INSTALLMENT INFORMATION SYSTEM FOR RETAIL BUSINESS

by

MISS PIYAKARN YARNUDOM

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

Submitted in Partial Fulfillment
of the Requirements for the Degree of
Master of Science
in Computer Information Systems
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Project Title : Installment information system for retail business

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Academic year : December, 1997

The Graduate School of Assumption University had approved this final report of the three - credit course, CS6998 System Development Project, submitted in partial fulfillment of the requirements for the degree of Master of Science in Computer Information Systems.

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Abstract

Lending business has been developed in several form of business, for example Hire Purchase, Installment, Housing Loan, and other loan. Installment Business has been grown up amongst the retail business such in the department store or in form of purchasing via credit cards.

Best Choice Co.,Ltd is the brand new company, which only runs installment business. It is the affiliate of Best Choice Leasing Co.,Ltd, which runs Leasing and Hire Purchase business for mainly automobiles (cars, trucks, and motorcycles).

The existing system has used some functions of Hire Purchase System such as Customer Information , and Account Information. Although these two business are similar it is not so efficient to use the same application because Hire Purchase System has more function to deal with customer and other parties such as Insurance Company, Car Dealer, Department of Transport and Lawyers. Installment System does not have to deal with those parties. However, for Installment System has much more transaction and is dealing with several suppliers who provide us with all different products and with negotiated price and margins.

The proposed Installment System will serve all the user's requirements and also solve the problems of sharing with Hire Purchase Applications and reduce the manual workload. It can be further developed to interface directly to Accounting System or to most frequent suppliers.

Acknowledgement

It is a great pleasure to acknowledge the assistance and guidance of numerous people who have been very helpful for providing all the related information for System Development Project and resulting in present report.

The author wishes to thank all the staff in Installment Department of Sinn Bualuang Leasing Co.,Ltd who have made a great deal of information support and comments. The author wishes that this report would be the guideline for the similar application.

Moreover, the author wishes to thank all the instructors of The Graduate School of Computer Information System of Assumption University. Most importantly, my honest appreciation for all the suggestions and comments from Dr.Supamit Chittayasothorn, advisor who has made the most of complete report.

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1. INTRODUCTION

1.1 BACKGROUND OF THE PROJECT

Installment System is another form of lending business which involved by large amount of people. The customers are in various areas of occupation. Moreover, several types of products can be involved in the system. Certainly, the differences in prices and installment period are assigned to each product.

Best Choice Co.,Ltd is another company that run the installment business. The company would distribute the brochure to the interested customers and the have the sample of all the products at the office. However, the customers can inspect the same products in any department store and compare the prices. Generally, the price of the products from Best Choice Co.,Ltd. are lower than in the department store in term of Installment price because the company has been negotiated the prices and the margins with several suppliers and have the firm contract with them about the product deliverable and time warranty.

When customer orders the product, the customer order form will be filled then the operation staff will have to make some inquiry to the supplier for the ordered products, this process is done twice a day (in the morning and afternoon) and the company will issue two documents for the supplier, P/O (Purchase Order) and D/O (Delivery Order). The company does not keep inventory of the products because the products will be change quarterly and the company has made the contract with each supplier to do all the product deliveries.

The payment period of are varied but normally, each product would have three different choices. The starting date is normally the beginning of next month after the customer receives the product. The system will generate the installment record of each customer combined with the customer order and the purchased product. The customer can select the payment methods to suit his/her convenience. If the customer would like to pay via deduction from his/her bank account, he/she has to fill and extra form to reconfirm the account number and the signature with the bank. For this issue, each month the company will generate the report to the bank with diskettes containing all the information of bank account number and amount to be deduct from each account.

The payment transactions records will be input in the system in two ways. First, the report and the processed diskettes from the bank will be transferred into the system in Payment Transaction file. Second, all other payment will be keyed into the transaction file in a daily basis. At the end of working day, these payment transaction records will be processed to be updated in the Installment File. Consequently, the receipts with the statement of account are generated and mailed to each customer.

This system is designed to serve most of the user requirements and the business of the company. All the screens and reports are generated to be easy to use and understand. The exceptional reports have been designed to help the officer to control the payment from the customers. The inquiry screens are also designed for the quick view of the installment record for each customer, this could help the operation staff who works closely with customer relation.

