce the finished goods from these lists. And then the department sends the finished goods to inventory department.

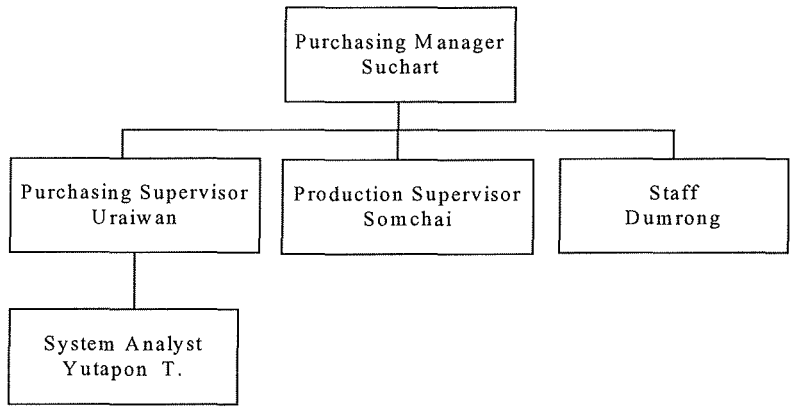


Figure 1.3 Purchasing Department Chart of Lian Hua Textile Company limited

Purchasing Department

The purchasing manager and production supervisor will calculate how much raw materials are needed before making purchase order. Purchasing manager selects suppliers from the list. He contacts with supplier related to quantity, specification, price and delivery. After the raw materials and supplier are selected, all information are recorded in order to use for next purchasing. After receiving raw materials, the staff will check the amounts and quality of the raw materials then contact with inventory department to store the raw material into warehouse.

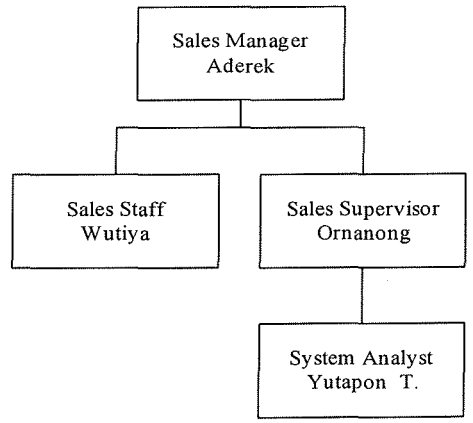


Figure 1.4 Sales Department Chart of Lian Hua Textile Company limited

Sales Department

Sales staff receives customer orders through telephone, mail, fax and face-to-face meeting. If the customer has never contacted with the company, he will record the new customer. The orders are checked with inventory department whether there is enough stock or not. He makes price agreement with customer, sends sales quotation to customer. After all processes are completed, he records all sales transactions and makes delivery to customer. The sales department is responsible for accepting new customers, receiving orders and checking customer records.

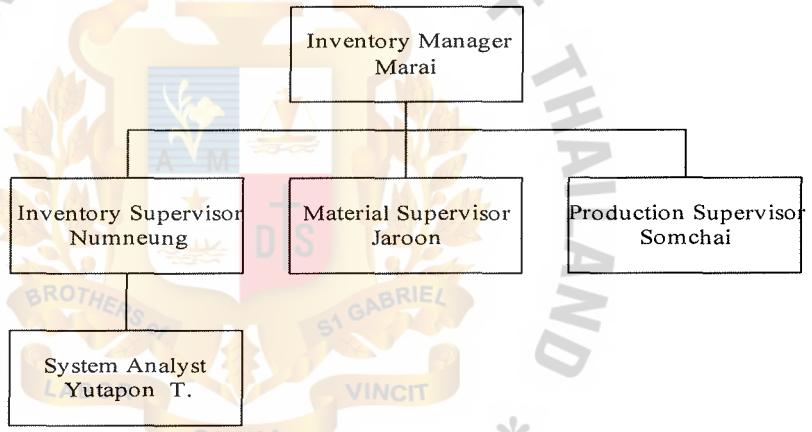


Figure 1.5 Inventory Department Chart of Lian Hua Textile Company limited

Inventory Department

When the staff receives orders from Sales department, he will check inventory level. If there is not enough inventory, he will report to manager. Once products are sold, the quantity will be deducted from the inventory. In case of purchasing raw material from supplier, the staff will add the quantity of the raw materials delivered and deduct when it is withdrawn for production. The inventory department is responsible for managing inventory level of both finished goods and raw materials.

1.4 Project Plan

The project is started in November. It is classified into

(1)	Study the Existing Systems	5	days
(2)	Identify the Existing Problems	4	days
(3)	Define the Objectives and Scope	7	days
(4)	Hardware and Software Requirements	2	days
(5)	Cost Analysis	3	days
(6)	Data Flow Diagram	9	days
(7)	Entity Relationship Diagram	7	days
(8)	Database Design	5	days
(9)	Process Specification	4	days
(10)	Data Dictionary	3	days
(11)	Interface Design	8	days
(12)	Management Report Design	7	days
(13)	Coding	47	days
(14)	Testing	45	days
(15)	Documentation	87	days

ID	Task Name	Duration	Start	Finish
1	**Analysis of the Existing System**	**9 days**	**Wed 9/6/04**	**Fri 18/6/04**
2	Study the Existing System	5 days	Wed 9/6/04	Mon 14/6/04
3	Identify the Existing Problems	4 days	Tue 15/6/04	Fri 18/6/04
4	**Feasibility Study**	**12 days**	**Sat 19/6/04**	**Thu 1/7/04**
5	Define the Objective and Scope	7 days	Sat 19/6/04	Sat 26/6/04
6	Hareware and Software Requirement	2 days	Sun 27/6/04	Mon 28/6/04
7	Cost Analysis	3 days	Tue 29/6/04	Thu 1/7/04
8	**Design of the Proposed System**	**24 days**	**Fri 2/7/04**	**Wed 28/7/04**
9	Data Flow Diagram	9 days	Fri 2/7/04	Sun 11/7/04
10	Entity-Relationship Diagram	7 days	Mon 5/7/04	Sun 11/7/04
11	Database Design	5 days	Fri 9/7/04	Tue 13/7/04
12	Process Specification	4 days	Mon 12/7/04	Thu 15/7/04
13	Data Dictionary	3 days	Mon 12/7/04	Wed 14/7/04
14	Interface Design	8 days	Mon 12/7/04	Wed 21/7/04
15	Management Report Design	7 days	Thu 22/7/04	Wed 28/7/04
16	**Implementation of the Proposed System**	**87 days**	**Wed 9/6/04**	**Mon 20/9/04**
17	Coding	47 days	Thu 15/7/04	Fri 10/9/04
18	Testing	45 days	Fri 23/7/04	Thu 16/9/04
19	Documentation	87 days	Wed 9/6/04	Mon 20/9/04

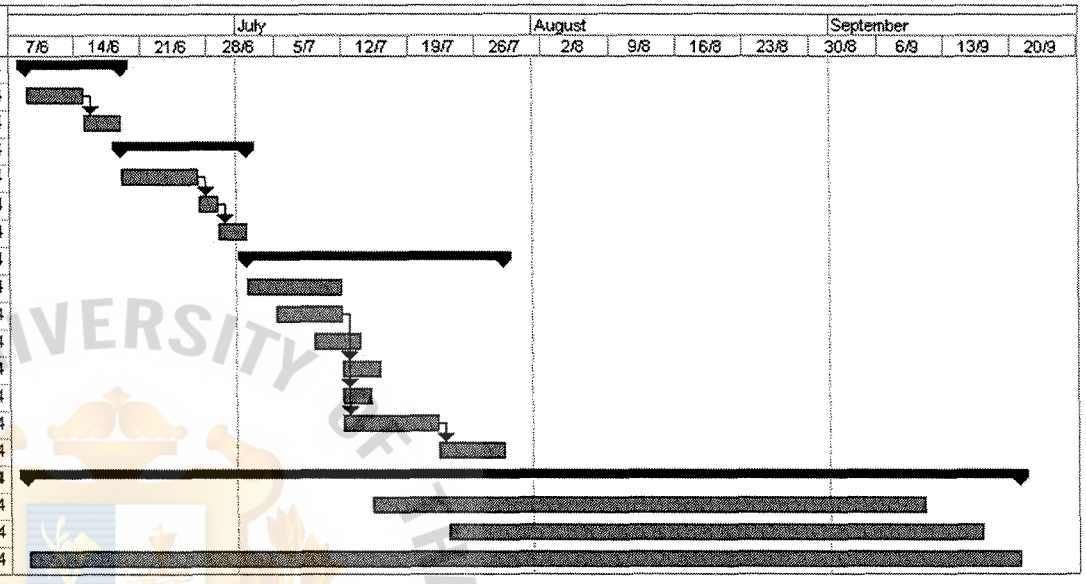


Figure 1-6 Project Plan for Lian Hua Material Planning and Inventory System

II. THE EXISTING SYSTEM

2.1 Background of Existing System

After the system receives sales summary report from Sales Department. The company will know customer order and how many products are needed. Next, the company will check finished good inventory levels whether there are enough inventories or not. If not, the company will start production.

When the raw material inventory levels are low, the inventory department will send purchase requisition to manager. If purchase requisition is approved by manager, purchase order will be made. After that purchase order is made the supplier will send a confirmation document back to the company, the manager will check and sign the document and make a call back for confirmation. When raw materials are delivered, the raw material inventory will be updated. In the case of low finished good inventory, the manager will make production order. Once completed the finished good will be updated to the inventory.

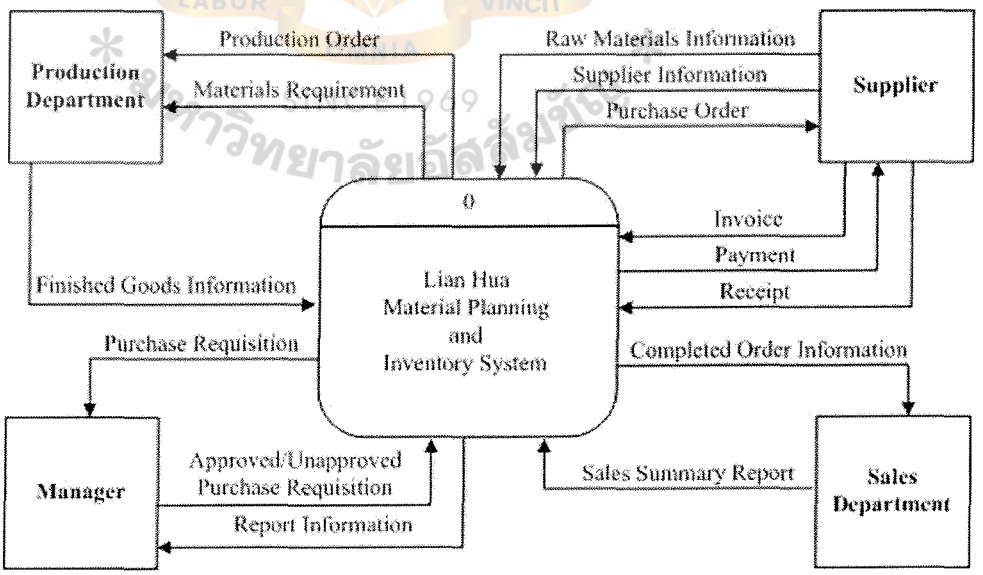


Figure 2-1 Context Diagram of Existing System

2.2 Problem Definition

(1) Inefficient warehouse management

Currently, the inventory are kept everywhere in the warehouse. There is no proper record of where they are kept. Therefore the company cannot really check the real inventory level and old raw materials are not used before new one.

(2) High document handling cost

High cost and time in document management. The company record data in paper. This makes it difficult to search for data as sometime those papers may be lost or misplaced.

(3) Islands of information

Data are kept separately in many locations. In order to generate report, combining those data can be time consuming.

(4) Inefficient inventory control

Human always make error. The staffs usually made error in recording the withdrawal of raw material or sometime they might miscalculate the inventory level, which causes the real inventory not matching the recorded data.

(5) No proper material planning

There is no automatic material planning for production department. This causes the company to handle high cost for raw materials on hand or sometimes there are delay occur from raw materials purchase.

III. THE PROPOSED SYSTEM

3.1 Feasibility Study

(1) Objectives of the System

(a) To use computerized system to manage the material planning, purchase and inventory system more effectively than paper-based system.

(b) To reduce unnecessary processes and save operation costs.

(c) To purchase the raw materials for appropriate time and eliminate the extra stock that can cost to the company.

(d) To implement information system in the company for developing and expanding the scalability in the future.

(2) Scope of the System

(a) Material Planning System

- To collect information about packing in and out.
- To calculate and prepare raw material required for production.
- To calculate cost of production considering only the variable cost of raw material.

(b) Inventory System

- To update stock in and out of inventory including both raw material and finished goods.
- To control the minimum and maximum level of inventory.
- To manage usage of raw material by using FIFO and produced date.

(c) Purchasing System

- To collect the supplier information.

- To edit and add supplier information.
- To collect information about received date, lead time and amounts of item for purchasing plan.
- To generate purchase order.

(d) Management Report

- Material Planning Report

  To print material planning report on periodic basis categorized by

  - Date
  - Raw Material
- Purchasing Report

  To print purchasing report on periodic basis categorized by

  - Date
  - Raw Material
  - Purchase order
- Inventory Report

  To print inventory report on periodic basis categorized by

  - Product
  - Raw Material
  - Date
- Supplier Report

  To print supplier report on periodic basis categorized by

  - Supplier

(3) Hardware and Software Requirements

In table 3-1, the recommended specification will use a powerful Pentium IV Processor for system stability and a lager Hard disk to support large amounts of data. The CD-RW is used to backup data from the system on daily basis to ensure system recovery in case of any incident. According to the system design, the company will use software application to process through all the system. All computers will share data with one another through LAN which can save time for officer in each department. As stated in the below table, computer in every department will have the same specification. Moreover, company is using the UPS to protect the instability of electricity and loss of data during operation.

According to the table 3-2, the company will use Windows XP Professional Edition because it provides a stable and user friendly environment working environment as well as its capacity to support network. Norton Antivirus 2004 is used to protect the system from computer viruses and this version also supports anti-virus network management. The information system requires Visual Basic 6.0 to create and run all of input data between officers and system software. In addition, Microsoft Access, Microsoft Office will be used for keeping record of all transactions inventory data in details and usage in general office work such as issue invoice, packing-in and out, etc. For Microsoft Internet Explorer, is used for connecting to both Intranet and Internet. Finally, Ahead Nero Burning Rom Program will be used to back up data into CD that can help system to store data in secondary data for higher reliability.

Table 3-1 Hardware Requirements for Server Computer

HARDWARE	**SPECIFICATION**
CPU	INTEL P.IV 2.6CGHz
MEMORY	512 Megabytes (256 DDR RAM Megabytes*2)
HARD DISK	Seagate ATA/133 60Gigabytes
CD-ROM DRIVE	Samsung 52X32X52X IDE
FLOPPY DRIVE	TEAC Floppy Drive 3.5inch
DISPLAY ADAPTER	On-board
DISPLAY	Philips 107s 17" CRT monitor
UPS	Leonics PC Acura 1050
PRINTER	Canon LBP1210
ETHERNET	PCI FXG-08TX Switching Hub 1Gb
COMMUNICATION	PCI GN-1200TC (Lan Card) PCI Mini3Plus (Print Server)

Table 3-2 Software Requirements for Server Computer

SOFTWARE	**SPECIFICATION**
Operating System	Microsoft Windows XP Professional Edition
Application	Microsoft Office 2000 Norton Antivirus 2004 Visual Basic 6.0 Crystal Reports 8.5 Ahead Nero Burning ROM Ultra Edition 6

Table 3-3 Hardware Requirements for Client Computer

HARDWARE	**SPECIFICATION**
CPU	Celeron II 2.6GHz
MEMORY	256 Megabytes (128 DDR RAM Megabytes*2)
HARD DISK	Seagate ATA/100 40Gigabytes
CD-ROM DRIVE	Samsung 52X IDE
FLOPPY DRIVE	TEAC Floppy Drive 3.5inch
DISPLAY ADAPTER	On-board
DISPLAY	Philips 105S59 15" CRT monitor
UPS	Leonics PC Mate 500VA
PRINTER	

Table 3-4 Software Requirements for Client Computer

SOFTWARE	**SPECIFICATION**
Operating System	Microsoft Windows XP Professional Edition
Application	Microsoft Office 2000 Norton Antivirus 2004 Visual Basic 6.0 Crystal Reports 8.5

(4) Cost Analysis

Cost analysis focuses on the cost of the system derived from non-operating and operating costs.

(a) System Costs of Existing System

Table 3-5 Cost of Existing System, Baht

Cost	Year				
	1	2	3	4	5
Fixed Costs:					
Hardware					
Workstation					
Pentium MMX 233 MHz	9,000.00	9,000.00	9,000.00	9,000.00	9,000.00
Monitor 15"	1,500.00	1,500.00	1,500.00	1,500.00	1,500.00
Printer Epson stylus color 800	3,000.00	3,000.00	3,000.00	3,000.00	3,000.00
Software					
Microsoft Windows 98	1,425.60	1,425.60	1,425.60	1,425.60	1,425.60
Microsoft Office 97	2,500.00	2,500.00	2,500.00	2,500.00	2,500.00
Implementation Cost					
Maintenance Costs	-	-	3,000.00	3,500.00	4,000.00
Total Fixed Cost	17,425.60	17,425.60	20,425.60	20,925.60	21,425.60
Operating Costs:					
Staff					
Managers 3 @ 18,000/month	648,000.00	712,800.00	784,080.00	862,488.00	948,736.80
Supervisors 4 @ 12,000/month	576,000.00	633,600.00	696,960.00	766,656.00	843,321.60
Production Officers 2 @ 9,000/month	216,000.00	237,600.00	261,360.00	287,496.00	316,245.60
Purchasing Officer @ 8,000/month	96,000.00	105,600.00	116,160.00	127,776.00	140,553.60
Paper	5,000.00	6,000.00	7,200.00	8,640.00	10,368.00
Utility	3,000.00	3,360.00	3,763.20	4,214.78	4,720.56
Opportunity Cost	30,000.00	33,000.00	36,300.00	39,930.00	43,923.00
Other expense	6,000.00	6,900.00	7,935.00	9,125.25	10,494.04
Total Operating Cost	1,580,000.00	1,738,860.00	1,913,758.20	2,106,326.03	2,318,363.20
Total Cost of Existing System	1,597,425.60	1,756,285.60	1,934,183.80	2,127,251.63	2,339,788.80

(b) System Costs of Proposed System

Table 3-6 Cost of Proposed System, Baht

Cost	Year				
	1	2	3	4	5
Fixed Costs:					
Hardware					
1 Server Computer					
Pentium IV 2.6 GHz	5,232.00	5,232.00	5,232.00	5,232.00	5,232.00
Monitor Philips 17"	1,422.00	1,422.00	1,422.00	1,422.00	1,422.00
UPS Leonics 1050	1,710.00	1,710.00	1,710.00	1,710.00	1,710.00
3 Client Computers					
Celeron II 2.6 MHz	8,796.00	8,796.00	8,796.00	8,796.00	8,796.00
Monitor Philips 15"	3,138.00	3,138.00	3,138.00	3,138.00	3,138.00
3 UPS Leonics 525	2,220.00	2,220.00	2,220.00	2,220.00	2,220.00
Ethernet					
PCI FXG-08TX	2,320.00	2,320.00	2,320.00	2,320.00	2,320.00
PCI GN-1200TC(32Bit)	720.00	720.00	720.00	720.00	720.00
PCI Mini3Plus	1,018.00	1,018.00	1,018.00	1,018.00	1,018.00
Printer Laser Canon	2,660.00	2,660.00	2,660.00	2,660.00	2,660.00
Software					
Windows XP Professional	10,880.00	10,880.00	10,880.00	10,880.00	10,880.00
MS-Office 2000	16,800.00	16,800.00	16,800.00	16,800.00	16,800.00
Visual Basic 6.0	9,200.00	9,200.00	9,200.00	9,200.00	9,200.00
Ahead Nero Burning ROM 6	1,120.00	1,120.00	1,120.00	1,120.00	1,120.00
Norton Antivirus 2004	7,360.00	7,360.00	7,360.00	7,360.00	7,360.00
Crystal Report 8.5	17,240.00	17,240.00	17,240.00	17,240.00	17,240.00
Implementation Cost					
Development Cost (300 Hrs@500)	150,000.00	-	-	-	-
Initial Setup Cost	30,000.00				
Training Cost (30 Hrs@400)	12,000.00	-	-	-	-
Maintenance Costs	-	3,000.00	4,000.00	5,000.00	6,000.00
Total Fixed Costs	283,836.00	91,836.00	91,836.00	96,836.00	97,836.00
Operating Costs:					
Staff					
Managers 3 @ 18,000/month	648,000.00	712,800.00	784,080.00	862,488.00	948,736.80
Supervisors 3 @ 12000/month	432,000.00	475,200.00	522,720.00	574,992.00	632,491.20
Production Officer @ 10,000/month	120,000.00	132,000.00	145,200.00	159,720.00	175,692.00
Purchase Officer @ 9,000/month	108,000.00	118,800.00	130,680.00	143,748.00	158,122.80
Paper	2,880.00	3,168.00	3,484.80	3,833.28	4,216.61
Utility	9,000.00	9,900.00	10,890.00	11,979.00	13,176.90
Opportunities Cost	40,000.00	44,000.00	48,400.00	53,240.00	58,564.00
Other expenses	8,500.00	9,350.00	10,285.00	11,313.50	12,444.85
Total Operating Costs	1,368,380.00	1,505,218.00	1,655,739.80	1,821,313.78	2,003,445.16
Total Cost of Proposed System	1,652,216.00	1,597,054.00	1,747,575.80	1,918,149.78	2,101,281.16

(c) The Comparison of Accumulated System Costs between Existing System and Proposed System

Table 3.7. Accumulated System Costs of Existing System for 5 Years, Baht.