1.2 OBJECTIVES OF THE PROJECT

The objectives of the project on Installment System are as follows :

1. To design an automate system for the Installment business which is the main part of company business.
2. To eliminate the problems from the existing system which includes the mix up of data with Hire Purchase System.
3. To reduce the manual workload as much as possible
4. To have more tools to control the main part of the business which is payment received and purchasing procedures from the suppliers.
5. To gather all the related information to be analyzed the trend of products to sell in future.

1.3 SCOPE OF THE PROJECT

The project will cover the major parts on The Installment System which include :

1. Maintain customer information
   - Maintain customer information
   - Maintain credit limit
   - Maintain customer status
2. Maintain product information
   - Maintain product information
   - Maintain product price information
3. Process customer order (C/O)
   - Approve customer order
   - Input customer order detail
   - Print purchase order form (P/O) and delivery order form (D/O)
4. Process delivery order
   - Input delivery date of each product from returned D/O
5. Calculate installment statement for each product
   - Calculate the starting and ending date of payment for each product in customer order
6. Receive payment process
   - Input payment receive detail
   - Calculate outstanding balance for each product from customer or

- Generate receipt and statement of account and mail to customer
- Update credit limit for customer

2. EXISTING SYSTEM

2.1 HISTORY OF THE COMPANY

Best Choice Co.,Ltd. is a brand new company which is the affiliate of Best Choice Leasing Co.,Ltd. Best Choice Co.,Ltd. runs only the Installment business where Best Choice Leasing Co.,Ltd. has run Hire Purchase and Leasing business for several years. Best Choice Leasing Co.,Ltd. has already had the automated system for Hire Purchase and Leasing. Once Best Choice Co.,Ltd. has been established, the computerized system has not yet been considered to be designed to serve the user requirements or the business needs in term of installment. All the information from Installment was input in Hire Purchase System for example, customer information would be keyed in with the different kind of code invention to be classified that this customer is from Installment system. The existing system does not have the Purchase Order (P/O) and Delivery Order (D/O) function therefore these two issues had to done manually. As the transaction records have increased, there is no way to control or to process the Installment business smoothly and efficiently.

2.2 EXISTING SYSTEM FUNCTION

By sharing some functions of existing Hire Purchase System, the functions which can be used for Installment are :

1. Customer Information

   The customer information can be entered into the existing system with no significant problem. However the customer code has to be different from the Hire Purchase customer and also the existing system does not have the field customer credit limit which is always used in Installment to approve the customer order.

2. Customer Account Information

   This is the function for Customer Order Process in term of Installment. When customer order has been approved by the Operation Manager, the customer order information would be input into Customer Account Information by product. This task not only made the Customer Account Information File a lot bigger but also the input screen is not appropriate for large amount of transaction.

3. Payment Receive Procedure

   The customer can select the payment method just the same as in Installment. They are deduct from customer's bank account, pay in at bank counter or at the company and by cheque. The payment records will be input either manually or automatically (records from bank account deduction) into the transaction file and will be processed by the end of the day.

4. Generate receipts and statement of account to mail to customer

   By the second week of each month, the operation staff has to generate receipts and statement of account to each customer. For the existing system, each customer would not purchase many products. The receipt and statement of account were designed to be one document for one account or one product. Therefore, Installment customer who bought many products would receive a lot of document at once. This task could cause some confusion for the customer and the customer service staff always had to answer a lot of unnecessary questions from numerous customers.

2.3 EXISTING SYSTEM PROBLEMS

As previously explained, the existing system caused significant problems as follows :

1. For Customer Information Function, it does not have the three important fields to control the additional purchasing products from customers, this task the operation staff has to control it manually by using log book or spreadsheet.
2. The existing system does not have Purchase Order (P/O) and Delivery Order (D/O) procedure. The P/O and D/O have to be prepared manually either by type writer or hand written. Moreover, another logbook had to be used.
3. The existing system does not have the Product Price Information. When Customer Order Information were entered into the system, the hard copy of price list was used heavily and there is no way to check the human errors in keying wrong price until later.
4. The receipts and the statement of account which then mail to each customer, for the customer who bought many products would get separate document for each product and this would some confusion for the customers. As the result, the customer service staff had to work very hard.