Year	Total Annual Cost	Accumulated Cost
1	1,597,425.60	1,597,425.60
2	1,756,285.60	3,353,711.20
3	1,934,183.80	5,287,895.00
4	2,127,251.63	7,415,146.63
5	2,339,788.80	9,754,935.43

Table 3.8. Accumulated System Costs of Proposed System for 5 Years, Baht.

Year	Total Annual Cost	Accumulated Cost
1	1,652,216.00	1,652,216.00
2	1,597,054.00	3,249,270.00
3	1,747,575.80	4,996,845.80
4	1,918,149.78	6,914,995.58
5	2,101,281.16	9,016,276.74

Table 3.9. The Comparison of Accumulated System Costs, Baht.

Year	Accumulated Existing System Cost	Accumulated Proposed System Cost
1	1,597,425.60	1,652,216.00
2	3,353,711.20	3,249,270.00
3	5,287,895.00	4,996,845.80
4	7,415,146.63	6,914,995.58
5	9,754,935.43	9,016,276.74

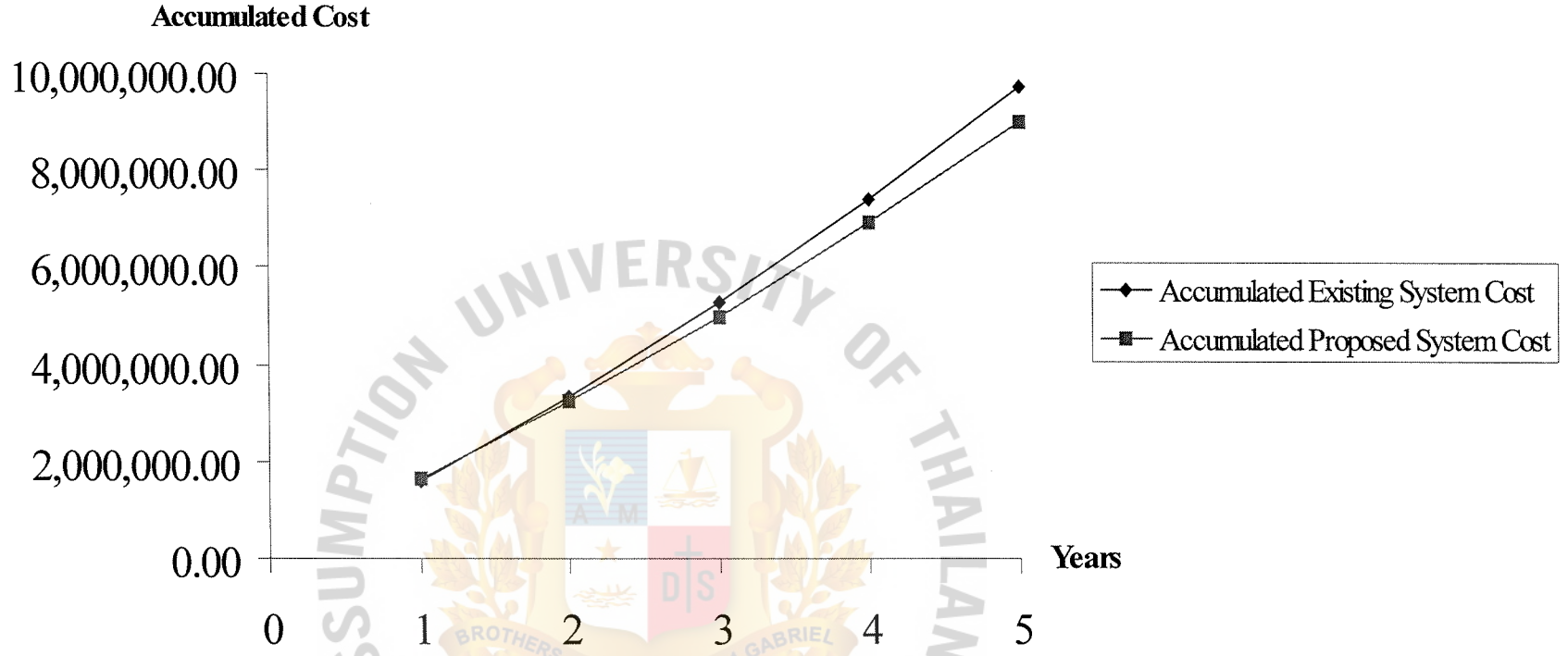


Figure 3-1 Break-even Analysis

The proposed system can help company to reduce unnecessary expenses (e.g. salary expenses, utilities expenses, other expenses and opportunity cost). Total Annual Cost in proposed system higher cost than Exist but in a long run proposed cost is slower than exist and can save cost more than exist.

The result of the Break-even Analysis from above line graph can demonstrated that if company implements the proposed system, company can break-even in 4 months. Though company have to invest higher than the existing system in the first year, however, in the long run, in year 2 – 5, new system can save more costs than the existing system. Additional costs are increased in the smaller proportions when compare to the existing system. In the long-run, company can save more and more in the future with lower opportunity cost. Finally, the new proposed system can help the company and management to save costs and lead to successful in the long run.