All of above problems would get worse when the transaction records have increased. No appropriate task to control the important information such as customer credit limit, P/O and D/O.

Best Choice Co.,Ltd.

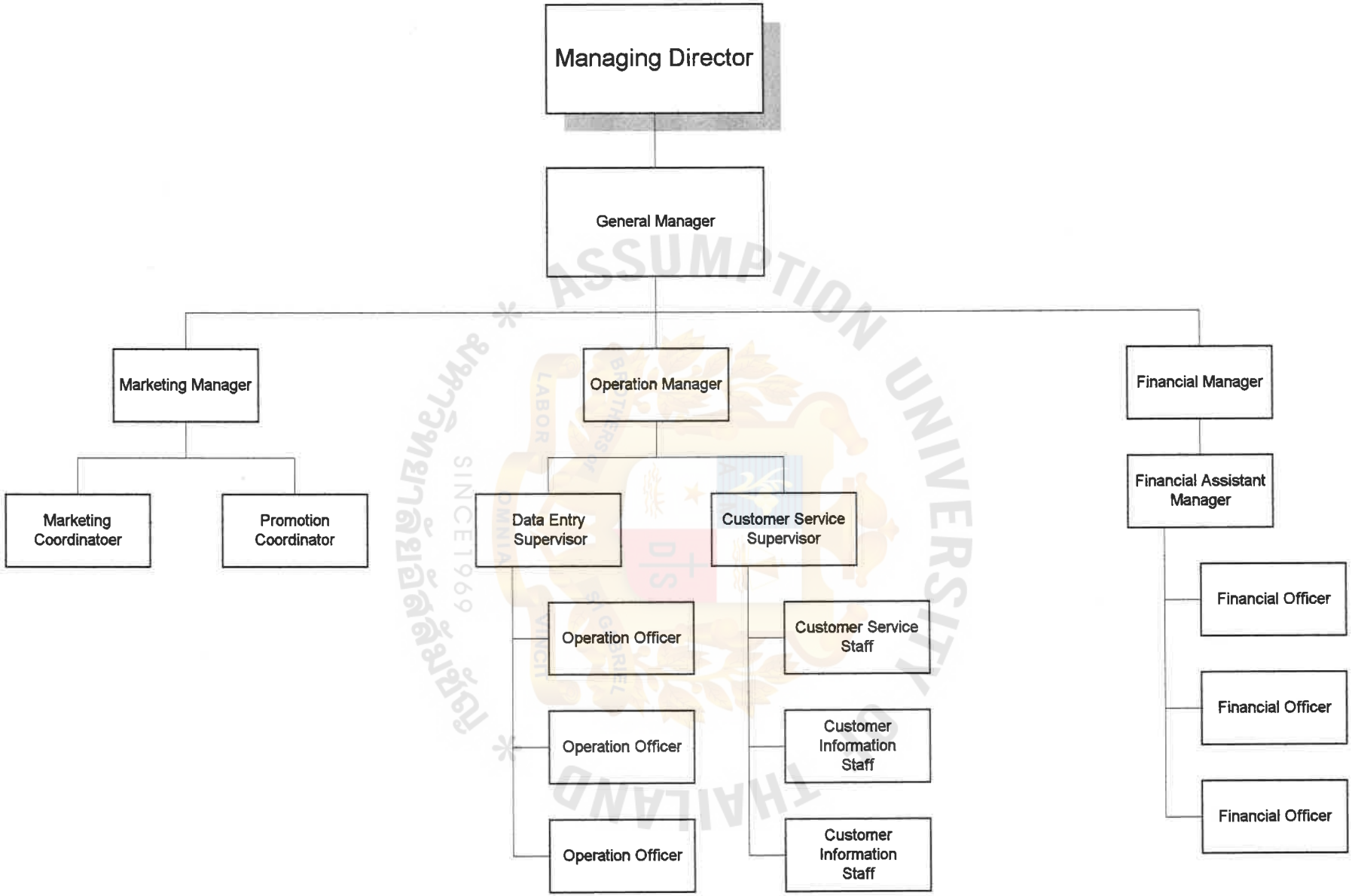

Figure 2.1 : Organization Chart of The Company

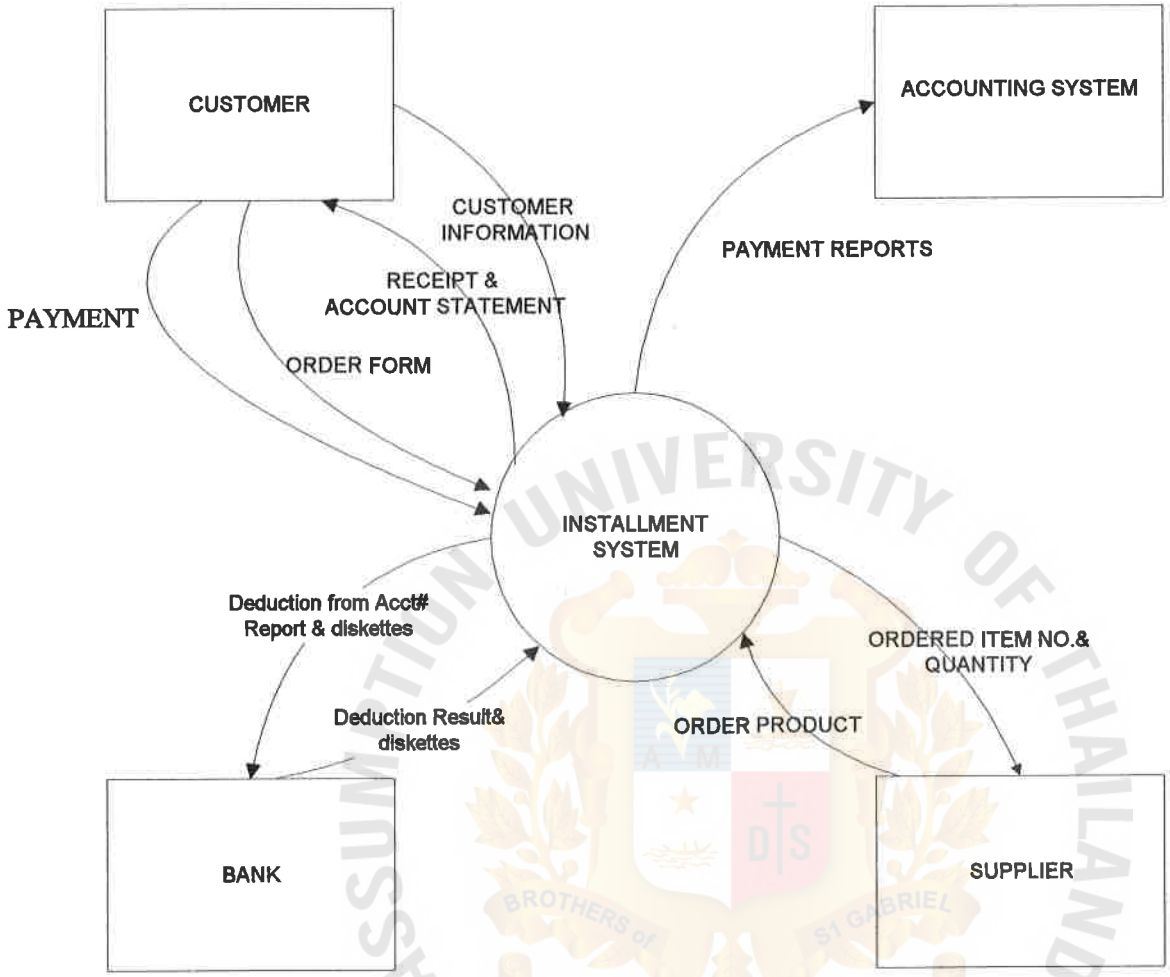

Figure 2.2 Context Diagram of Existing System

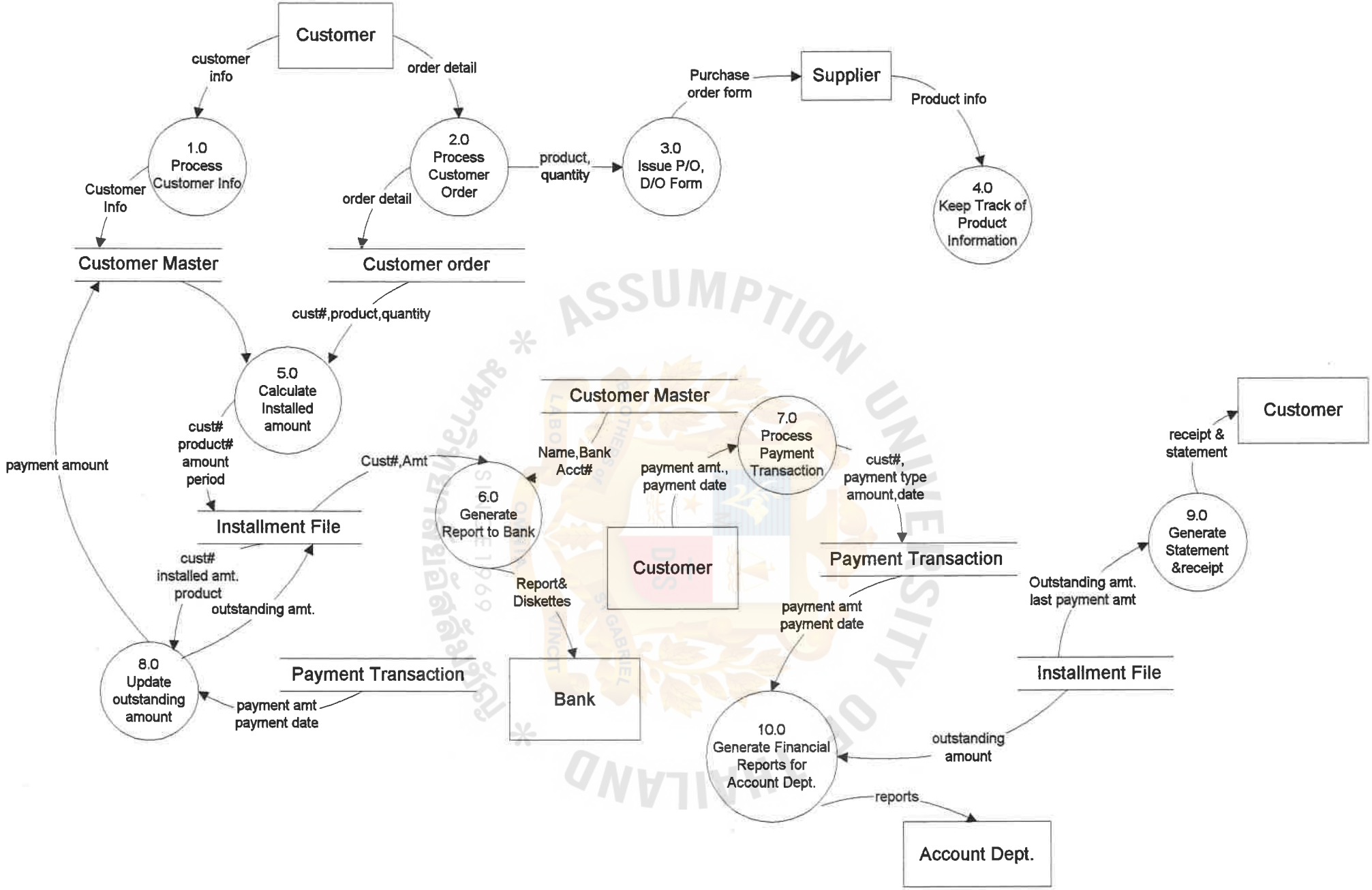

Figure 2.3 : Data Flow Diagram Level 0 of Existing System

3.PROPOSED SYSTEM

3.1 USER REQUIREMENT

After analyzing existing system, user requirements were stated as :