3.2 System Design

(1) Data Flow Diagram

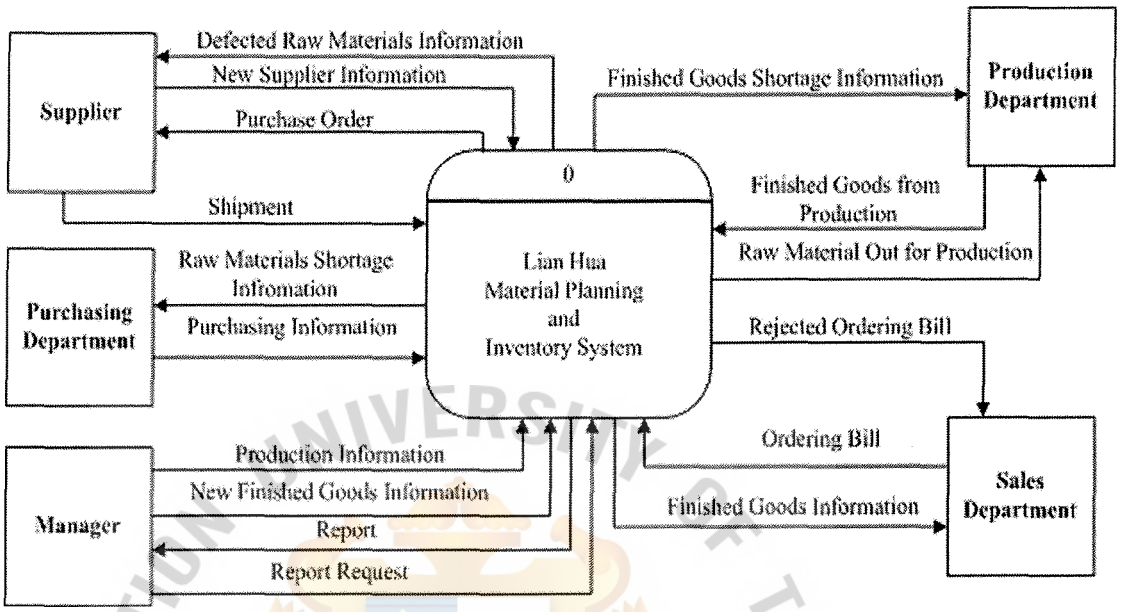


Figure 3-2 Context Diagram of Proposed System

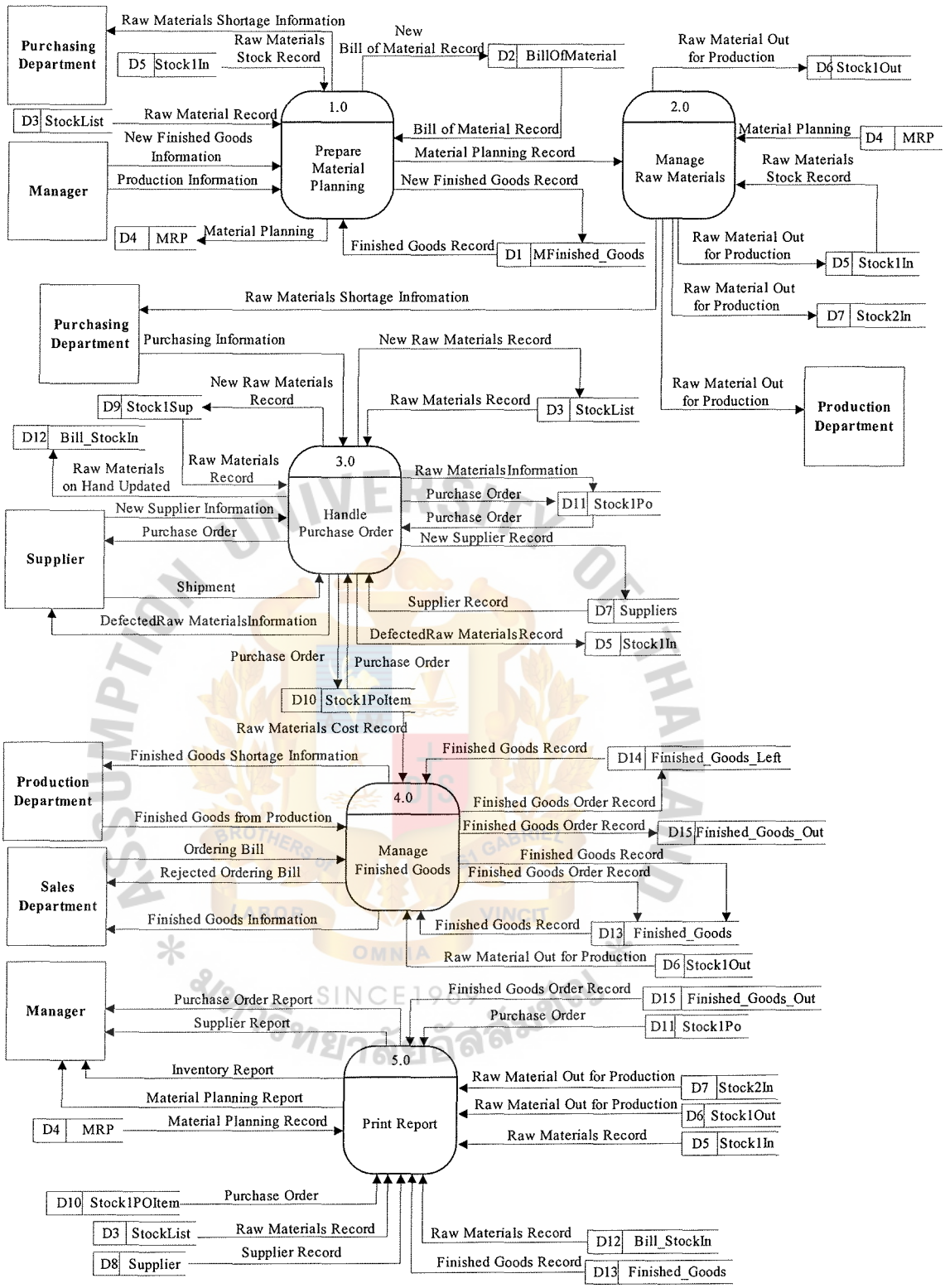


Figure 3-3 Data Flow Diagram – Level 0

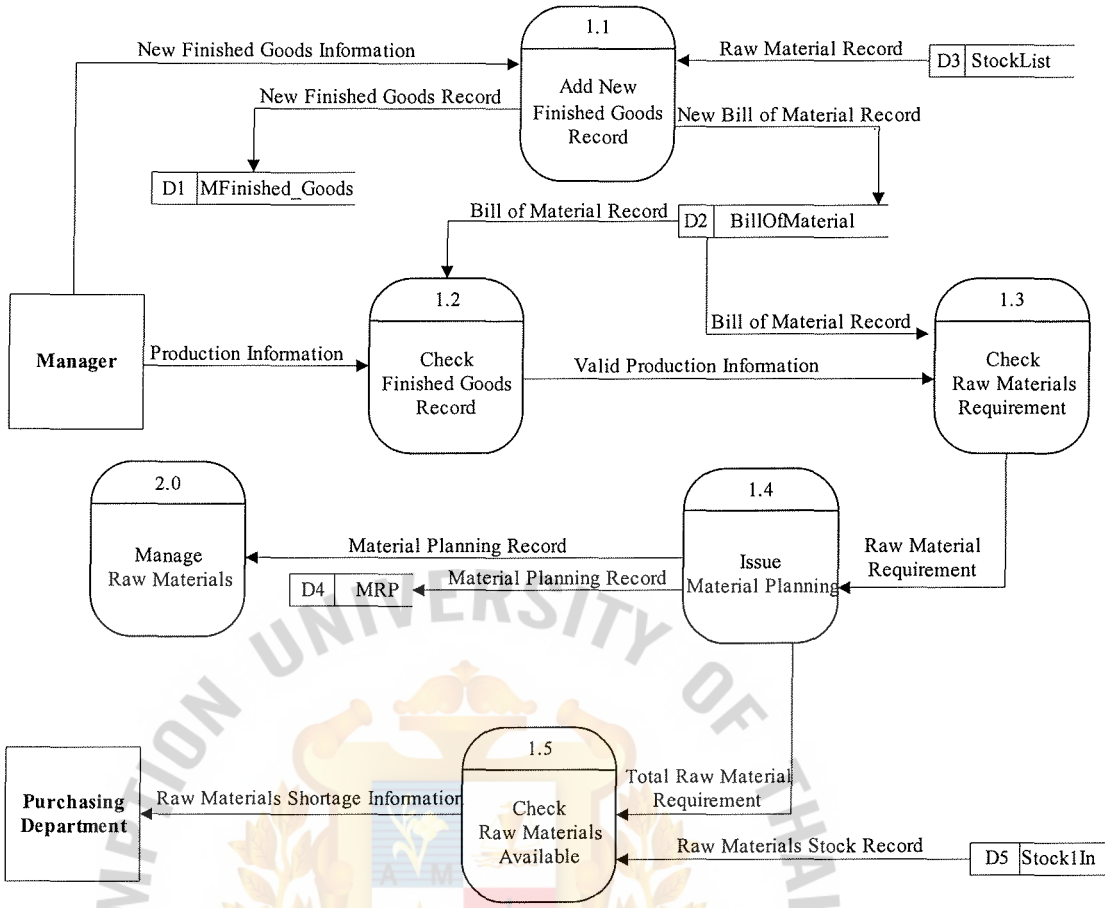


Figure 3-4 Data Flow Diagram – Level 1 for Process 1

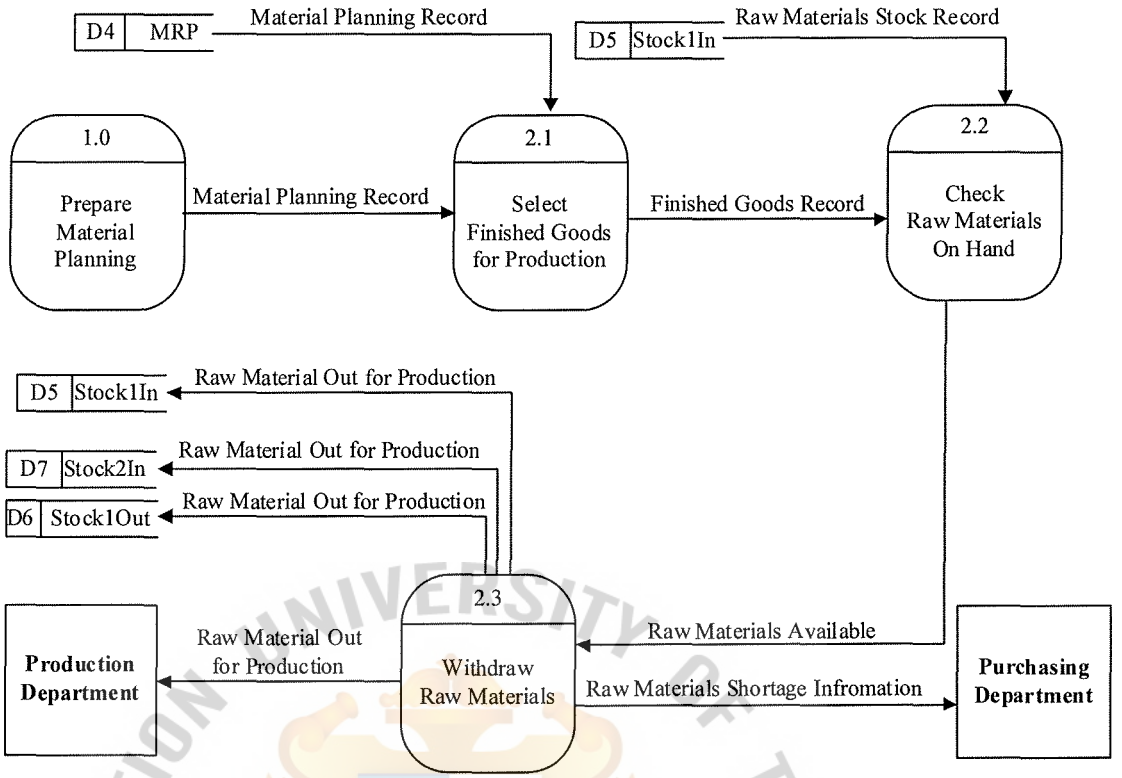


Figure 3-5 Data Flow Diagram – Level 1 for Process 2

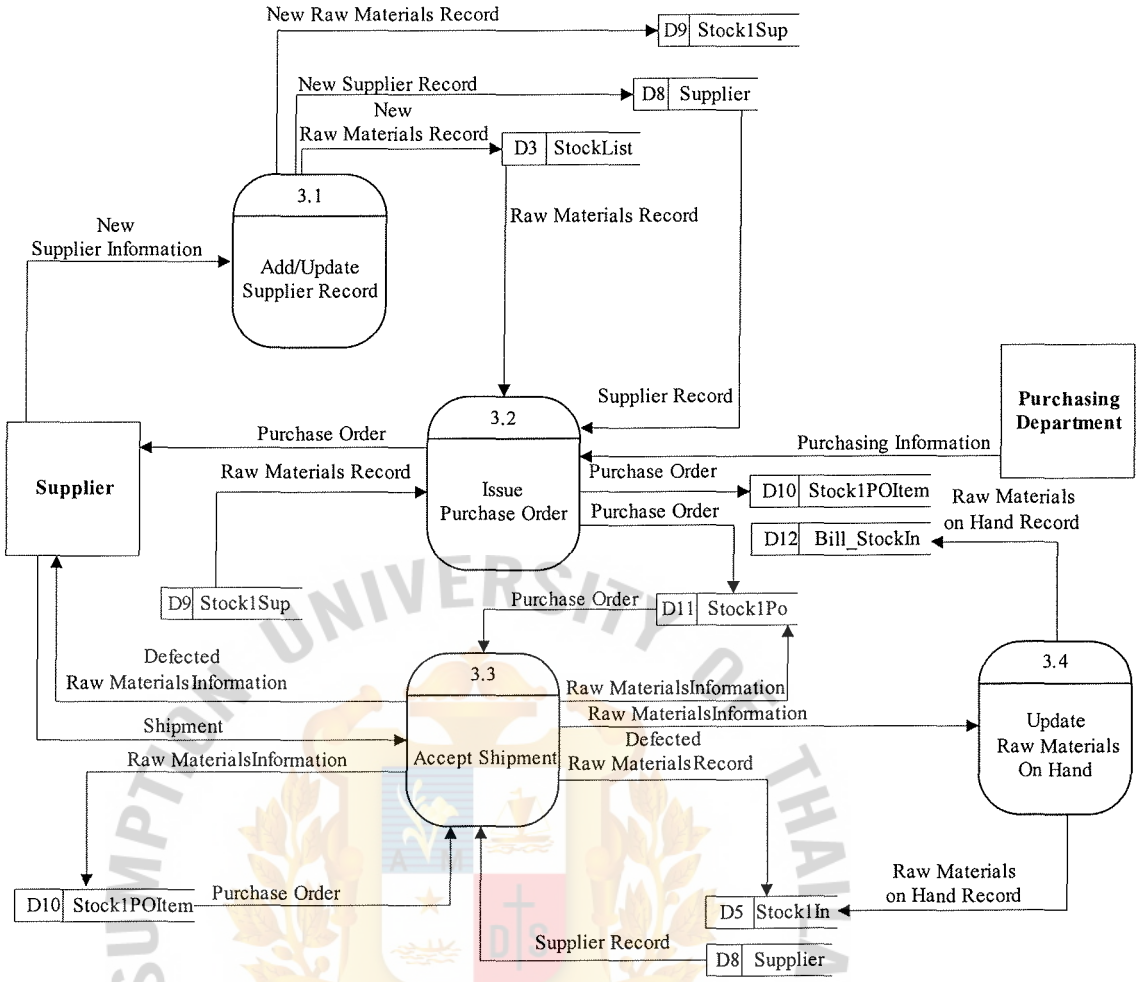


Figure 3-6 Data Flow Diagram – Level 1 for Process 3

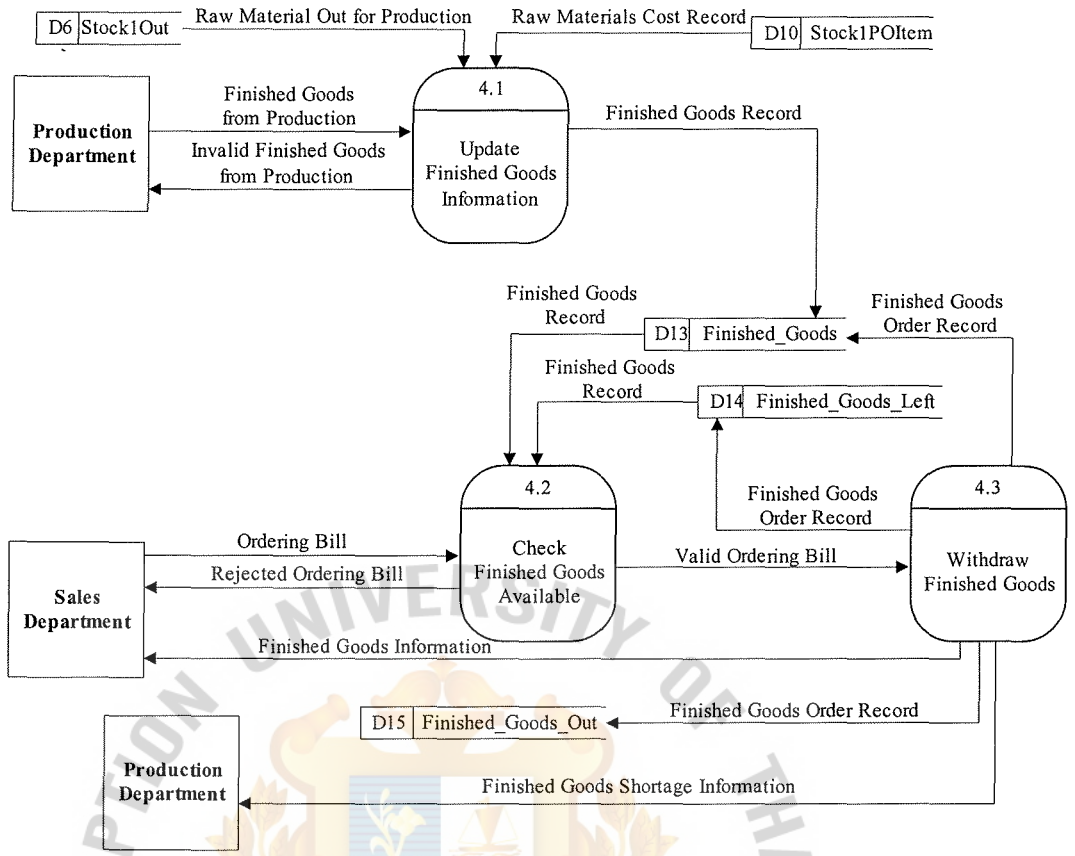


Figure 3-7 Data Flow Diagram – Level 1 for Process 4

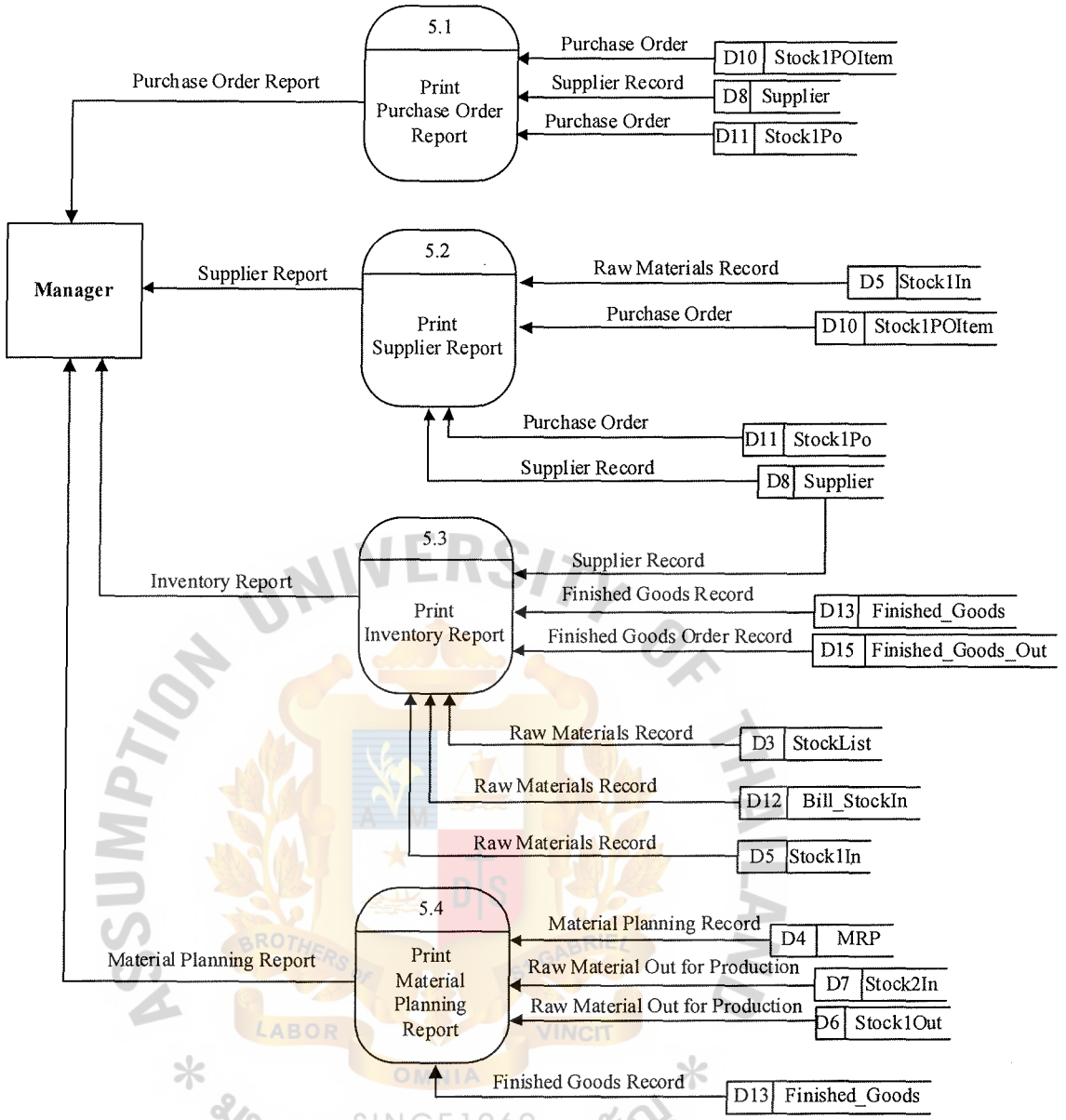


Figure 3-8 Data Flow Diagram – Level 1 for Process 5

(2) Entity-Relationship Diagram

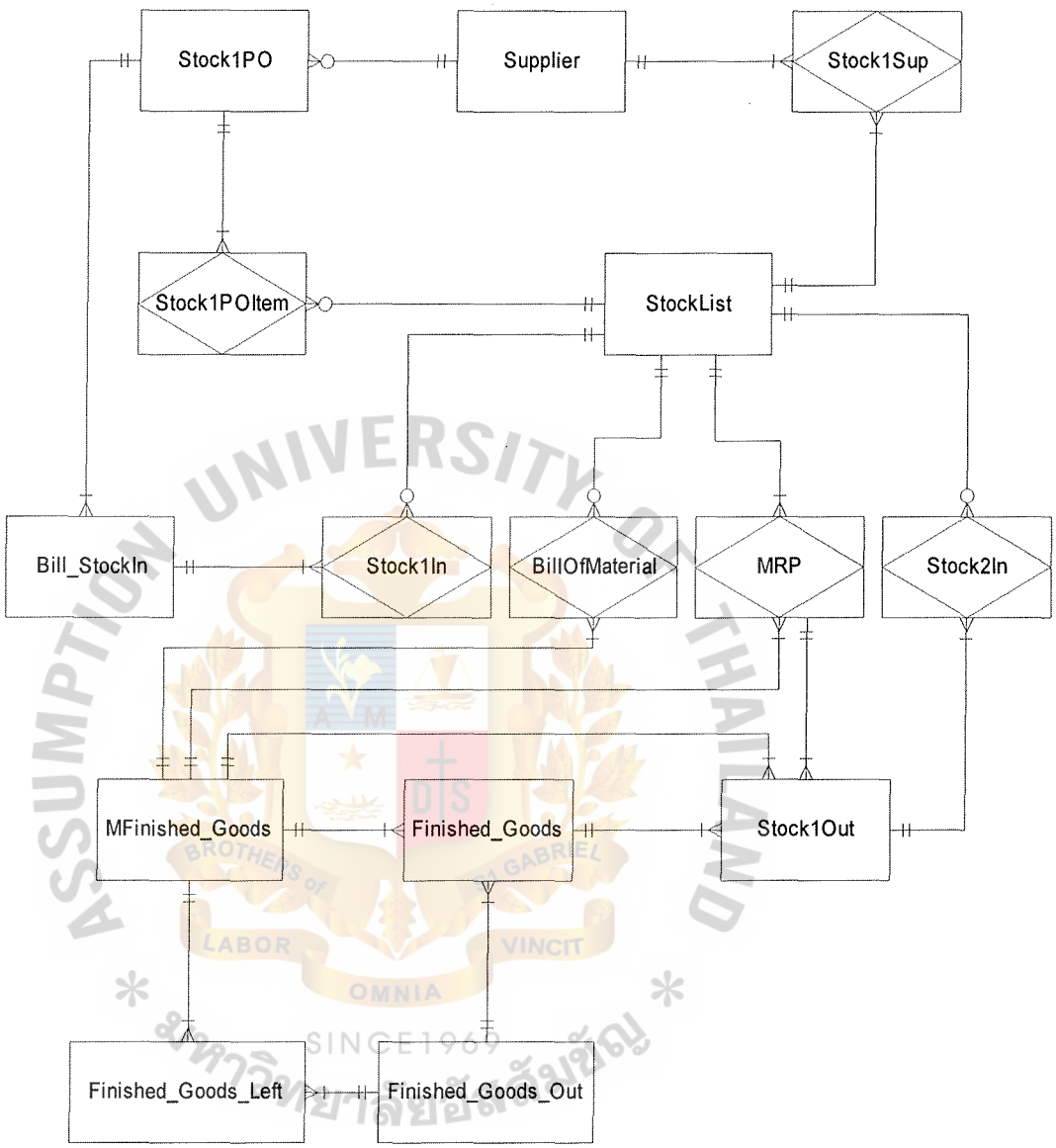


Figure 3-9 Entity-Relationship Diagram

(3) Database Design

Each column of a table represents an attribute or characteristic of an entity. Each row of a table represents an instance of the entity. An important property of the relational model is that it represents logical relationships between entities by values stored in the columns of the corresponding tables.

Using logical database design also helps in transforming the conceptual data model (E-R Diagram) to a logical model (relational database). It represents entities as a relation and sets the identifier of the entity as primary key of the relation in order to be unique and a single value in each row and some non-key attributes of the relation as foreign key to link between two relations. Then, it represents relationships and normalizes or refines the relations to avoid the problems of redundancy data and errors or inconsistencies when updating tables that contain redundant data. Finally, it will merge the relations in order to minimize the redundancy of data. (Rob, Coronel 2000:136)

For this information system there are all together fifteen tables or relations (refer to Appendix C for Database Design):

- Supplier Table

  It stores general information about supplier. (Appendix C-1)

- Stock1Sup Table

  It stores the information about raw materials that suppliers sell. (Appendix C-2)

- Stock1PO Table

  It stores the information about purchase order that the company purchases from suppliers. (Appendix C-3)

- Stock1POItem Table

It stores information about purchase item in details. (Appendix C-4)

- StockList Table

  It stores the information about raw material. (Appendix C-5)

- Bill_StockIn Table

  It stores the information about delivery bill of raw materials received from suppliers. (Appendix C-6)

- Stock1In Table

  It stores the information about raw materials kept in the warehouse. (Appendix C-7)

- BillOfMaterial Table

  It stores the information about the portions of raw material used to produce the specific finished goods. (Appendix C-8)

- MRP Table

  It stores the information about quantities of finished goods and raw materials that the company planed to produce. (Appendix C-9)

- Stock1Out Table

  It stores the information about quantities of raw materials that is withdrawn from warehouse to production according to material requirement planning. (Appendix C-10)

- Stock2In Table

  It stores the information about actual quantities of raw materials that is withdrawn from warehouse to production by using FIFO method. (Appendix C-11)

- Mfinished_Goods Table

  It stores information about finished goods. (Appendix C-12)

- Finished_Goods Table

  It stores information about finished goods kept in the warehouse. (Appendix C-13)

- Finished_Goods_Left Table

  It stores the information about remainder of finished goods kept in the warehouse. (Appendix C-14)

- Finished_Goods_Out Table

  It stores the information about finished goods that are withdrawn from warehouse for sale. (Appendix C-15)

(4) Interface Design

For this information systems there are refer to Appendix D for Database Design:

- Log in Form: It is used for user to log in to the system. (Appendix D-1)
- Raw Material Form: It is main menu for raw material. (Appendix D-2)
- Supplier Form: It is used to show supplier profile along with contact person and raw material that the supplier provide. (Appendix D-3)
- Raw Material Master Form: It is used to show raw material details and allow data modification. (Appendix D-4)
- Material Requirement Planning Form: This form shows plan of how many raw materials are to be used to produce Finished goods. (Appendix D-5)
- Compare Form: It is used to compare stock information. (Appendix D-6)
- Search Supplier Form: It is used to search for supplier information. (Appendix D-7)
- Raw Material Purchase Order Form: It is used to show the list of raw materials that are purchased. (Appendix D-8)
- Raw Material In To Stock Form: It is show the list of raw material that are added into stock. (Appendix D-9)
- Raw Material Out To Production Form: It is show the list of raw materials withdrawn for production. (Appendix D-10)

- Show Cost Form: It is used to show cost of raw materials. (Appendix D-11)
- Search Raw Material Out Form: It can search for raw materials that are withdrawn for production. (Appendix D-12)
- Search Raw Material Form: It is used to search for amount of raw materials available. (Appendix D-13)
- Raw Material Minimum And Maximum Control Form: It is used to adjust amount of maximum and minimum raw materials required in stock. (Appendix D-14)
- Finished Goods Form: It is main menu for Finished Goods form. (Appendix D-15)
- Finished Goods Formula Form: It is used to calculate amount of Raw Material that provided to Finished Goods. (Appendix D-16)
- Finished Goods Minimum And Maximum Control Form: It is used to adjust amount of max and min in Finished Goods level of stock. (Appendix D-17)
- Finished Goods In Form: This form is use to add amount of sack into warehouse. (Appendix D-18)
- Record Finished Goods Out: It is used to prepare finished good out of warehouse and deliver to customer. (Appendix D-19)
- Search Finished Goods Status: This form can search status of Finished Goods back from each production. (Appendix D-20)
- Raw Material Report Form: This form includes option to select criteria for generation Raw Material Report. (Appendix D-21)

- Finished Goods Report Form: This form includes option to select criteria for generating Finished Goods Report. (Appendix D-22)

(5) Management Report Design

For the following management report designs, refers to Appendix E for the figure Report Design:

(a) Material Planning Report: (Appendix E-1, E-2, E-3, E-4)

This Material Planning report will be used for manager to determine the requirement of each product in the company. This report consists of 2 parts which are topic and details.

(b) Purchase Report: (Appendix E-10)

This report shows the transaction details that the company made with suppliers. Consist of 3 parts which are header, details and footer.

(c) Inventory Report: (Appendix E-7, E-8, E-9)

This summary report shows the details of each finished goods and raw material detail.

- On each Inventory report will shows the lists of finished goods and raw material holds in the warehouse.
- On each report can keep data from supplier and store finished goods data from production process to warehouse.
- Manager can follow for the particular report needed. It can help manager to make a decision.

(d) Supplier Report: (Appendix E-10)

This report shows the profile of suppliers that have transaction with our company.

IV. SYSTEM IMPLEMENTATION

4.1 Overview of the System Implementation

The system implementation is the process to ensure that the employees are ready to use the new system. It is concerned with the installation of the computerized system replacing the manual system.

The system should use the Pilot Operation changeover method to convert the existing system into the new system. The new system will be used first in the Inventory Department because the objective of this system is to solve the problem in Inventory Department.

After the new system can work effectively, the company can extend the computerized system to other departments.

4.2 Test Plan

To ensure that the new system work properly, testing of specific program and total system is essential. Testing is done to look for errors before the system is actually used.

Testing methodology that are applied include:

(1) Unit testing is the testing method that tests the functions and components in each module. This method will check whether the process in each module can work properly. The modules that will be tested include material planning module, purchasing module, inventory module and report module.

(2) Integration Testing is the testing methods that test whether the data in each module are linked among the module. The data that have been tested include the information that are send from one module to another module. For example, the information of purchase order bill in the purchasing module must be the same with the information in the Purchase Order Report in Report module.

(3) Validation Testing is the testing method that check whether the data to record is valid or not. For example, the user can put only the number in the input box that need number data only. The user are not allowed to put alphabets data in this input box.

(4) System Testing is the testing method that test whether the system can work properly with another system in the company. This method will test this system with another system in the company. For example, the purchase order information that use in this department must be accurate with the data in Purchasing Department and Accounting Department.

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In designing a Material Planning and Inventory System, it is essential to obtain the management support. System users should be involved in the system by specifying their information needs and outlining format for the information presentation.

As the development of Material Planning and Inventory System, there are many advantages for the company after the company uses the new system.

The company can manage warehouse system more efficient than before. There are proper record about the quantity of raw materials and finished goods. So it will save time to check the information about the inventory that are stored in the warehouse.

The new system can automatically retrieve the information about the materials planning, supplier information, inventory information and reports from Warehouse Department. The information that are used in the system will be more accurate than before and the mistake from human errors will be reduced. The other department can retrieve the information from Warehouse Department because all data are stored in computer.

The company can plan the use of raw materials and cost of raw materials that are used for production more efficiently than before. The company can also plan how many raw materials should be ordered from suppliers, so the cost of storage will be reduced.

If there are the problem in the new system, it can causes from many reasons. The employees that used the new system are not familiar with the new therefore additional training should be included in this system until the employees are familiar with the new system.

5.2 Recommendations

The proposed system is changing into a computerized system. All information will be automated and the database can be shared among department. The information in the system will be up-to-date.

In the proposed system, there is no contact with suppliers via the system. In the future, the company can implement the Electronic Data Interchange to contact with the suppliers in order to provide the convenience for the information that the company exchange with the suppliers and improve the relationship with them.

The proposed system is the first step to convert from manual system of this department to computerized system. In the future, other system of the company may be developed into computerized system as well.

APPENDIX A
DATA DICTIONARY

Table A-1 Data Dictionary of Order Processing System

Data	Meaning
Address	The address of suppliers.
Amount	The amount of raw materials that are required to produce finished goods per month.
AmountDay	The amount of raw materials that are required to produce finished goods per day.
Bill of Material Record	Information about the ingredient of finished goods. (Dai_No + StockCode + dpercent)
BillNo	The id. Of purchase order.
CompanyName	The name of suppliers.
ContactPerson	The name of supplier that the company can contact.
Cost	Cost of raw materials in purchase order.
Credit_Term	The credit term of supplier.
Dai_Name	Name of finished goods.
Dai_No	The id. Of finished goods.
DateIn	The date that purchase order have been created.
Defected Raw Materials Information	The defected raw materials from the shipment that used to inform suppliers.
Defected Raw Materials Record	The record of defected raw materials. Alias to Defected Raw Materials

	Information.
Department	The department of contact person of suppliers.
dpercent	The composition of raw materials to produce the finished goods.
E-mail	The e-mail address of suppliers.
Fax	The fax number of suppliers.
Finished Goods from Production	The finished goods information that are produced from Production Department.
Finished Goods Information	Information about the finished goods that produced and sold to customer. (Dai_No + Dai_Name + Type + UseLife + Weight)
Finished Goods Order Record	The information of the finished goods that are ordered from customers.
Finished Goods Record	The record of finished goods. Alias to Finished Goods Information.
Finished Goods Shortage Information	The finished goods information that have the quantity on hand lower than minimum quantity.
Gender	The gender of contact person of suppliers.
Inventory Report	Report about the inventory that has been submitted to Manager.
Invoicekg	The weight of raw materials that are defined in purchase order.

KG	The weight of finished goods that would like to produce per month.
Material Planning Record	Planning information about the raw material that should be used for production. (MRPcode + StockCode + NoDay + Dai_No + Kg + Amount + AmountDay)
Material Planning Report	Report about the material planning that has been submitted to Manager.
MRPcode	The id. of material planning.
New Bill of Material Record	The record of new bill of materials. Alias to Bill of Material Record.
New Finished Goods Information	The information about the new finished goods. Alias to Finished Goods Information.
New Finished Goods Record	The record of new finished goods. Alias to Finished Goods Information.
New Raw Materials Record	The record of new raw materials. (StockCode + StockName + StockType + StockUseLife)
New Supplier Information	The information that supplier provide to company. (Supplier_Id + CompanyName + Address + Telephone + Fax + E-mail + Credit_term + ContactPerson + Gender + Position + Department)

New Supplier Record	The record of new suppliers. Alias to New Supplier Information.
NoDay	The number of day that the material planning uses per month.
Ordering Bill	The bill about the finished goods that the Sales department would like to sell to customers. (Dai_No + Weight)
Position	The position of contact person of suppliers.
Production Information	The information about the finished goods that the Production department would like to produce.
Purchase Order	The ordering bill that the company used to order raw materials from suppliers. (BillNo + Supplier_Id + DateIn + Invoicekg + Cost)
Purchase Order Report	Report about the purchase order that have been submitted to Manager.
Purchasing Information	The information about the raw materials ordering from Purchasing Department. Alias to Accepted Purchasing Information.
Raw Material Out for Production	The amount of raw materials that are withdrawal for production per day.
Raw Material Requirement	Raw materials information that need to produce the finished goods.

Raw Materials Available	The available of raw material quantity.
Raw Materials Information	The information of raw materials that received from suppliers. Alias to New Raw Materials Record.
Raw Materials on Hand Record	Updated raw material quantity on hand.
Raw Materials Record	The record of the raw materials that company used to produce the finished goods. Alias to New Raw Materials Record.
Raw Materials Shortage Information	The raw materials information that have the quantity on hand lower than minimum quantity.
Raw Materials Stock Record	The record of raw materials that stored in warehouse.
Rejected Ordering Bill	The rejected bill about the finished goods that the Sales department would like to sell to customers.
Report Request	The report that are requested from Manager.
Shipment	The information about the raw materials that have been shipped from suppliers.
StockCode	The id. of raw materials.
StockName	The name of raw materials.
StockType	Type of raw materials.
StockUseLife	The useful life of raw materials.
Supplier Record	The record of suppliers.

	Alias to New Supplier Information.
Supplier Report	Report about the supplier that has been submitted to Manager.
Supplier_ID	The id. of suppliers.
Telephone	The telephone number of suppliers.
Total Raw Material Requirement	The total raw materials those are required for production per month.
Type	Type of finished goods
UseLife	Useful life of finished goods
Valid Ordering Bill	The accepted bill about the finished goods that the Sales department would like to sell to customers.
Valid Production Information	Valid information of production information.
	Alias to Production Information.
Weight	The weight of finished goods.

APPENDIX B
PROCESS SPECIFICATION

Table B-1 Process Specification for Process 1.0

Process Name:	Prepare Material Planning
Data In:	(1) Bill of Material Record (2) Finished Goods Record (3) New Finished Goods Information (4) Production Information (5) Raw Material Record (6) Raw Materials Stock Record
Data Out:	(1) Bill of Material Record (2) New Bill of Material Record (3) New Finished Goods Record (4) Material Planning Record (5) Raw Materials Shortage Information
Process:	(1) Receive the new product information (2) Add new product type and material requirement (3) Receive production information from Production department (4) Check production information from Production department (5) Check material requirement for product (6) Calculate total material requirement for production (7) Create material planning for production (8) Send raw materials shortage information to Purchasing Department
Attachment:	(1) Manager (2) Purchasing Department (3) Process 2.0

	(4) Data Store D1 (5) Data Store D2 (6) Data Store D3 (7) Data Store D4 (8) Data Store D5

Table B-2 Process Specification for Process 1.1

Process Name:	Add New Finished Goods Record
Data In:	(1) New Finished Goods Information (2) Raw Material Record
Data Out:	(1) New Bill of Material Record (2) New Finished Goods Record
Process:	(1) Received new finished goods information (2) Add new finished goods information (3) Add material requirement for the finished goods
Attachment:	(1) Production Department (2) Data Store D1 (3) Data store D2

Table B-3 Process Specification for Process 1.2

Process Name:	Check Finished Goods Record
Data In:	(1) Bill of Material Record (2) Production Information
Data Out:	(1) Valid Production Information
Process:	(1) Receive production information from Production department (2) Check finished goods information of production information
Attachment:	(1) Production Department (2) Process 1.3 (3) Data Store D2

Table B-4 Process Specification for Process 1.3

Process Name:	Check Raw Materials Requirement
Data In:	(1) Bill of Material Record (2) Valid Production Information
Data Out:	(1) Raw Material Requirement
Process:	(1) Check material requirement for production information
Attachment:	(1) Process 1.2 (2) Process 1.4 (3) Data Store D2

Table B-5 Process Specification for Process 1.4

Process Name:	Issue Material Planning
Data In:	(1) Raw Material Requirement
Data Out:	(1) Material Planning Record (2) Total Raw Material Requirement
Process:	(1) Calculate total material requirement for production (2) Issue material planning for production
Attachment:	(1) Process 1.3 (2) Process 1.5 (3) Process 2.0 (4) Data Store D4

Table B-6 Process Specification for Process 1.5

Process Name:	Check Raw Materials Available
Data In:	(1) Total Raw Material Requirement (2) Raw Materials Stock Record
Data Out:	(1) Raw Materials Shortage Information
Process:	(1) Calculate raw materials need more for production
Attachment:	(1) Purchasing Department (2) Process 1.4 (3) Data Store D5

Table B-7 Process Specification for Process 2.0

Process Name:	Manage Raw Materials
Data In:	(1) Material Planning Record (2) Raw Materials Stock Record
Data Out:	(1) Raw Materials Out for Production (2) Raw Materials Shortage Information
Process:	(1) Issue raw materials on hand for production (2) Collect information about raw materials for production (3) Update raw materials on hand (4) Send raw materials shortage information to Purchasing Department
Attachment:	(1) Purchasing Department (2) Production Department (3) Process 1.0 (4) Data Store D4 (5) Data Store D5 (6) Data Store D6 (7) Data Store D7

Table B-8 Process Specification for Process 2.1

Process Name:	Select Finished Goods for Production
Data In:	(1) Material Planning Record
Data Out:	(1) Finished Goods Record
Process:	(1) Select finished goods for production (2) Inform the amount of raw materials required for production
Attachment:	(1) Process 1.0 (2) Process 2.2 (3) Data Store D4

Table B-9 Process Specification for Process 2.2

Process Name:	Check Raw Materials On Hand
Data In:	(1) Finished Goods Record (2) Raw Materials Stock Record
Data Out:	(1) Raw Materials Available
Process:	(1) Check actual raw materials on hand
Attachment:	(1) Process 2.1 (2) Process 2.3 (3) Data Store D5

Table B-10 Process Specification for Process 2.3

Process Name:	Withdraw Raw Materials
Data In:	(1) Raw Materials Available
Data Out:	(1) Packing In Record (2) Raw Materials Out for Production (3) Raw Materials Shortage Information
Process:	(1) Withdraw raw materials for production (2) Send raw materials shortage information to Production Department (3) Collect information about issue raw materials (4) Update raw materials on hand
Attachment:	(1) Purchasing Department (2) Production Department (3) Process 2.2 (4) Data Store D5 (5) Data Store D6 (6) Data Store D7

Table B-11 Process Specification for Process 3.0

Process Name:	Handle Purchase Order
Data In:	(1) Purchasing Information (2) Purchase Order (3) Raw Materials Record (4) Shipment (5) New Supplier Information (6) Supplier Record
Data Out:	(1) Defected Raw Materials Information (2) Defected Raw Materials Record (3) New Raw Materials Record (4) New Supplier Record (5) Purchase Order (6) Raw Materials Information (7) Raw Materials on Hand Updated (8) Rejected Purchasing Information
Process:	(1) Add supplier information (2) Edit supplier information (3) Check purchasing information from Manager (4) Issue purchase order to supplier (5) Accept shipment from supplier (6) Collect defected raw materials information (7) Update raw materials on hand
Attachment:	(1) Purchasing Department (2) Supplier

	(3) Data Store D3 (4) Data Store D5 (5) Data Store D8 (6) Data Store D9 (7) Data Store D10 (8) Data Store D11 (9) Data Store D12

Table B-12 Process Specification for Process 3.1

Process Name:	Add/Update Supplier Record
Data In:	(1) New Supplier Information
Data Out:	(1) New Raw Materials Record (2) New Supplier Record
Process:	(1) Receive supplier information (2) Add new supplier information (3) Add new raw material that supplier sale (4) Add new raw materials information (5) Edit supplier information
Attachment:	(1) Supplier (2) Data Store D3 (3) Data Store D8 (4) Data Store D9

Table B-13 Process Specification for Process 3.2

Process Name:	Issue Purchase Order
Data In:	(1) Raw Materials Record (2) Supplier Record (3) Purchasing Information
Data Out:	(1) Purchase Order
Process:	(1) Accept purchasing information from Purchasing Department (2) Issue purchase order to supplier (3) Collect information about purchase order
Attachment:	(1) Purchasing Department (2) Supplier (3) Process 3.2 (4) Data Store D3 (5) Data Store D8 (6) Data Store D9 (7) Data Store D10 (8) Data Store D11

Table B-14 Process Specification for Process 3.3

Process Name:	Accept Shipment
Data In:	(1) Purchase Order (2) Shipment (3) Supplier Record
Data Out:	(1) Defected Raw Materials Information (2) Defected Raw Materials Record (3) Raw Materials Information
Process:	(1) Accept shipment from supplier (2) Check shipment (3) Collect defected raw materials information
Attachment:	(1) Supplier (2) Process 3.5 (3) Data Store D5 (4) Data Store D8 (5) Data Store D10 (6) Data Store D11

Table B-15 Process Specification for Process 3.4

Process Name:	Update Raw Materials On Hand
Data In:	(1) Raw Materials Information
Data Out:	(1) Raw Materials on Hand Updated
Process:	(1) Update raw materials on hand
Attachment:	(1) Process 3.4 (2) Data Store D5 (3) Data Store D12

Table B-16 Process Specification for Process 4.0

Process Name:	Manage Finished Goods
Data In:	(1) Finished Goods from Production (2) Finished Goods Record (3) Raw Materials Cost Record (4) Raw Material Out for Production (5) Ordering Bill
Data Out:	(1) Finished Goods Information (2) Finished Goods Record (3) Finished Goods Order Record (4) Finished Goods Shortage Information (5) Rejected Ordering Bill
Process:	(1) Accept finished goods information from Production department (2) Collection finished goods out from production (3) Update finished goods on hand (4) Send finished goods shortage information to Purchasing Department (5) Handle finished goods to Sales department
Attachment:	(1) Purchasing Department (2) Production Department (3) Sales Department (4) Data Store D6 (5) Data Store D10 (6) Data Store D13

	(7) Data Store D14

Table B-17 Process Specification for Process 4.1

Process Name:	Update Finished Goods Information
Data In:	(1) Finished Goods from Production (2) Raw Material Out for Production (3) Raw Materials Cost Record
Data Out:	(1) Finished Goods Record
Process:	(1) Accept finished goods information from Production department (2) Check finished goods information
Attachment:	(1) Production Department (2) Data Store D6 (3) Data Store D10 (4) Data Store D13

Table B-18 Process Specification for Process 4.2

Process Name:	Check Finished Goods Available
Data In:	(1) Finished Goods Record (2) Ordering Bill
Data Out:	(1) Rejected Ordering Bill (2) Valid Ordering Bill
Process:	(1) Receive picking bill from Sales department (2) Check finished goods information of picking bill
Attachment:	(1) Sales Department (2) Process 4.3 (3) Data Store D13 (4) Data Store D14

Table B-19 Process Specification for Process 4.3

Process Name:	Withdraw Finished Goods
Data In:	(1) Valid Ordering bill
Data Out:	(1) Finished Goods Information (2) Finished Goods Order Record (3) Finished Goods Shortage Information
Process:	(1) Handle finished goods to Sales department (2) Update finished goods on hand (3) Send finished goods shortage information to Production Department
Attachment:	(1) Production Department (2) Sales Department (3) Process 4.2 (4) Data Store D13 (5) Data Store D14 (6) Data Store D15

Table B-20 Process Specification for Process 5.0

Process Name:	Print Report
Data In:	(1) Material Planning Record (2) Finished Goods Record (3) Finished Goods Order Record (4) Purchase Order (5) Raw Materials Record (6) Raw Materials Out for Production (7) Report Request (8) Supplier Record
Data Out:	(1) Report
Process:	(1) Issue Purchase Order Report to Manager (2) Issue Supplier Report to Manager (3) Issue Inventory Report to Manager (4) Issue Material Planning Report to Manager
Attachment:	(1) Manager (2) Data Store D3 (3) Data Store D4 (4) Data Store D5 (5) Data Store D6 (6) Data Store D7 (7) Data Store D8 (8) Data Store D10 (9) Data Store D11 (10) Data Store D12

	(11) Data Store D13 (12) Data Store D15

Table B-21 Process Specification for Process 5.1

Process Name:	Print Purchase Order Report
Data In:	(1) Purchase Order (2) Report Request (3) Supplier Record
Data Out:	(1) Purchase Order Report
Process:	(1) Gather purchase order record (2) Print Purchase Order Report (3) Issue Purchase Order Report to Manager
Attachment:	(1) Manager (2) Data Store D8 (3) Data Store D10 (4) Data store D11

Table B-22 Process Specification for Process 5.2

Process Name:	Print Supplier Report
Data In:	(1) Purchase Order (2) Raw Materials Record (3) Report Request (4) Supplier Record
Data Out:	(1) Supplier Report
Process:	(1) Gather purchase order record (2) Gather supplier record (3) Gather defected raw materials record (4) Print Supplier Report (4) Issue Supplier Report to Manager
Attachment:	(1) Manager (2) Data Store D5 (3) Data Store D8 (4) Data Store D10 (5) Data Store D11

Table B-23 Process Specification for Process 5.3

Process Name:	Print Inventory Report
Data In:	(1) Finished Goods Record (2) Finished Goods Order Record (3) Supplier Record (4) Report Request (5) Raw Materials Record
Data Out:	(1) Inventory Report
Process:	(1) Gather finished goods record (2) Gather raw materials record (5) Print Inventory Report (3) Issue Inventory Report to Manager
Attachment:	(1) Manager (2) Data Store D3 (3) Data Store D5 (4) Data Store D8 (5) Data Store D12 (6) Data Store D13 (7) Data Store D15

Table B-24 Process Specification for Process 5.4

Process Name:	Print Material Planning Report
Data In:	(1) Materials Planning Record (2) Raw Materials Out for Production (3) Report Request (4) Finished Goods Record
Data Out:	(1) Material Planning Report
Process:	(1) Gather materials planning record (2) Gather packing record (6) Print Material Planning Report (3) Issue Material Planning Report to Manager
Attachment:	(1) Manager (2) Data Store D4 (3) Data Store D6 (4) Data Store D7 (5) Data Store D13

APPENDIX C
DATABASE DESIGN

Table C-1 Supplier Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Supplier_ID	Char (5)	Y	Y		S-9999	PK	
2	CompanyName	Varchar (50)	Y					
3	Address	Varchar (80)						
4	Telephone	Varchar (9)				(99)-999-9999		
5	Fax	Varchar (9)				(99)-999-9999		
6	E-mail	Varchar (30)			Y			
7	Credit_Term	Varchar (4)						
8	Note	Varchar (30)			Y			
9	ContactPerson	Varchar (50)						
10	Gender	Varchar (6)						
11	Positon	Varchar (30)			Y			
12	Ext	Varchar (10)			Y			
13	Department	Varchar (30)			Y			

Table C-2 Stock1Sup Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	SupplierID	Char (5)	Y	Y		S-9999	PK,FK	Supplier Table
2	StockCode	Char (8)	Y	Y		XXXX-9999	PK,FK	StockList Table

Table C-3 Stock1PO Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	BillNo	Char (6)	Y	Y		Po-9999	PK	
2	Supplier_ID	Char (5)	Y	Y		S-9999	FK	Supplier Table
3	DateIn	Date				99-99-9999		
4	Note	Varchar (30)			Y			

Table C-4 Stock1POItem Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	BillNo	Char (6)	Y	Y		Po-9999	PK,FK	Stock1PO Table
2	StockCode	Char (8)	Y	Y		XXXX-9999	PK,FK	StockList Table
3	InvoiceKG	Double				#,###,###.##		
4	Cost	Double				#,###,###		
5	Reamaining	Double				#,###,###.##		

Table C-5 StockList Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	StockCode	Char (8)	Y	Y		XXXX-9999	PK	
2	StockName	Varchar (20)	Y					
3	StockType	Varchar (30)						
4	StockUseLife	Int (1)			Y	9		

Table C-6 Bill_StockIn Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	BillNo	Char (9)	Y	Y		XXXXXXXXX	PK	
2	Supplier_ID	Char (5)	Y	Y		S-9999	FK	Supplier Table
3	DateIn	Date				99-99-9999		
4	StockType	Varchar (30)						
5	Note	Varchar (30)			Y			
6	Status	Varchar (20)			Y			
7	PoID	Char (6)	Y	Y		Po-9999	FK	Stock1PO Table
8	Rid	Char (4)	Y	Y		9999		

Table C-7 Stock1In Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	BillNo	Char (9)	Y	Y		XXXXXXXXX	PK,FK	Bill_StockIn Table
2	StockCode	Char (8)	Y	Y		XXXX-9999	PK,FK	StockList Table
3	Bale	Int (3)				999		
4	Kg	Double				#,###,###.##		
5	InvoiceKg	Double				#,###,###.##		
6	AvgKg	Double				#,###,###.##		
7	RemainingBale	Int (3)				999		
8	RemainingKG	Double				#,###,###.##		
9	KGdefect	Double				#,###,###.##		

Table C-8 BillOfMaterial Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Dai_No	Char (6)	Y	Y		XX-9999	PK,FK	Mfinished_Goods Table
2	StockCode	Char (8)	Y	Y		XXXX-9999	PK,FK	StockList Table
3	dpercent	Int (2)				99		

Table C-9 MRP Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	MRPcode	Char (7)	Y	Y		MRP-9999	PK	
2	StockCode	Char (8)	Y	Y		XXXX-9999	PK,FK	StockList Table
3	NoDay	Int (2)				99		
4	Dai_no	Char (6)	Y	Y		XX-9999	PK,FK	Mfinished_Goods Table
5	KG	Double				#,###,###.##		
6	Amount	Double				#,###,###.##		
7	AmountDay	Double				#,###,###.##		

Table C-10 Stock1Out Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Reference	Char (12)	Y	Y		FAC-999999999	PK	
2	Trans_Date	Date				99-99-9999		
3	Note	Varchar (30)			Y			
4	Out_Type	Char (3)						
5	Status	Varchar (20)			Y			
6	MRPCode	Char (7)	Y	Y		MRP-9999	FK	MRP Table
7	DaiNo	Char (6)	Y	Y		XX-9999	FK	Mfinished_Goods Table
8	time	Int (2)				99		

Table C-11 Stock2In

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Reference	Char (12)	Y	Y		FAC-999999999	PK,FK	Stock1Out Table
2	StockCode	Char (8)	Y	Y		XXXX-9999	PK,FK	StockList Table
3	Bale	Int (3)				999		
4	Kg	Double				#,###,###.##		
5	BillNo	Char (9)	Y			XXXXXXXXX		

Table C-12 MFinished_Goods Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Dai_No	Char (6)	Y	Y		XX-9999	PK	
2	Dai_Name	Varchar (20)	Y					
3	Type	Varchar (30)						
4	UseLife	Int (1)			Y	9		
5	Cod	Char (2)				XX		