1. Customer Information File must have three important fields besides the general personal information, these three fields are credit limit, balance and over limit.
2. The proposed system should have Product Master File and Product Price File. For Product Price File will have to be designed to activate/inactivate pricing in different period of time because the product price in the market can be changed within the short period of time frame.
3. For each Customer Order (C/O) might contain more than one product, therefore from one C/O can generate more than one Purchase Order (P/O) and Delivery Order (D/O). P/O and D/O will have to send to the supplier and the customer must sign on D/O to confirm to receive product for the supplier.
4. Once the supplier return the D/O with customer signature, the delivery date will be input into the system to calculate the first date for payment and also the last date. Then the system should generate Statement of Account to inform the customer for the first period of installment.
5. The receipt and statement of account should have all the payment information of all products which were purchased instead of separated document by each product.
6. The proposed system should have the appropriate reports which can be used as an audit trail to reconcile data which were entered into the system in a daily basis.
7. The exceptional reports layout should be designed by the users to track some abnormal information.
8. The MIS reports should also be designed to help the management to analyze or decide the trend of the products which can increase the sale volume.

3.2 SYSTEM DESIGN

Using context diagram and dataflow diagram (DFD) as the tools for structured analysis and design, the proposed system's DFD are presented as follows : (The proposed Dataflow Diagrams are shown in Appendix A)

3.2.1 Overview of DFD Level 0

There are 10 main process in the Installment System as follows :

Process 1.0 : Process Customer Information

- To maintain Customer Information

Process 2.0 : Process Customer Order Information

- To input Customer Order Information
- To gather the Customer Order Information to generate P/O and D/O
- To calculate customer balance credit and over credit

Process 3.0 : Process Purchase Order Information

- To generate Purchase Order (P/O) for supplier
- To generate Delivery Order (D/O) for Supplier

Process 4.0 : Process Input Product Information

- To maintain Product Information in Product Master File
- To maintain Product Price Information in Product Price Information File

Process 5.0 : Process Calculate Installed Amount

- To calculate installed amount for each purchased product in Customer Order
- To calculate total installed amount for each customer

Process 6.0 : Process Generate Report to Bank

- To generate report to Bank to be reconciled with the data from the diskettes (This task select only customers who wishes pay by bank account deduction)
- To create diskettes for bank to process account deduction

Process 7.0 : Process Payment Transaction

- To input payment transaction into the system

Process 8.0 : Process Update Outstanding amount

- To calculate outstanding amount of each installment record
- To calculate balance credit of each customer
- To calculate balance installed amount for each product
- To calculate balance period for each purchased product

Process 9.0 : Process Generate Statement and Receipt

- To generate Statement of Account and receipt to mail to each customer

Process 10.0 Process Generate Financial Reports for Account Department

- To generate various reports for Account Department

3.2.2 Proposed Output

The following detail of output reports are shown in Appendix D :

1. Daily Customer Order Report
2. Daily Payment Transaction Report
3. Payment History by Customer
4. Customer Credit Information
5. Installment Information by Customer
6. Outstanding Report by Customer
7. Daily P/O, D/O Report
8. Report to Bank for Account Deduction
9. Purchased Product by Product and Brand
10. Aging Payment Report by Customer (< 30 days)
11. Aging Payment Report by Customer (31-60 days)
12. Aging Payment Report by Customer (> 60 days)

3.2.3 Proposed File Layout

The following file layout have been designed to serve the input requirement and to be the tool for calculation. The detail of all file layout are shown in Appendix B.

1. Customer Master File
2. Supplier Master File
3. Product Master File
4. Product Price Master File
5. Customer Order File
6. Payment Transaction File
7. Installment File
8. P/O, D/O File
9. Bank Code File
10. Bank branch File
11. Brand Code File
12. Model File
13. Title Code File
14. Income Range File
15. Occupation File
16. Payment Method File
17. Product Type File
18. Reason Code File
19. Unit of Measurement File

3.2.4 Proposed Screen Display

The screen display have been designed in a menu driven form which can be easy to use. The screen layouts are shown in Appendix C.