Table C-13 Finished_Goods Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	LotNo	Char (13)	Y	Y		MRP-9999-XX-9999	PK	
2	PC_NO	Int (2)	Y	Y		99	PK	
3	Dai_No	Char (6)	Y	Y		XX-9999	FK	Mfinished_Goods Table
4	Size	Int (2)				99		
5	Amount	Int (2)				99		
6	Weight	Double				#,###,###.##		
7	Status	Varchar (13)	Y	Y		RE_999999/999	FK	Finished_Goods_Out Table
8	R_Date	Date				99-99-9999		
9	Note	Varchar (30)			Y			
10	By	Varchar (50)						
11	Doc_No	Char (7)	Y	Y		Doc-9999		
12	reference	Char (12)	Y	Y		FAC-999999999	FK	Stock1Out Table
13	Cost	Double				#,###,###.##		

Table C-14 Finished_Goods_Left Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	LotNo	Char (13)	Y	Y		MRP-9999-XX-9999	PK	
2	PC_No	Int (2)	Y	Y		99	PK	
3	Dai_No	Char (6)	Y	Y		XX-9999	FK	Mfinished_Goods Table
4	Type	Varchar (20)						
5	Size	Int (2)				99		
6	Amount	Int (2)				99		
7	Weight	Double				#,###,###.##		
8	Status	Varchar (13)	Y	Y		RE_999999/999	FK	Finished_Goods_Out Table
9	R_Date	Date				99-99-9999		
10	Note	Varchar (30)			Y			
11	By	Varchar (50)						
12	MPC_NO	Int (2)				99		
13	Cost	Double				#,###,###.##		

Table C-15 Finished_Goods_Out Table

No	Field Name	Field Type	Index	Unique	Nullable	Validity Check	Key	FK Referenced Table
1	Doc_No	Char (13)	Y	Y		RE_999999/999	PK	
2	DateOut	Date				99-99-9999		
3	Amount	Int (2)				99		
4	Weight	Double				#,###,###.##		
5	Note	Varchar (30)			Y			
6	Status	Varchar (13)						
7	Cost	Double				#,###,###.##		