1. Screen to input Customer Master Information
2. Screen to input Supplier Information
3. Screen to input Product Master Information
4. Screen to input Product Price Information
5. Screen to input Payment Transaction Information
6. Screen to input Brand Code
7. Screen to input Model Code
8. Screen to input Bank Code
9. Screen to input Branch Code
10. Screen to input Product Type
11. Screen to input Unit of Measurement
12. Screen to input Title Code
13. Screen to input Income Range
14. Screen to input Occupation
15. Screen to input Payment Method

3.2.5 Proposed Equipment

A Local Area Network (LAN) is an optimum system for the proposed system as it will increase productivity , efficiency and cost effective. Approximate life cycle of this system is normally at least 5 years. Network Configuration is shown in Figure 3.1

3.2.6 Hardware and Software Configuration

Hardware and Software Specifications are shown in Table 3.2

Table 3.2 : Hardware and Software Specifications

Description	Unit Price	Qty	Total
File Server	65,000	1	65,000
HP NETSERVER E30			
Pentium 166 MHz, 64 MB DRAM, 2.1 GB HDD			
4x CD-ROM, LAN Card			
PC Workstation	35,000	5	175,000
HP VECTRA VL5			
Pentium 133 MHz, 16 MB DRAM,1.6 GB HDD			
HP Mouse & Keyboard, LAN Card & Monitor			
Network Peripherals			
3COM SuperStack II Hub 10, 12 ports	8,500	1	8,500
UPS			
SYNDOME UPS SZ-501	5,800	1	5,800
Printers			
HP LaserJet 5p	25,000	1	25,000
HP LaserJet 6L	13,000	1	13,000
NEC P6300 Pinwriter	11,000	1	11,000
Software			
Novell Netware 4.11 (10 Users) CD-ROM	65,000	1	65,000
Windows95 Thai Edtion	5,500	1	5,500
Microsoft Office95 Thai Edition	125,000	1	125,000
Total			**563,800**