APPENDIX D
INTERFACE DESIGN

Figure D-1 LogIn Form

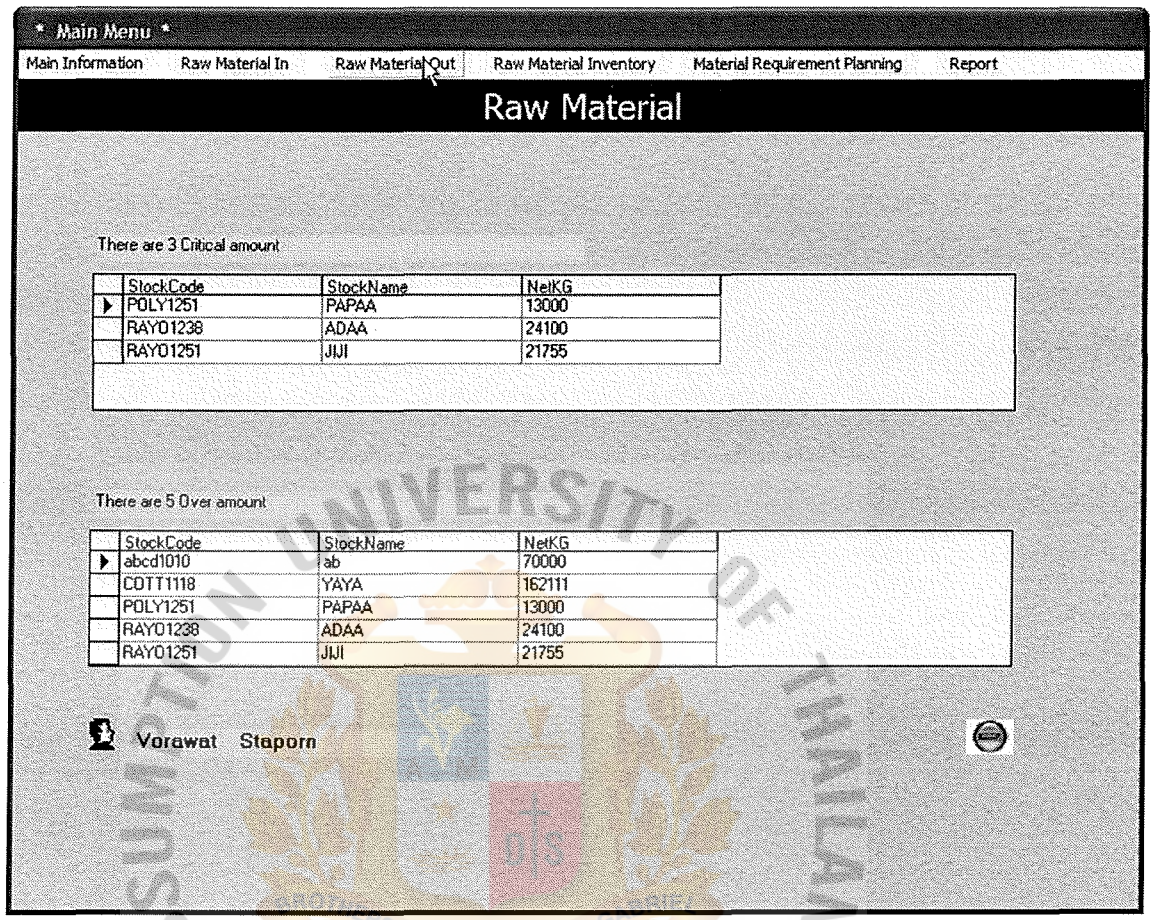


Figure D-2 Raw Material Form

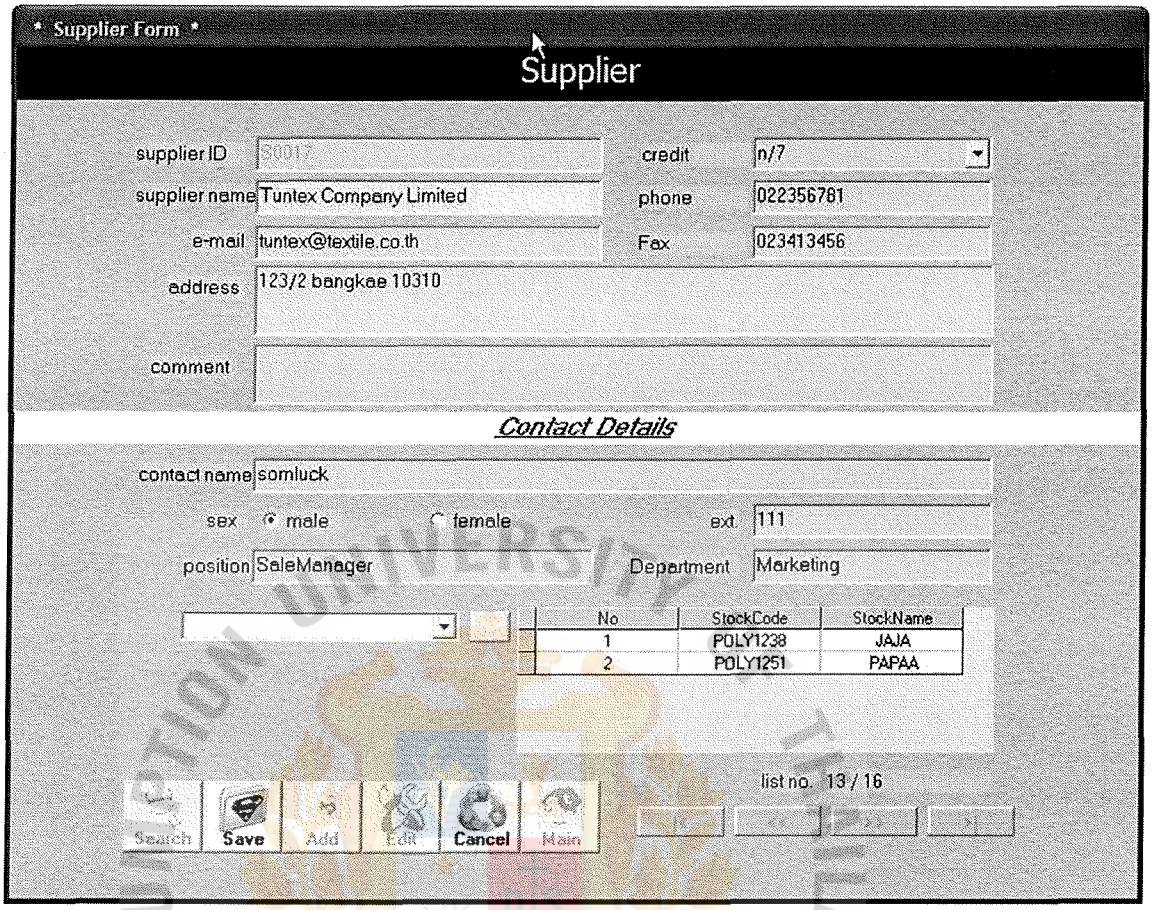


Figure D-3 Supplier Form

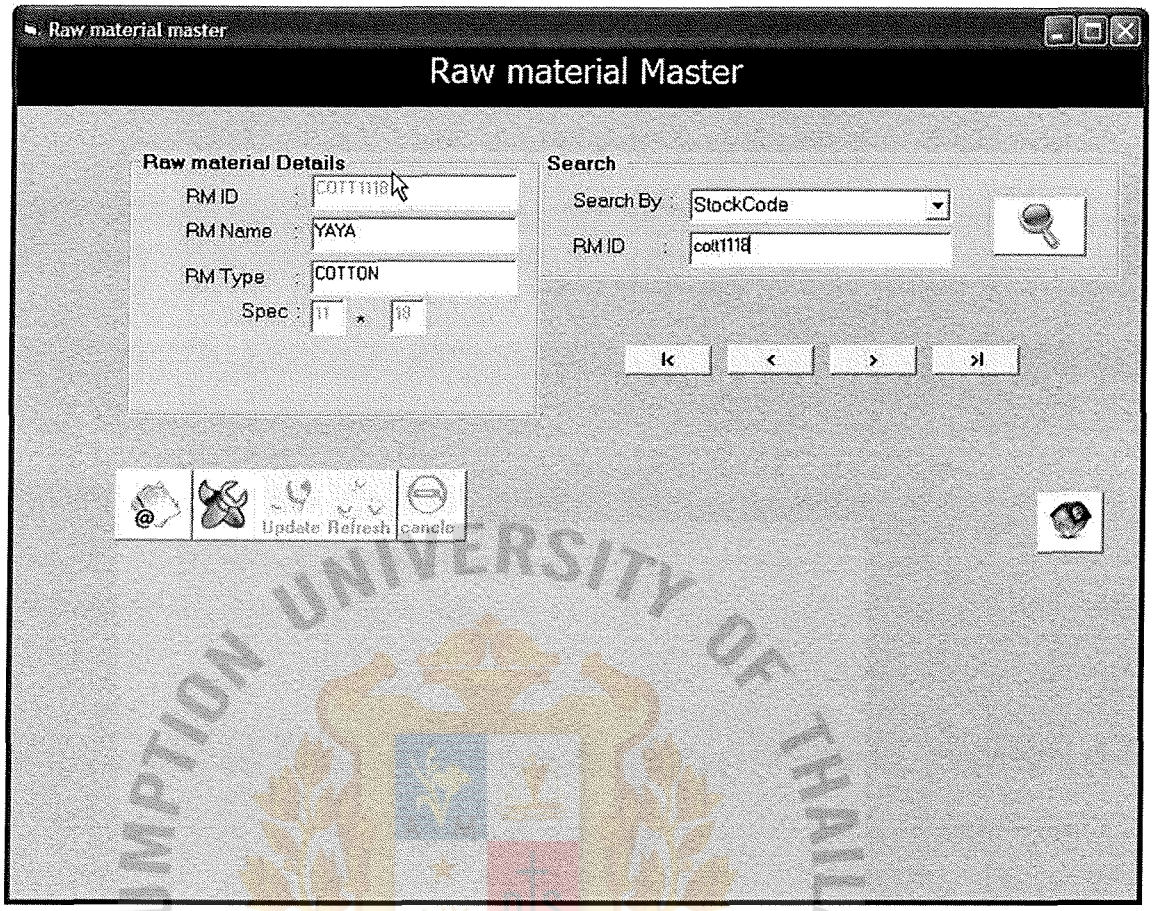


Figure D-4 Raw Material Master Form

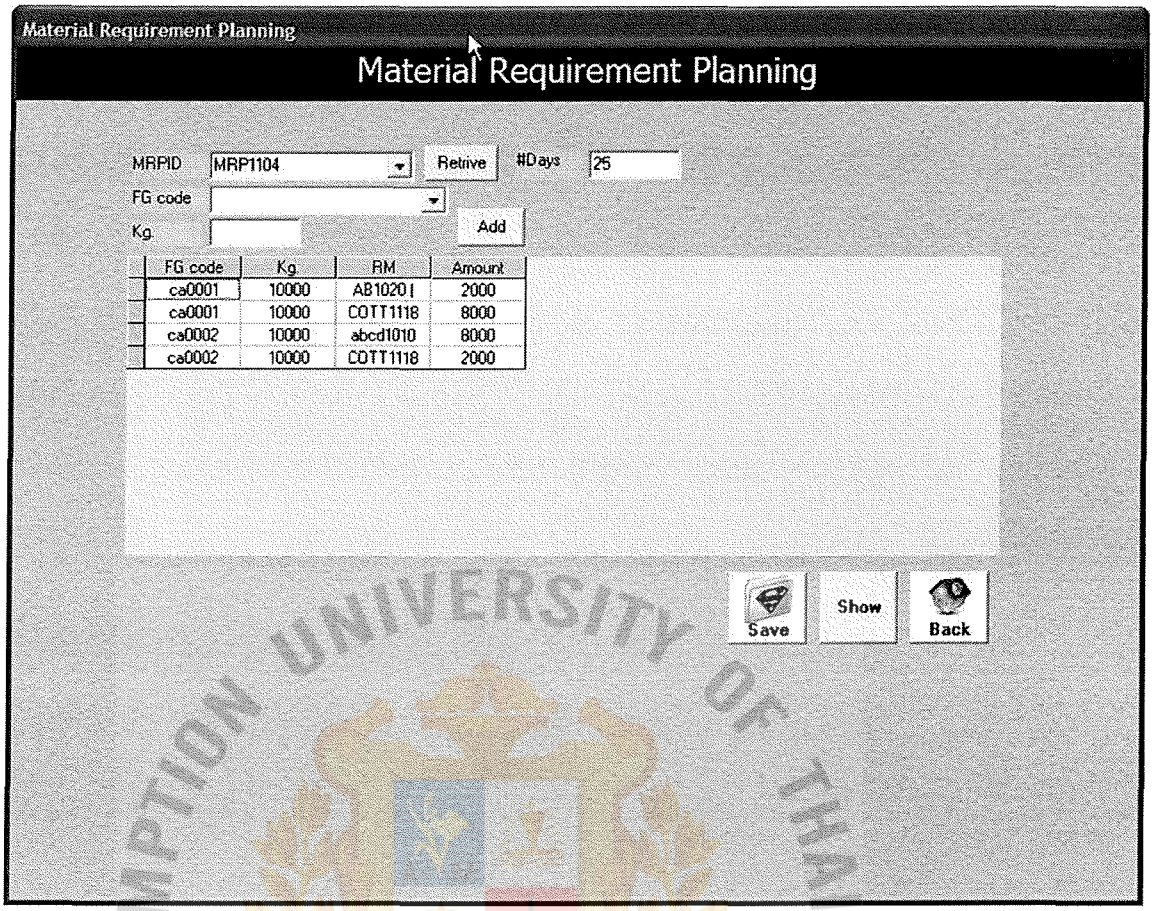


Figure D-5 Material Requirement Planning Form

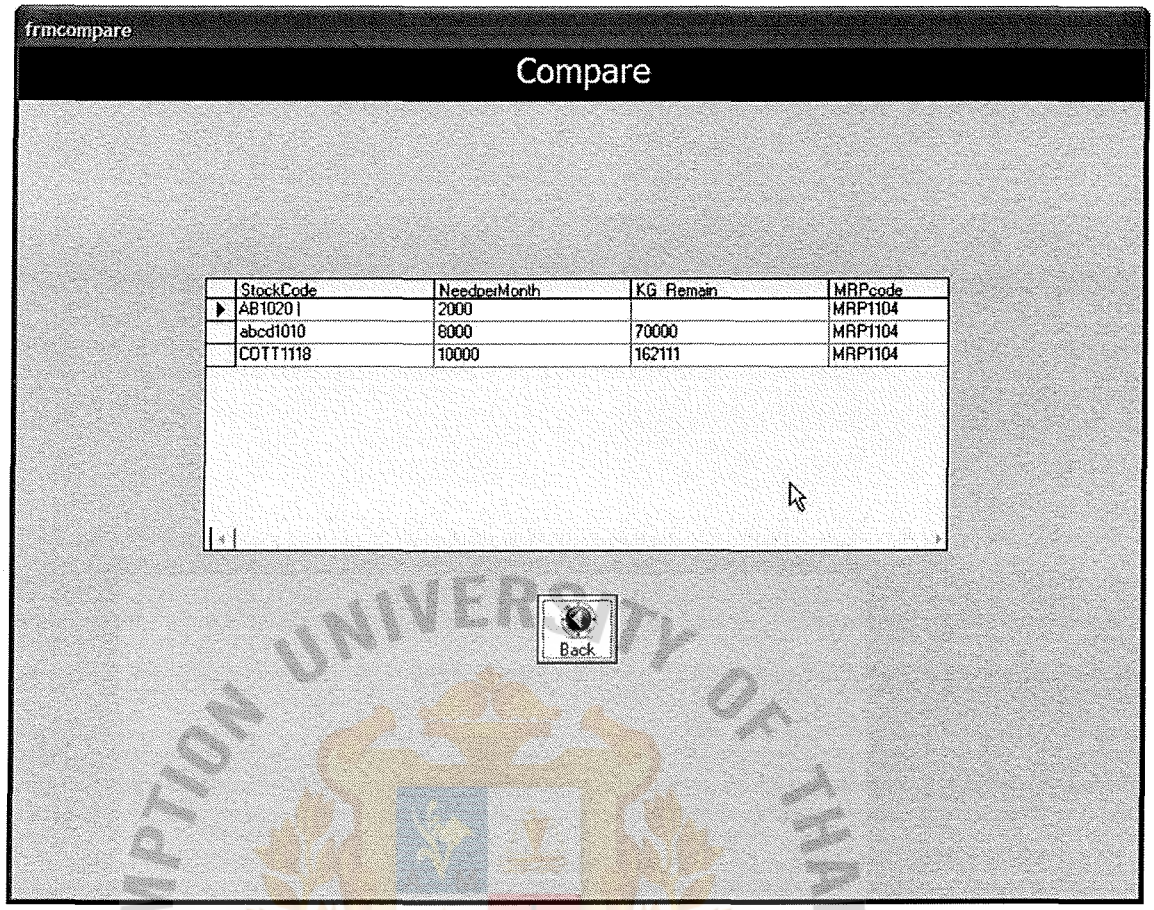


Figure D-6 Compare Form

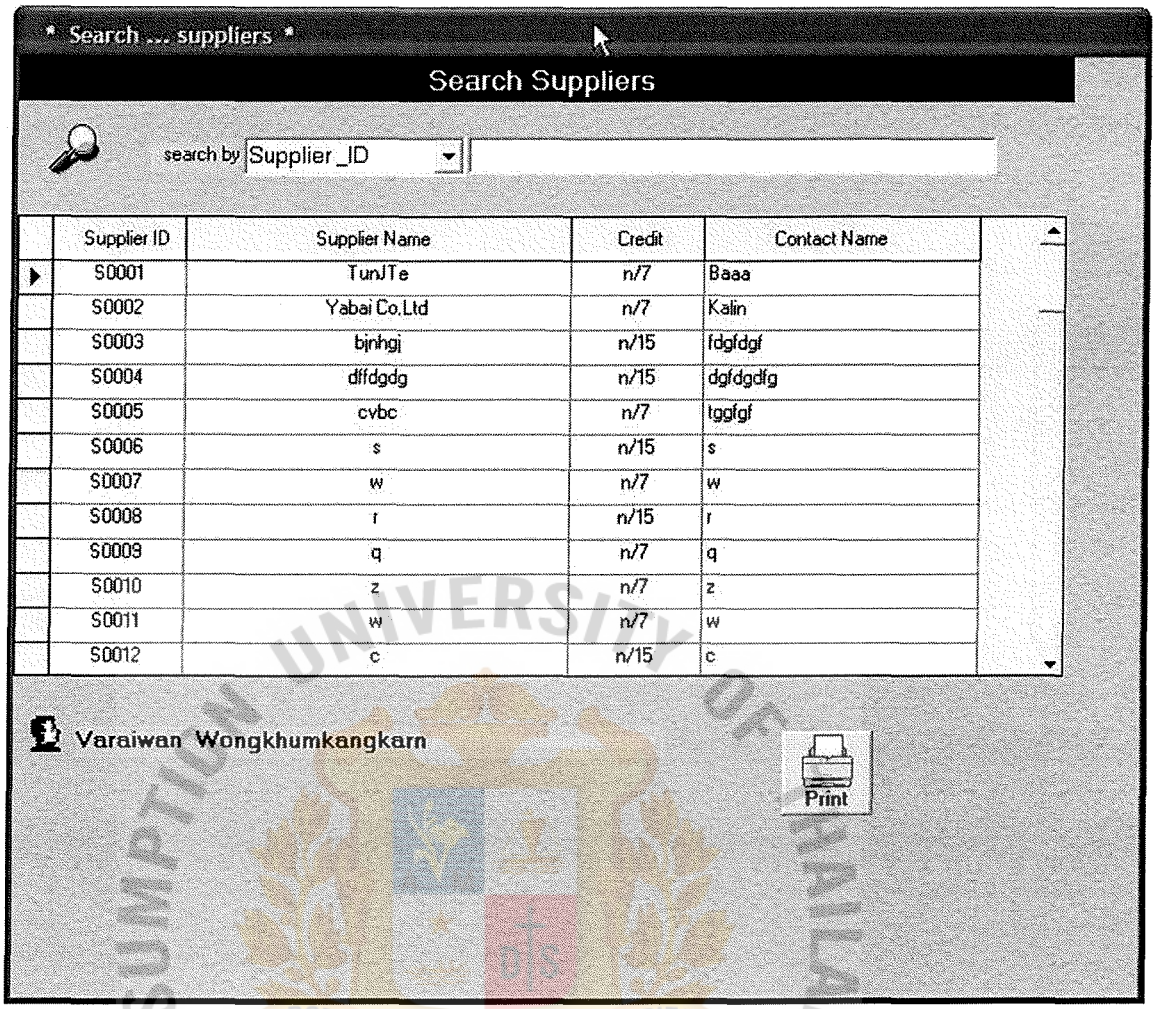


Figure D-7 Search Supplier Form

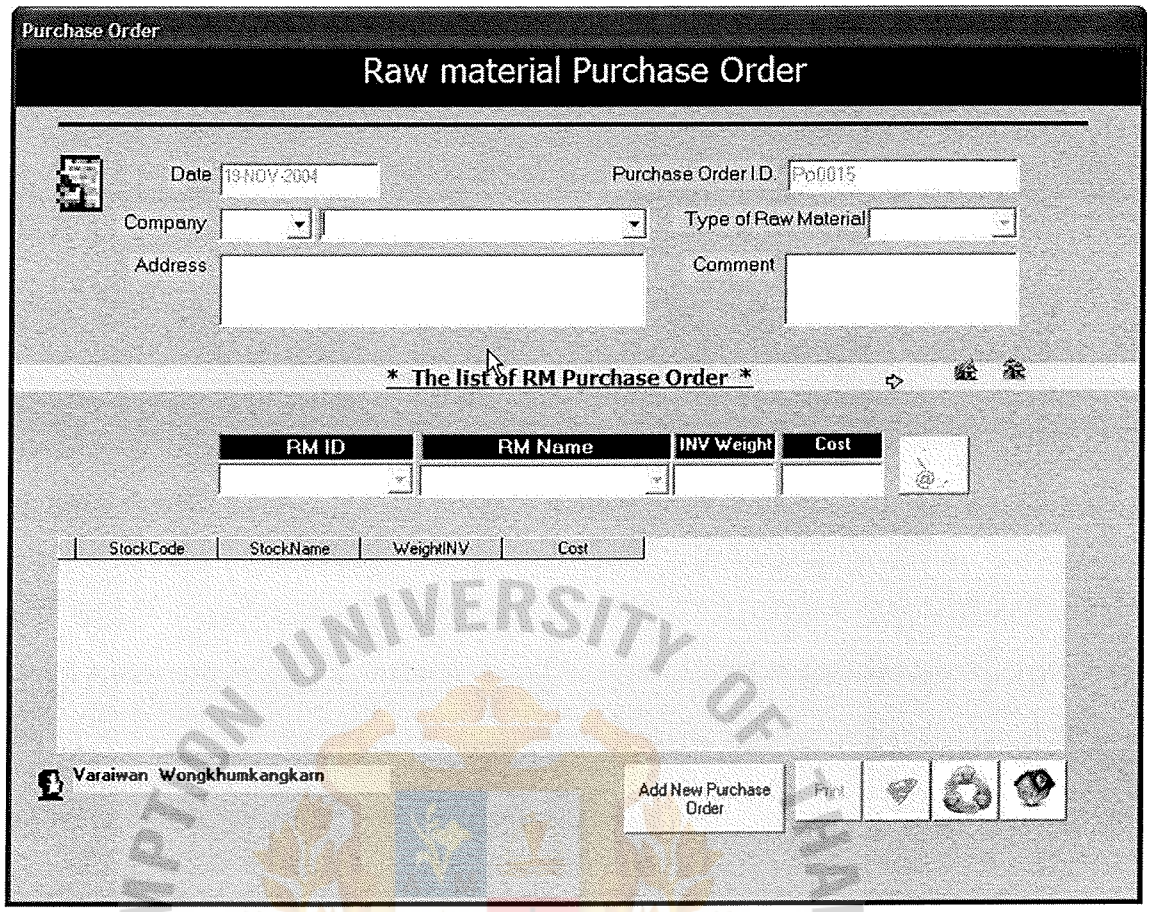


Figure D-8 Raw Material Purchase Order Form

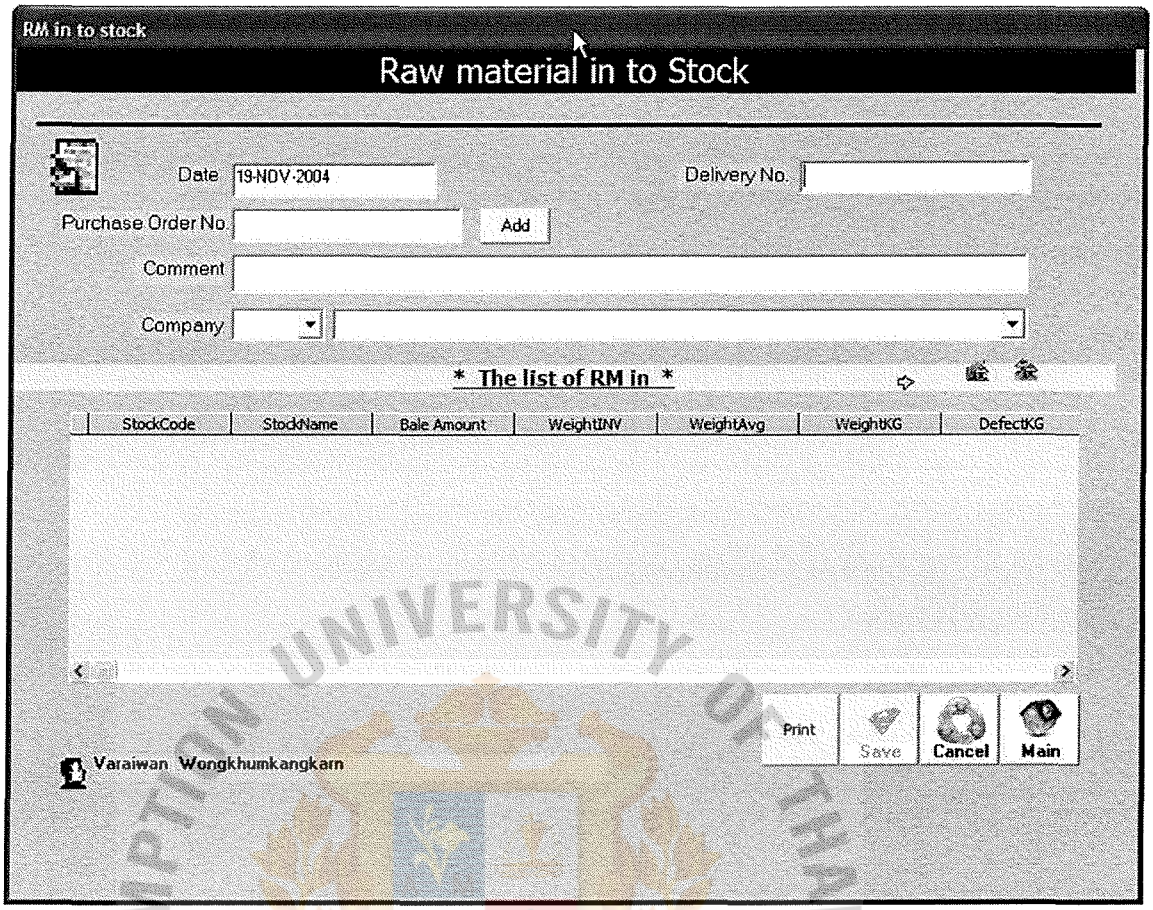


Figure D-9 Raw Material in to Stock Form

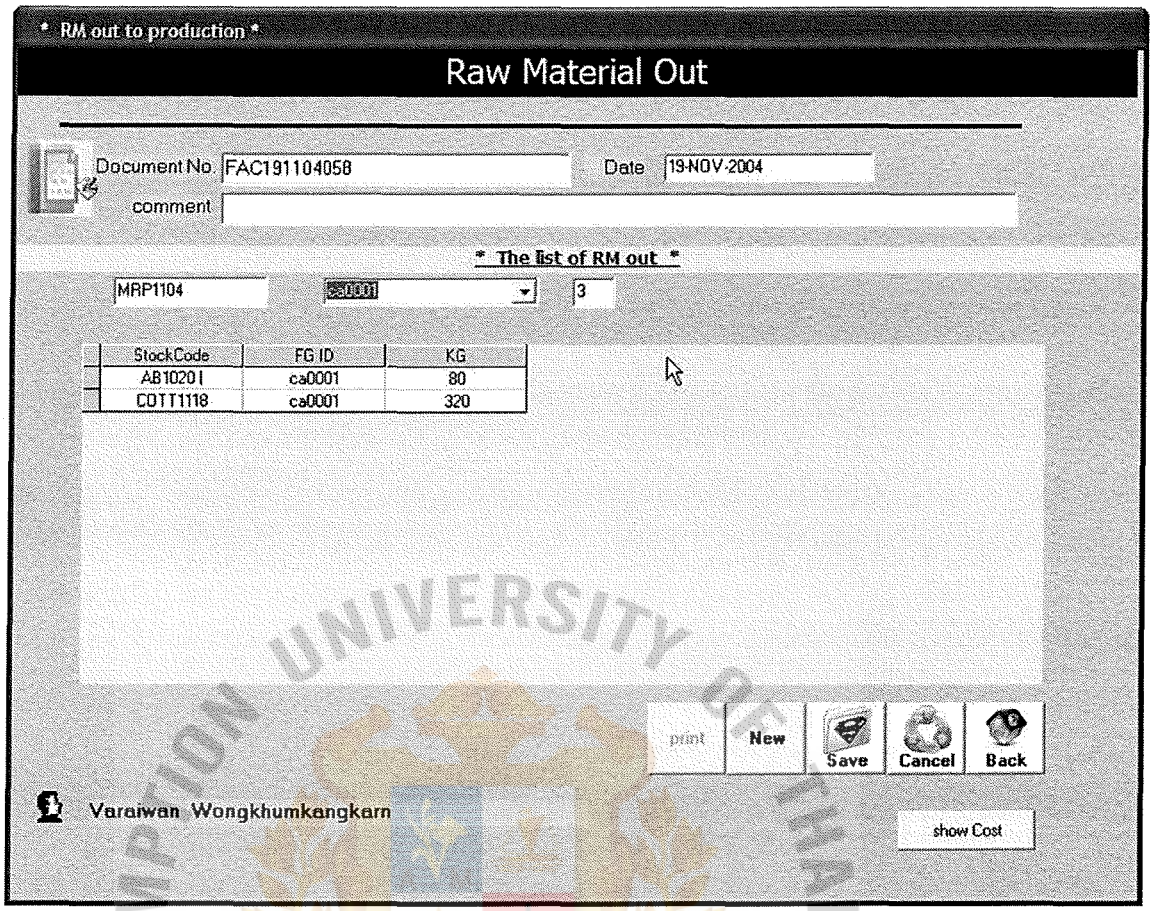


Figure D-10 Raw Material Out Form

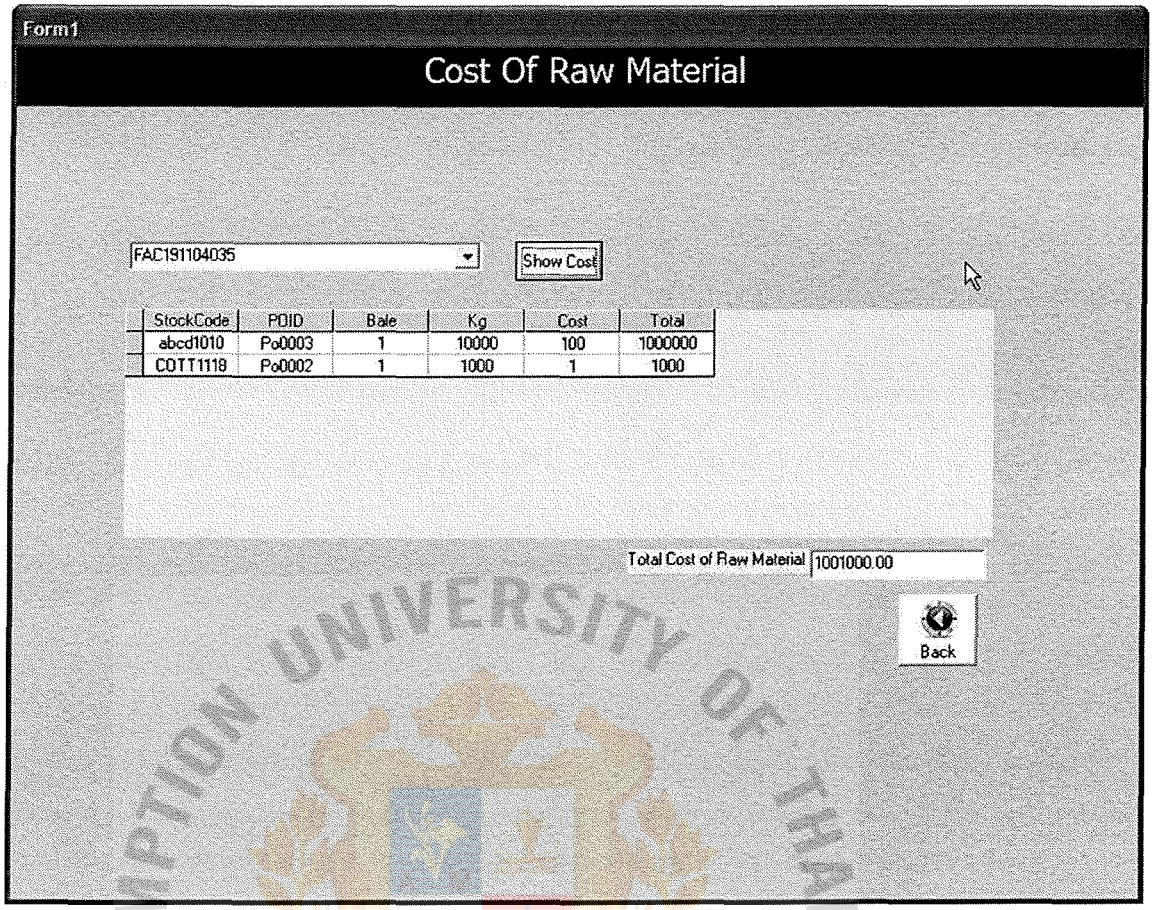


Figure D-11 Cost of Raw Material Form

Figure D-12 Search Raw Material Out Form

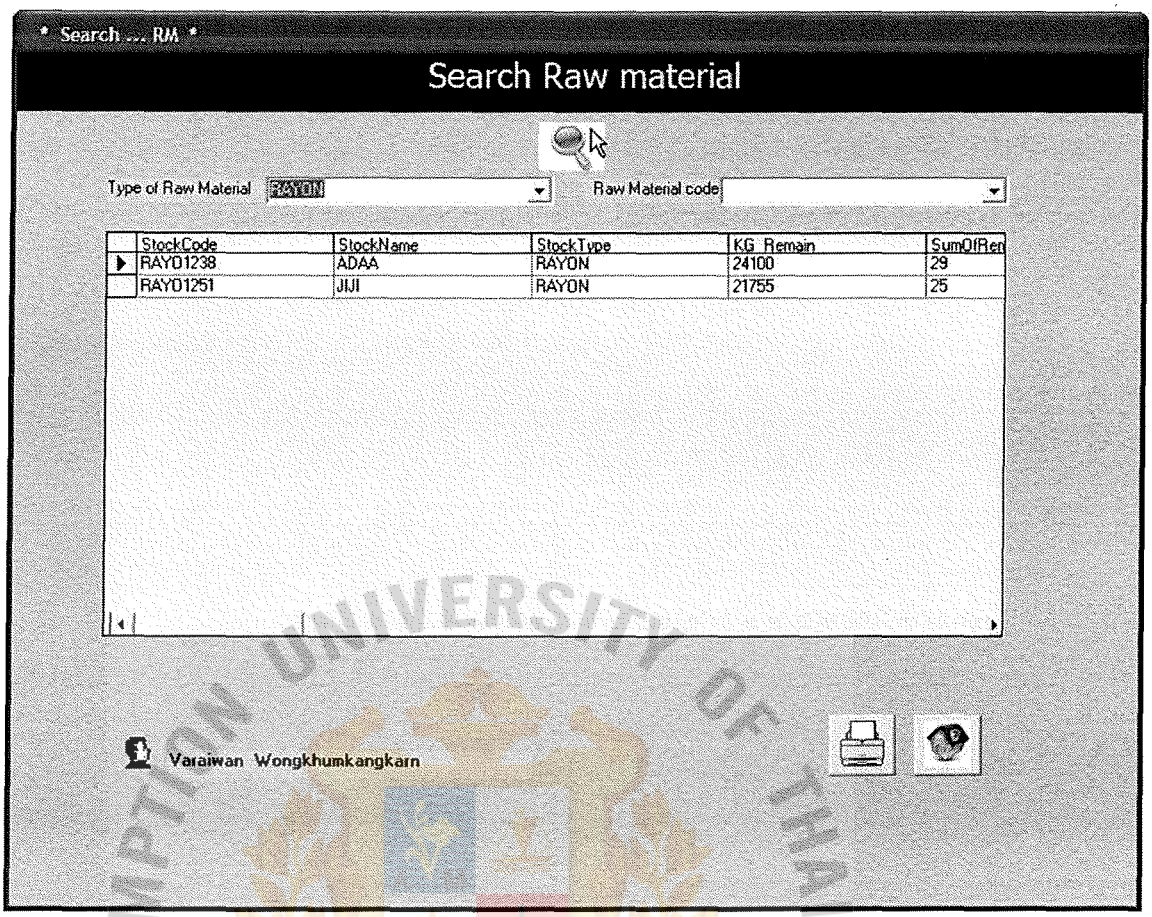


Figure D-13 Search Raw Material Form

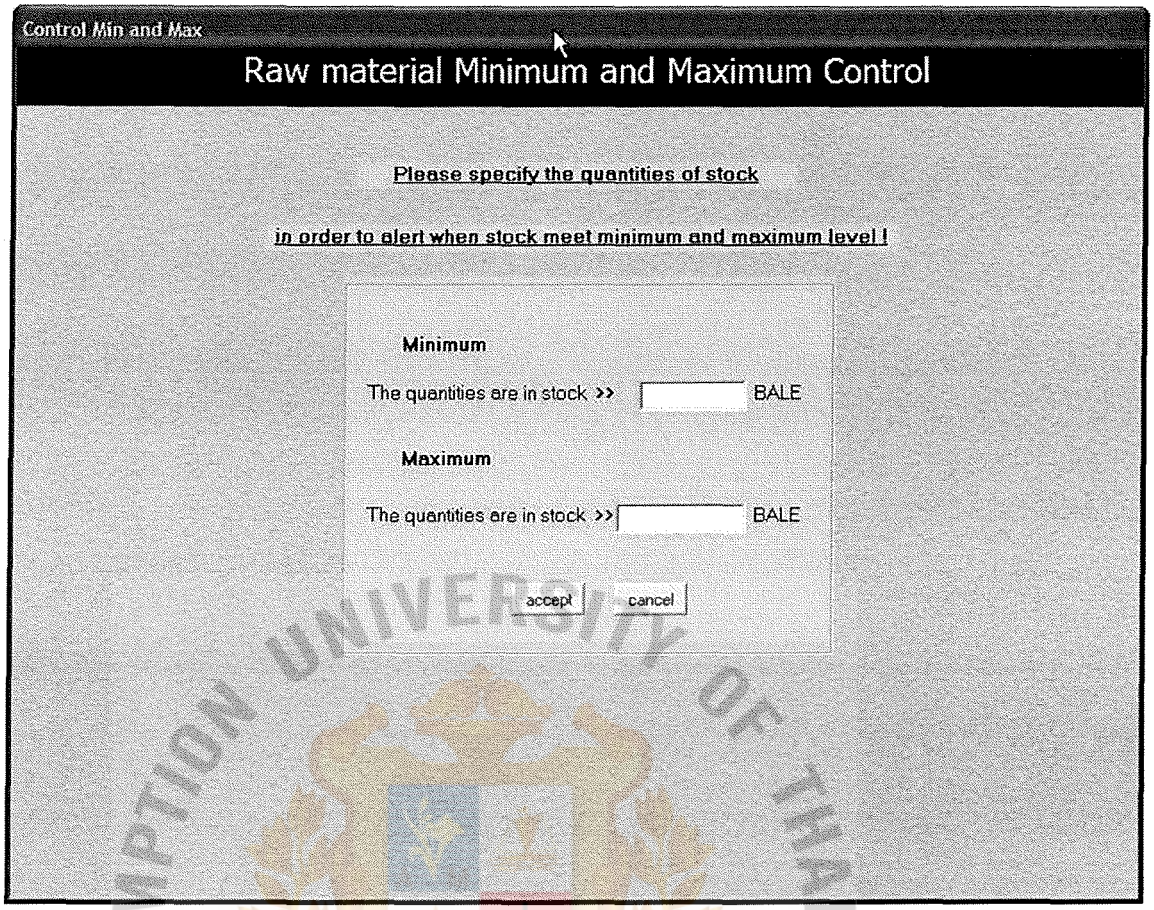


Figure D-14 Raw Material Minimum and Maximum Control From

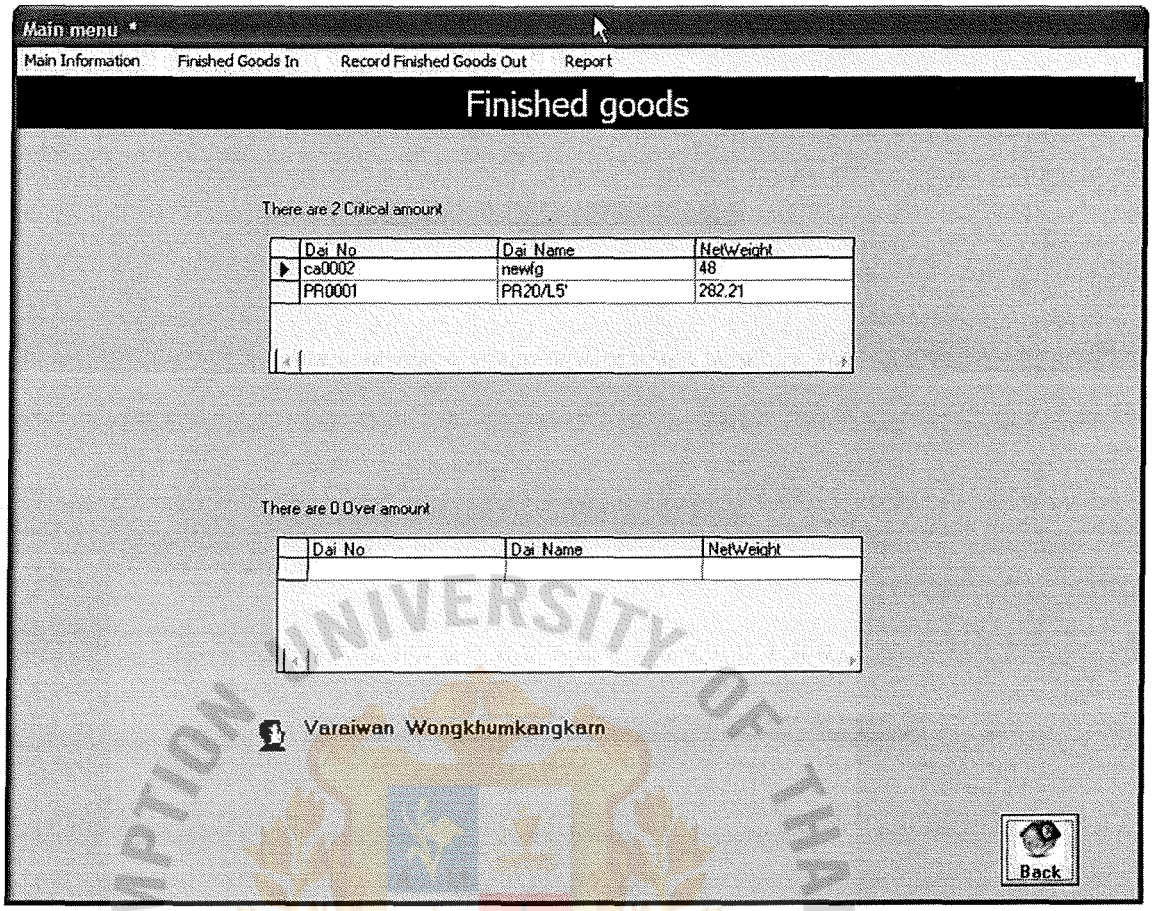


Figure D-15 Finished Goods Form

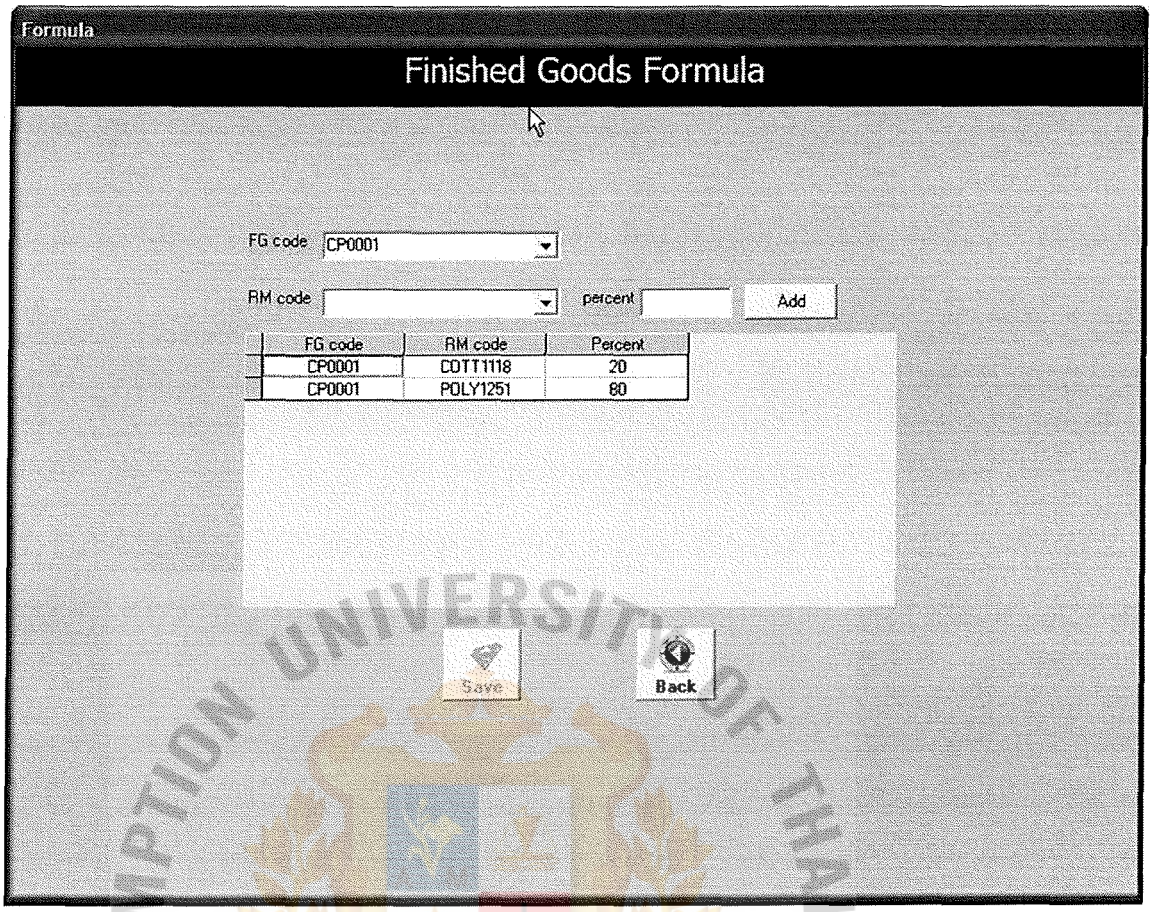


Figure D-16 Finished Goods Formula Form

Figure D-17 Finished Goods Minimum and Maximum Control Form

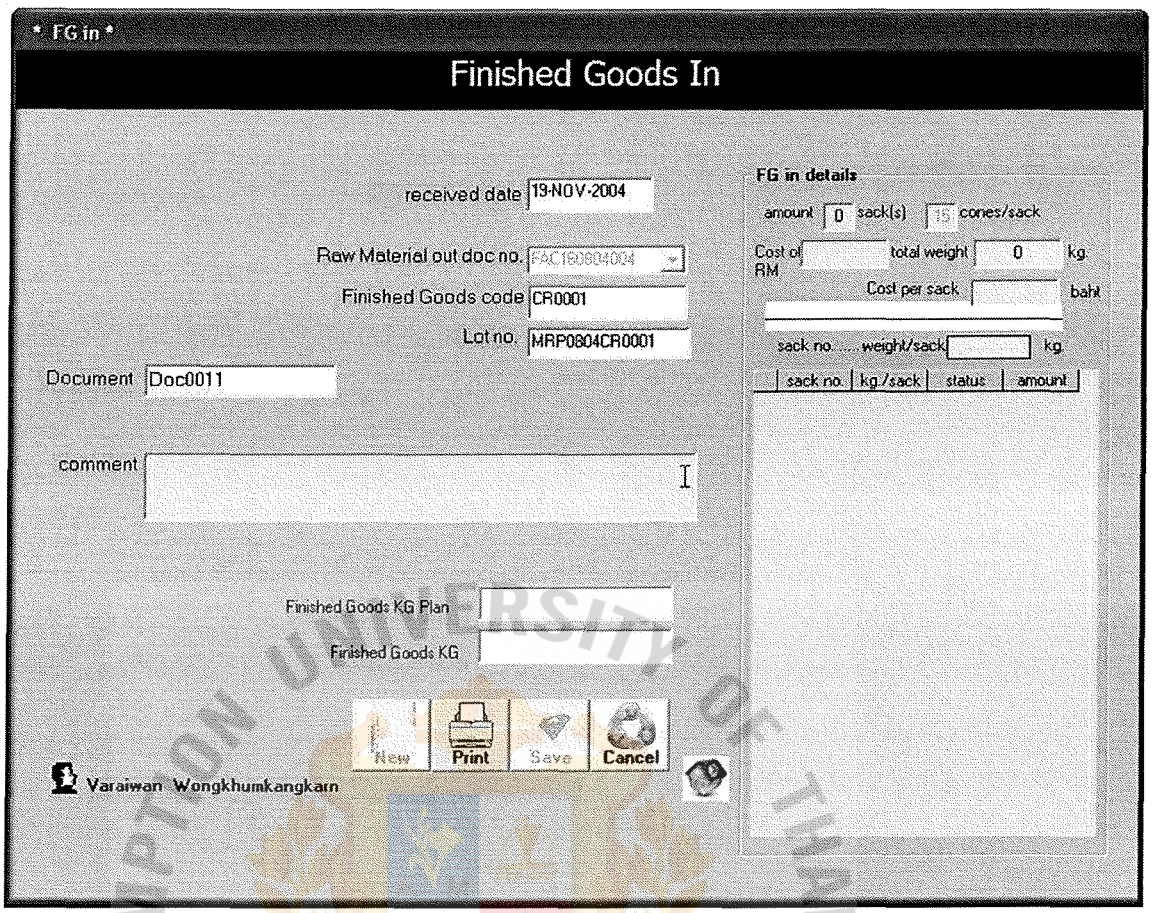


Figure D-18 Finished Goods In Form

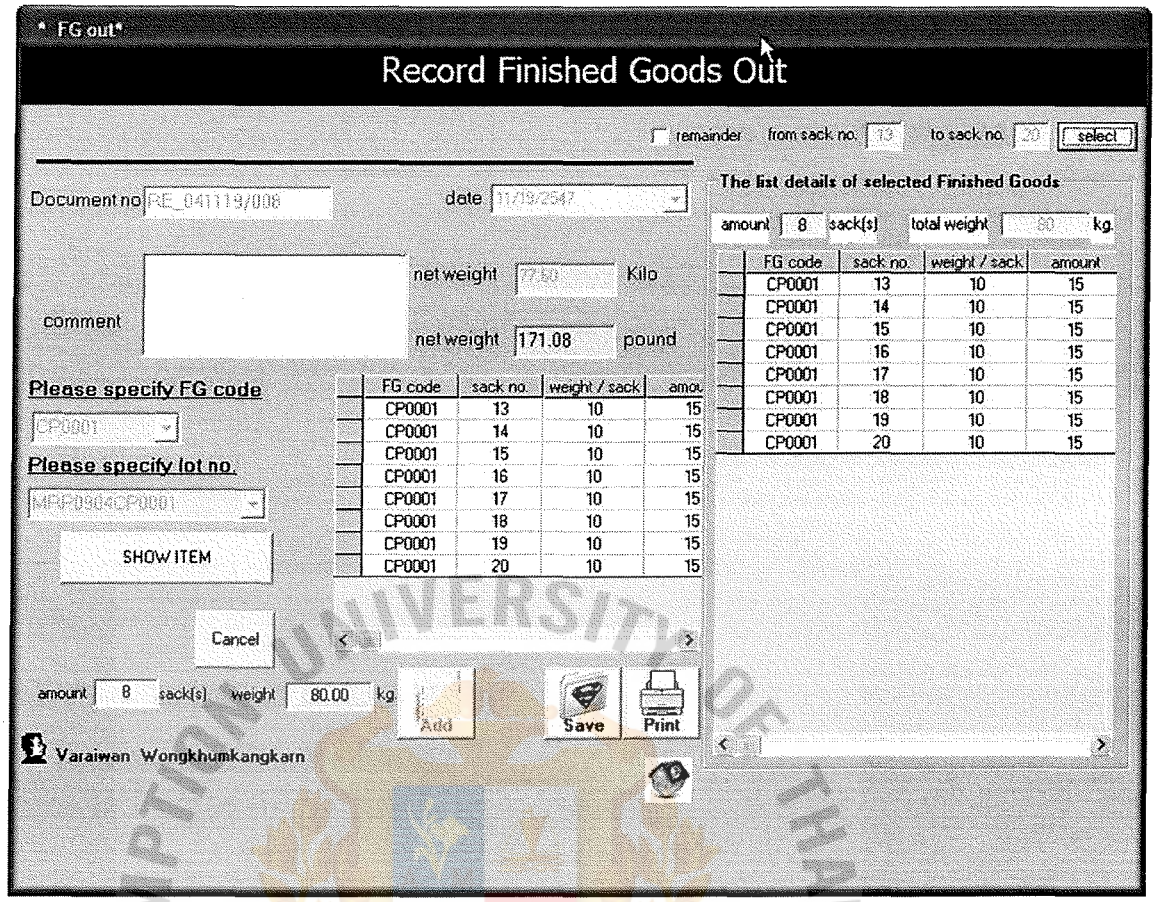


Figure D-19 Record Finished Goods Out Form

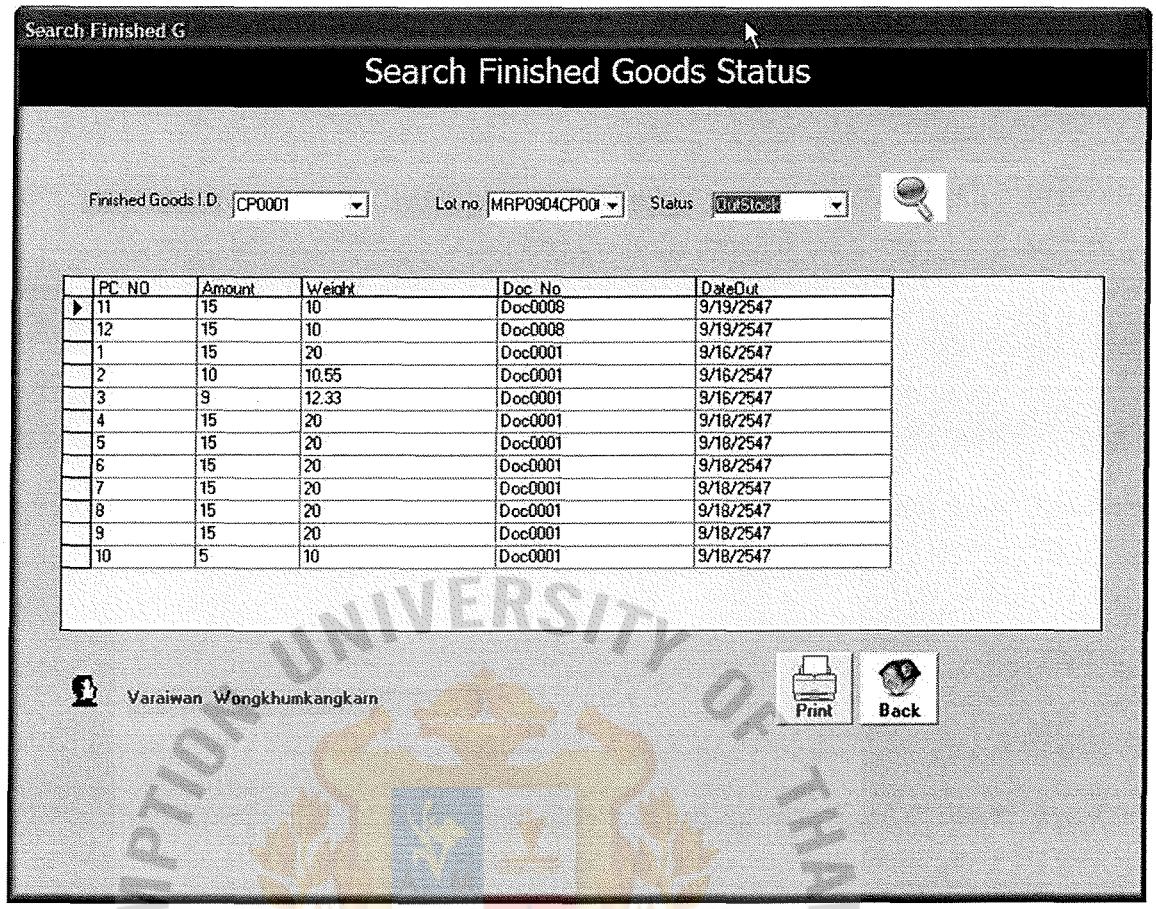


Figure D-20 Raw Material Master Form

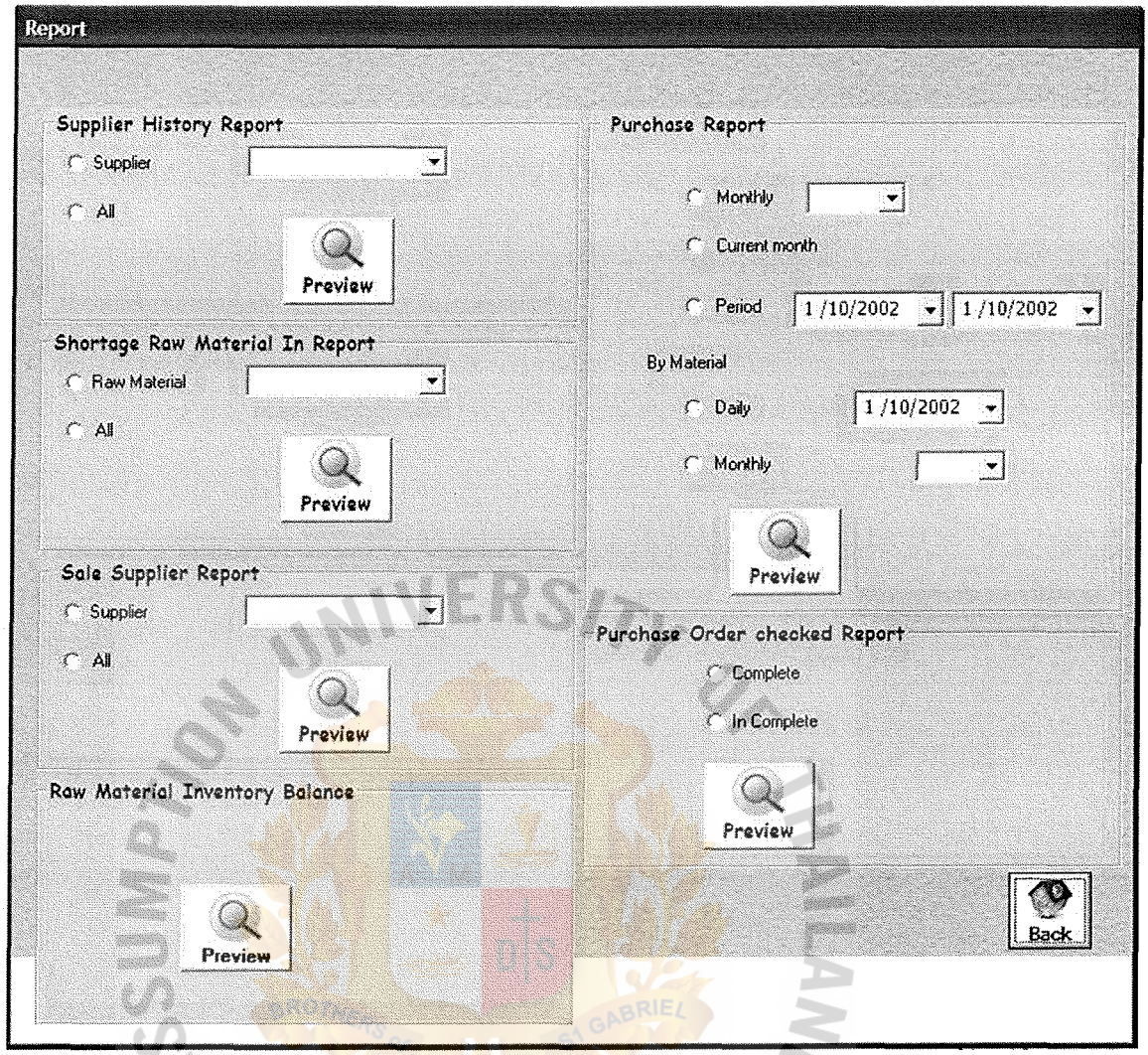


Figure D-21 Raw Material Report Form

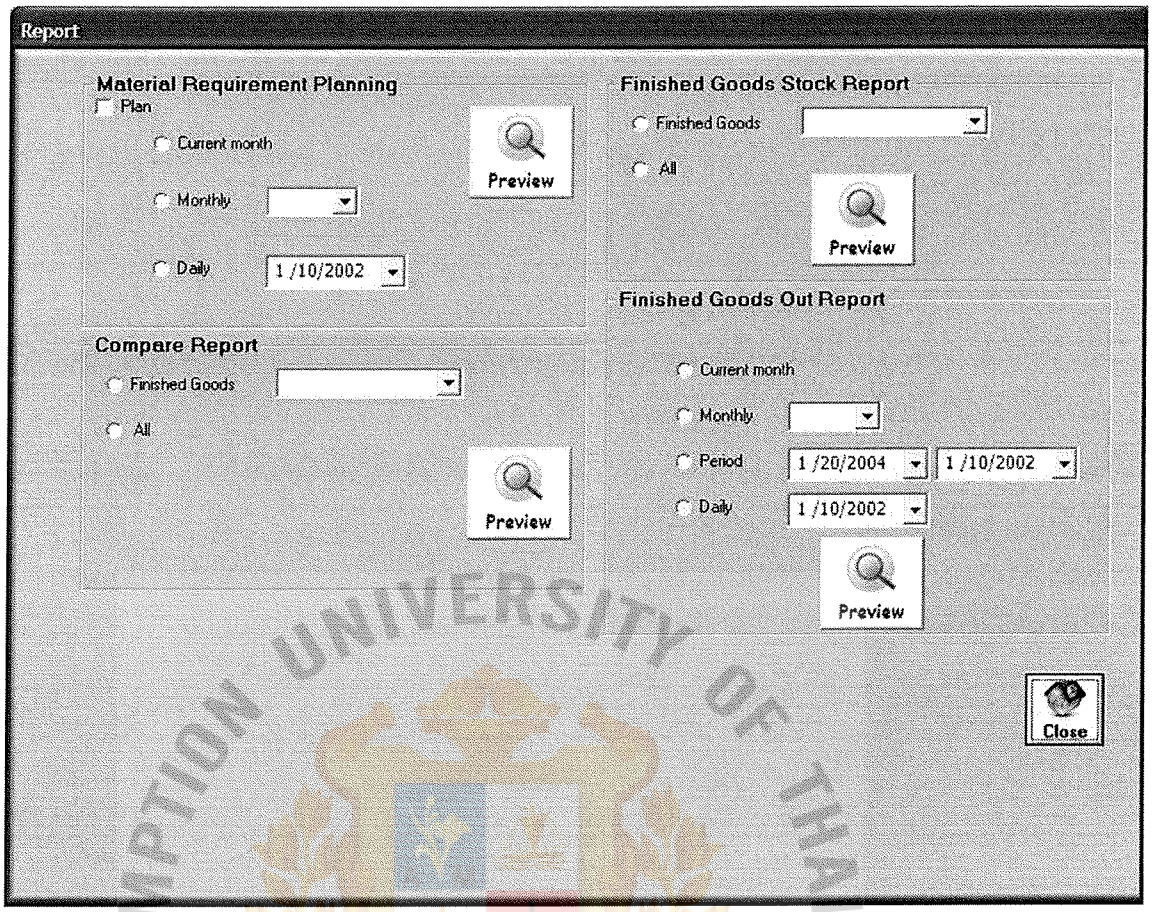


Figure D-22 Finished Goods Report Form

APPENDIX E
MANAGEMENT REPORT DESIGN

บริษัท เหรียญหัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
210 หมู่ 10 ถนนประชาอุทิศ ต.ไทรม้า อ.เมืองนนทบุรี จ.นนทบุรี 11120
210 M.10 PRACHAUTIT ROAD, TSAIMAI, MUANG NONTHABURI, NONTHABURI
โทร. 4837846,4841080,4844985, Fax. 8156702

Material Requirement Planning Report

9/20/2004

MRPcode	MRP0902	NoDay	25
Dai_no	COT001	KG	10,000

COT001

StockCode	Amount	AmountDay
POLY1238	8,000	320
COTT1118	2,000	80

MRPcode	MRP0904	NoDay	25

Figure E-1 Material Requirement Planning Report

บริษัท เหรียญหัวสิงหอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
216 หมู่ 10 ตำบลท่าจีน อ.เมืองสมุทรสาคร จ.สมุทรสาคร 10290
216 M 10 PRACHARUTIT ROAD, TAKKOSE, MUANGSAMUTSAKHON SAMUTSAKHON
โทร. 4637016,4641050,4644085, Fax. 4138762

Material Requirement for Daily

9/20/2004

FAC160904001

Reference **MRPcode** MRP0904 **Dai_no** CR0001

Tran 9/16/2004 12:00:00AM

StockCode	Bale	Kg	Plan/Day
COTT1118	1	350	480
POLY1251	2	690	160
POLY1251	2	690	640

FAC160904003

Reference **MRPcode** MRP0904 **Dai_no** PR0001

Tran 9/16/2004 12:00:00AM

StockCode	Bale	Kg	Plan/Day
RAYO1251	1	350	40
POLY1251	1	345	160
POLY1251	1	345	640

Figure E-2 Material Requirement Planning Date Report

บริษัท เหรียญหัวสิงทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
216 หมู่ 10 ถนนบางนา-ตราด กม.ที่ 21 ตำบลบางแก้ว อำเภอบางพลี จ.สมุทรปราการ 10260
216 M 10 PRACHARUTIT ROAD, TNAIKWO, BANGPLAKOD, AMPHUR BANGPLEE, SAMUTPRAKARN
โทร. 4657016,4641050,4641055, Fax. 5158722

Material Requirement Planning Report forNovember 2004

9/20/2004

Dai_no	**PA0001**	**NoDay**	25
MRPcode	MRP1104	**KG**	200

StockCode	Amount	AmountDay
COTT1118	40	2
RAYO1238	160	6
COTT1118	40	2
COTT1118	40	2
RAYO1238	160	6
RAYO1238	160	6

Figure E-3 Material Requirement Planning by Material Report

บริษัท เหลียนหัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
216 หมู่ 10 ตำบลท้ายบ้านใหม่ อ.บางพลี จ.สมุทรปราการ 10540
216 M.10 PRACHASUTIT ROAD, TAIKONG-BANGPLAKOD, AMPHAWAMUTHATEE, SAMUTPRAKARN
โทร. 4637046,4641060,4644085, Fax. 8156782

Purchase Order Report

9/20/2004

PO No.	Po0001	DateIn	9/10/2002 :	Note
BillNo	Po0001	Supplier_ID	s0001	
Company Name	Tuntex (Thailand) Public Company Limited			
Address	BB.Building 18th. Sukhumvit 21 (Asoke), Bangkok 10110			

StockCode	InvoiceKg	Cost
POLY1238	10,000	1,000.00
COTT1118	10,000	1,000.00
Total		**2,000.00**

PO No.	Po0002	DateIn	9/10/2002 :	Note
BillNo	Po0002	Supplier_ID	s0001	
Company Name	Tuntex (Thailand) Public Company Limited			
Address	BB.Building 18th. Sukhumvit 21 (Asoke), Bangkok 10110			

Figure E-4 Purchase Order Report

บริษัท เหรียญหัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
216 หมู่ 10 ถนนพระรามที่ ๒ ตำบลท่าทราย อำเภอเมืองสมุทรสาคร จังหวัดสมุทรสาคร 10290
216 M.10 PRACHARATH ROAD, TSAIYONG, MUANGSAMUTSAKHON A.PHRASAMUTJEDEE, SAMUTSAKARN
โทร. 4657046,481 1080,4644085, Fax. 4438702

Purchase Order Report On Monday, November 15, 2004

9/20/2004

BillNo	Po0001	DateIn	11/15/2004
Supplier_ID	s0001	CompanyName	panu

StockCode	InvoiceKg	Cost
RAYO1238	10,000	20,000
POLY1238	10,000	10,000

Figure E-5 Purchase Order by Date Report

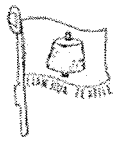
บริษัท เหรียญหัวสิงทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
219 หมู่ 10 ถนนประชาอุทิศ ตำบลทรงคนอง อำเภอพระประแดง จังหวัด สมุทรปราการ 10130
219 M.10 PRACHAUTHIT ROAD, TAMBON SONGKHANONG AMPHUR PHRAPRADAENG, SAMUTPRAKARN
โทร. 4637046,4641080,4644085, Fax. 8156762

Raw Material Inventory Report

9/20/2004

StockCode	Kg	RemainingKG	Out
COTT2456	30,000.00	28,000.00	2,000.00
POLY1238	10,000.00	10,000.00	0.00
RAYO1238	10,000.00	8,000.00	2,000.00

Figure E-6 Raw Material Inventory Report



บริษัท เหรียญหัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
218 หมู่ 10 ตำบลบางปลาม้า อำเภอบางปลาม้า จังหวัดสมุทรปราการ 10560
218 M.10 PRACHANTHT ROAD, TAMBONG BANPLAKOO AMPHANAMUTHEMEE SAMUTPRAKARN
โทร. 4637046,4611050,4644055, Fax. 8198782

Raw Material In Report By Date

DATE 9/16/2004 **Bill No.** 111

Supplier_ID s0001 panu

RM Type: COTTON

RM Name :	RM Code :	BALE	Kg	Invoice Weight	Average Weight
KKKK	COTT1118	20	5,001	5,000	250

DATE 11/15/2004 **Bill No.** 11111111

Supplier_ID s0001 panu

RM Type: cotton

Figure E-7 Raw Material Inventory by Date Report

บริษัท เหรียญหัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
218 หมู่ 10 ถนนประชาอุทิศ ต.ไทยลอง อ.พระสมุทรเจดีย์ จ.สมุทรปราการ 10290
218 M 10 PRACHAUTIT ROAD, TAIKONG BANGPLAKOD A.PHRASAMUTCHEDI, SAMUTPRAKARN
โทร. 4637046,4641010,4644085, Fax. 5138702

Raw Material In Report By Material

RM Type: COTTON
Supplier_ID s0001 panu
Bill No. 111

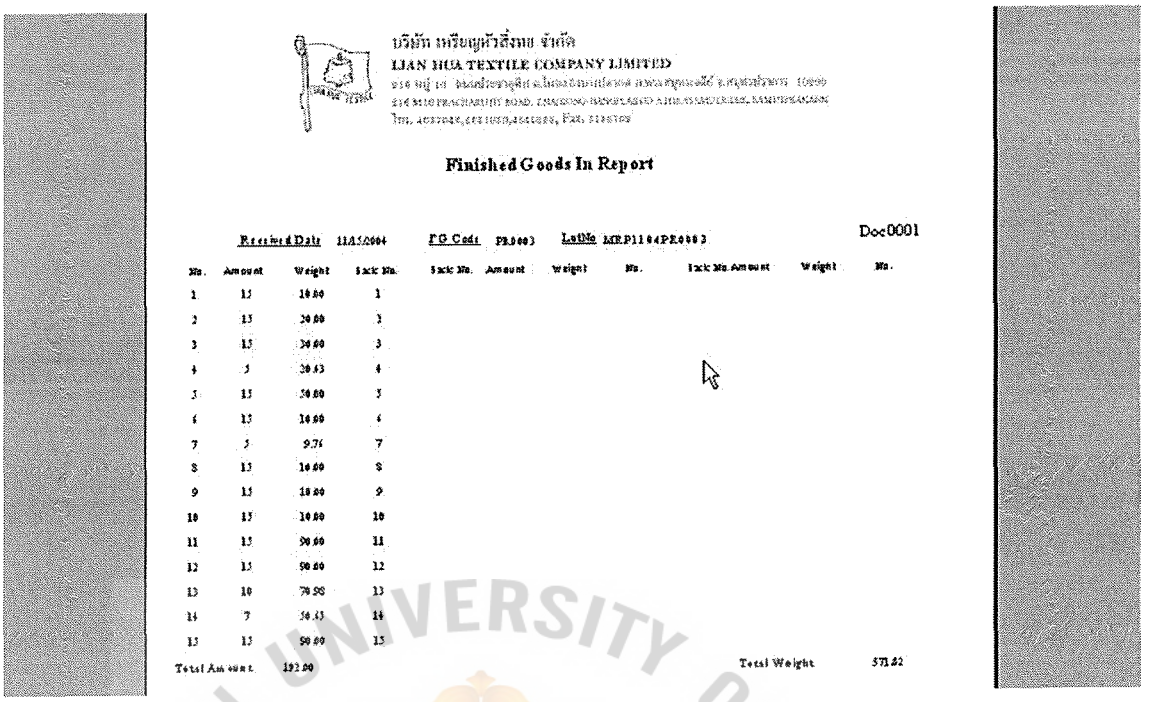
DATE 9/16/2004

RM Name :	RM Code :	Lot No.	BALE	Kg	Invoice Weight	Average Weight
KKKK	COTT1118		20	5,001	5,000	250

DATE 11/15/2004

RM Name :	RM Code :	Lot No.	BALE	Kg	Invoice Weight	Average Weight
jujub	COTT2456		25	25,000	30,000	1,000
jujub	COTT2456		5	5,000	30,000	1,000

Figure E-8 Raw Material Inventory by Material Report



บริษัท เหลียนฮัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED

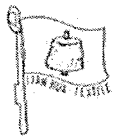
Finished Goods In Report

Doc0001

Received Date 11/5/2004 FG Code FB003 LotNo MRP1104PE003

No.	Amount	Weight	Sack No.	Sack No.	Amount	Weight	No.	Sack No.	Amount	Weight	No.
1	13	19.80	1								
2	13	20.80	2								
3	13	20.80	3								
4	5	20.63	4								
5	13	20.80	5								
6	13	19.80	6								
7	5	9.76	7								
8	13	19.80	8								
9	13	19.80	9								
10	13	19.80	10								
11	13	20.80	11								
12	13	20.80	12								
13	10	20.98	13								
14	7	20.43	14								
15	13	20.80	15								
Total Amount		322.00							Total Weight		571.82

Figure E-9 Finished Goods Inventory Report



บริษัท เหรียญหัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
216 หมู่ 10 ถนนประชาอุทิศ ต.ไทยาง อ.เมืองสมุทรสาคร จ.สมุทรสาคร 10290
216 M.10 PRACHAUTIT ROAD, TNAIKONG, BANGPLAKOD A.PHRASAMUTCHEDI, SAMUTSAKARN
โทร. 4657040,4611080,4644085, Fax. 4156702

Finished Goods Inventory

Finished Goods Type COT001 **Lot No.** MRP0902COT001

Sack No.	Amount	Weight	Date	Sack No.	Amount	Weight	Date	Sack No.	Amount	Weight	date
1	15	31.23	10/9/2545								
2	15	32.13	10/9/2545								
3	15	32.13	10/9/2545								
4	10	28.25	10/9/2545								
5	15	32.13	10/9/2545								
6	15	32.11	10/9/2545								
7	15	32.13	10/9/2545								
8	15	43.42	11/9/2545								
9	15	43.24	11/9/2545								

Figure E-10 Finished Goods Inventory by type Report

บริษัท เหรียญหัวสิงห์ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
218 หมู่ 10 ถนนประชาอุทิศ ต.ไทรน้อย อ.บางบัวทอง จ.นนทบุรี 11110
218 M.10 PRACHAUTHIT ROAD, T.NAIKHONG, BANGBUATHONG, NONTHABURI, THAILAND
โทร. 4037046,4041080,4044085, Fax. 8156762

20/9/2004

Finished Goods Out Report

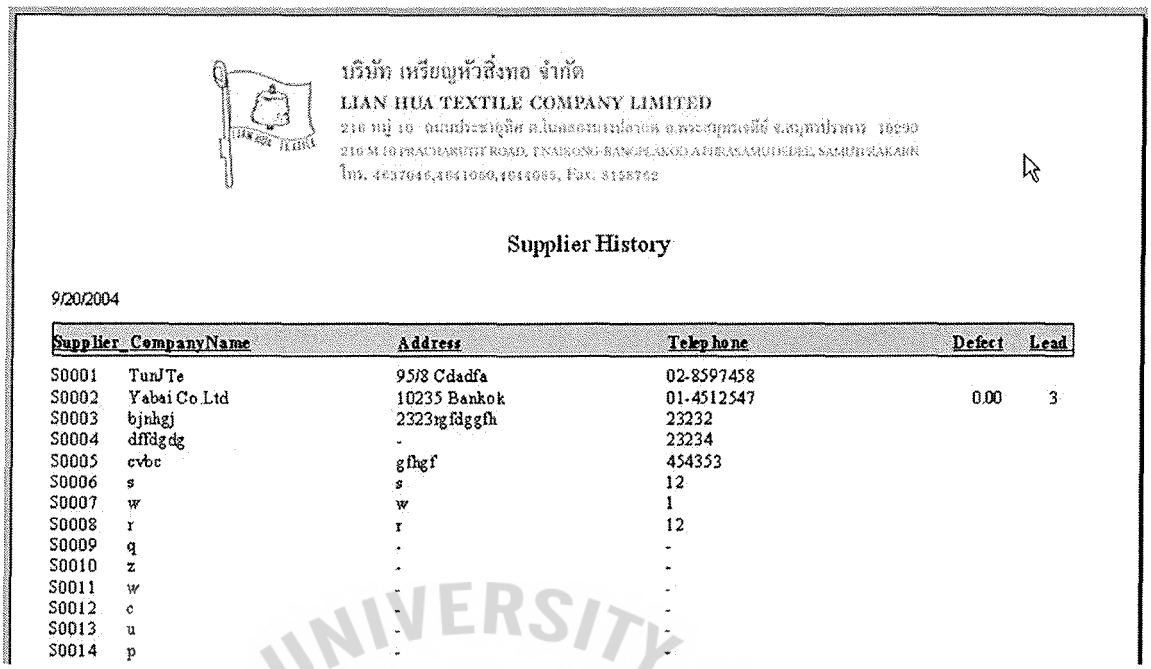
DateOut

Doc_No	FG_Code	LotNo	Sack No	Amount	Weight
	PR0003	MRP1104PR0003	15	15	90.00

DateOut **9/16/2547**

Doc_No	FG_Code	LotNo	Sack No	Amount	Weight
RE_040916/001	PR0003	MRP1104PR0003	5	15	50.00
RE_040916/001	PR0003	MRP1104PR0003	6	15	10.00
RE_040916/001	PR0003	MRP1104PR0003	7	5	9.76
RE_040916/001	PR0003	MRP1104PR0003	8	15	10.00

Figure E-11 Finished Goods by Date Report



บริษัท เหรียญหัวสิ่งทอ จำกัด
LIAN HUA TEXTILE COMPANY LIMITED
210 หมู่ 10 ถนนประชาอุทิศ ต.ไทรน้อย อ.พระประแดง จ.สมุทรปราการ 10290
210 M.10 PRACHAUTHIT ROAD, TRAINOI SAMPRADAENG SAMUTPRAKARN
โทร. 4637046,4641060,4644085, Fax. 8198762

Supplier History

9/20/2004

Supplier_Code	CompanyName	Address	Telephone	Defect	Lead
S0001	TunJTe	95/8 Cdadfa	02-8597458		
S0002	Yabai Co.Ltd	10235 Bankok	01-4512547	0.00	3
S0003	bjnhgj	2323tgfdggfh	23232		
S0004	dffdgdg	-	23234		
S0005	cvbc	gfhgf	454353		
S0006	s	s	12		
S0007	w	w	1		
S0008	r	r	12		
S0009	q	-	-		
S0010	z	-	-		
S0011	w	-	-		
S0012	c	-	-		
S0013	u	-	-		
S0014	p	-	-		

Figure E-12 Supplier Report

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