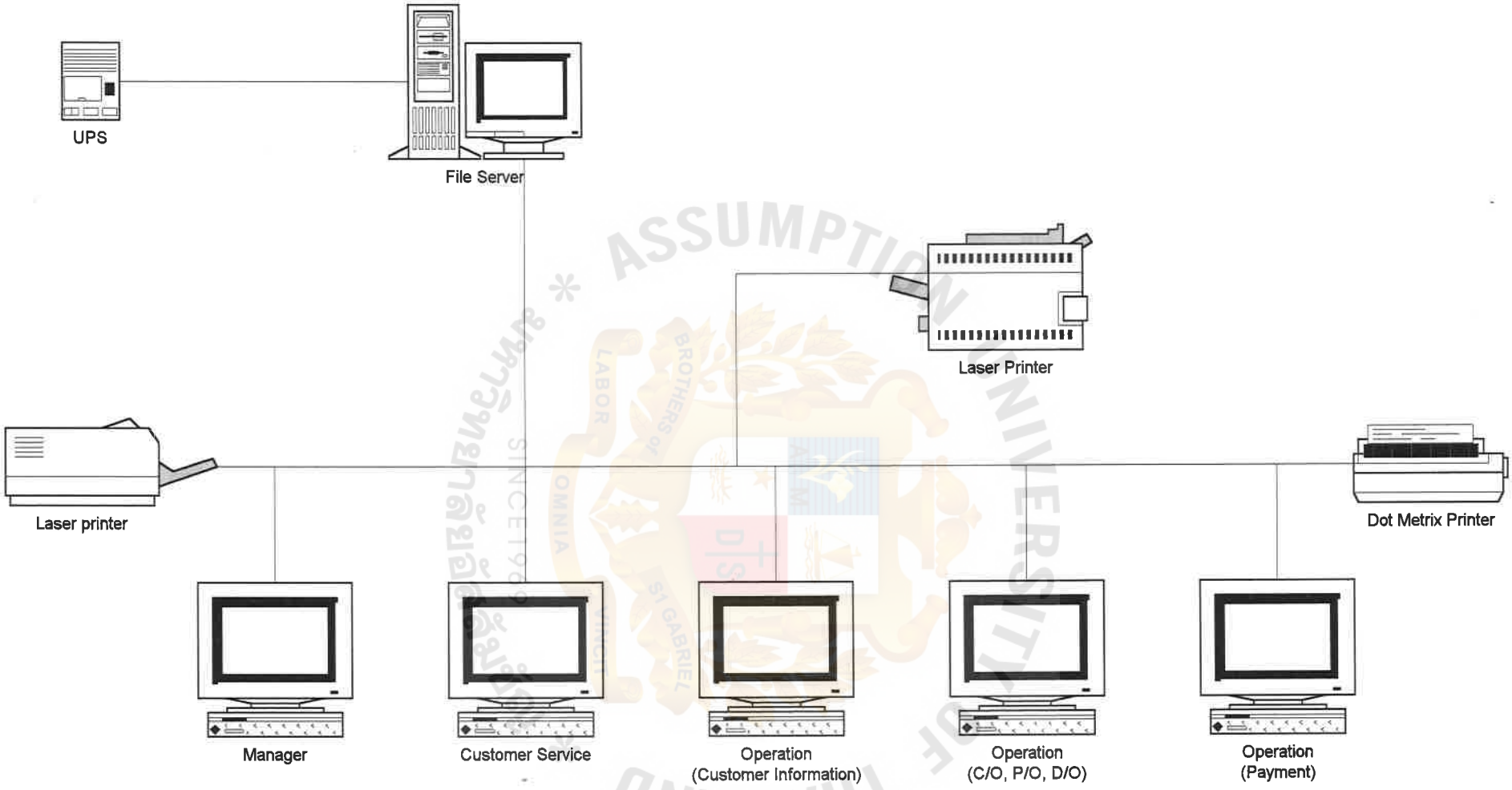

Figure 3.1 : Network Configuration for Proposed System

3.3 ECONOMIC COST COMPARISON

3.3.1 Benefits

There are two types of benefits, tangible and intangible.

Tangible Benefits

The proposed system will reduce the manual operation and clerical work that result in personnel saving cost which can be approximately calculate as follows :

Salary (@12,000 Baht/month * 12 months) * 3 (3 staffs)	432.000
Bonus (2 months bonus = @24,000) * 3	72,000
Total Personnel Saving Cost	504,000

According to the accurate and meaningful reports produced by the system, it will reduce the bad-debt at least from 3 % to 2 % of loans i.e. reduce by 1 %

Target of first year sales (1996) = 6,000,000 Baht

The bad-debt reduced by 1% = 6,000,000 * 0.01 = 60,000 Baht

Intangible Benefits

The proposed system provides the useful information to be further analyzed and will be the tools for decision making. It also eliminates some manual operations such as generating P/O, D/O for suppliers. It will reduce manual logbooks and increase productivity of all the manual tasks for example the customer credit limit, balance credits , P/O , D/O running number , product code and price list.

3.3.2 Costs

The tangible cost concerned with Hardware and software which is shown in Table 3.2 : Hardware and Software Specification. We hereby consider and analyze the cost which hides under the continuing use of the existing system **(intangible cost)**.

What is the tangible concerned ? The manual workload in the existing system is *time consuming*. Moreover, the clerical work needed to be completed without the tools from the system. The detailed and summary reports have be prepared on the spreadsheets. As the transactions have been increased rapidly, the users will be more struggle to complete all the manual operation *(opportunity lost)*. The inflexibility of the existing system will be result in unsmoothly workflow and in the end the company will lose the image gain bad reputation.

TABLE 3.1 COST COMPARISON BETWEEN COMPUTERIZED SYSTEM AND MANUAL

Cost /Benefits Analysis between Computerized System and Manual

Description	Year 0		Year 1		Year 2		Year 3		Year 4		Year 5	
	Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual	Auto	Manual
Hardware Cost	309,800	70,000	247,840	10,500	185,880	140,000	123,920	175,000	61,960	210,000		245,000
Software Cost	87,500	18,000	70,000	14,400	52,500	10,800	35,000	7,200	17,500			
Salaries	36,000	72,000	39,600	79,200	43,560	87,120	47,920	95,840	57,970	105,400	63,770	115,940
Hardware Maintenance Cost		8,000	6,000	7,000	6,000	6,000	5,000	7,000	4,000	8,000	3,000	9,000
Training Cost	6,000		2,000		2,000		2,000		2,000		2,000	
Total	**439,300**	**168,000**	**365,440**	**111,100**	**289,940**	**243,920**	**213,840**	**285,040**	**143,430**	**323,400**	**68,770**	**369,940**

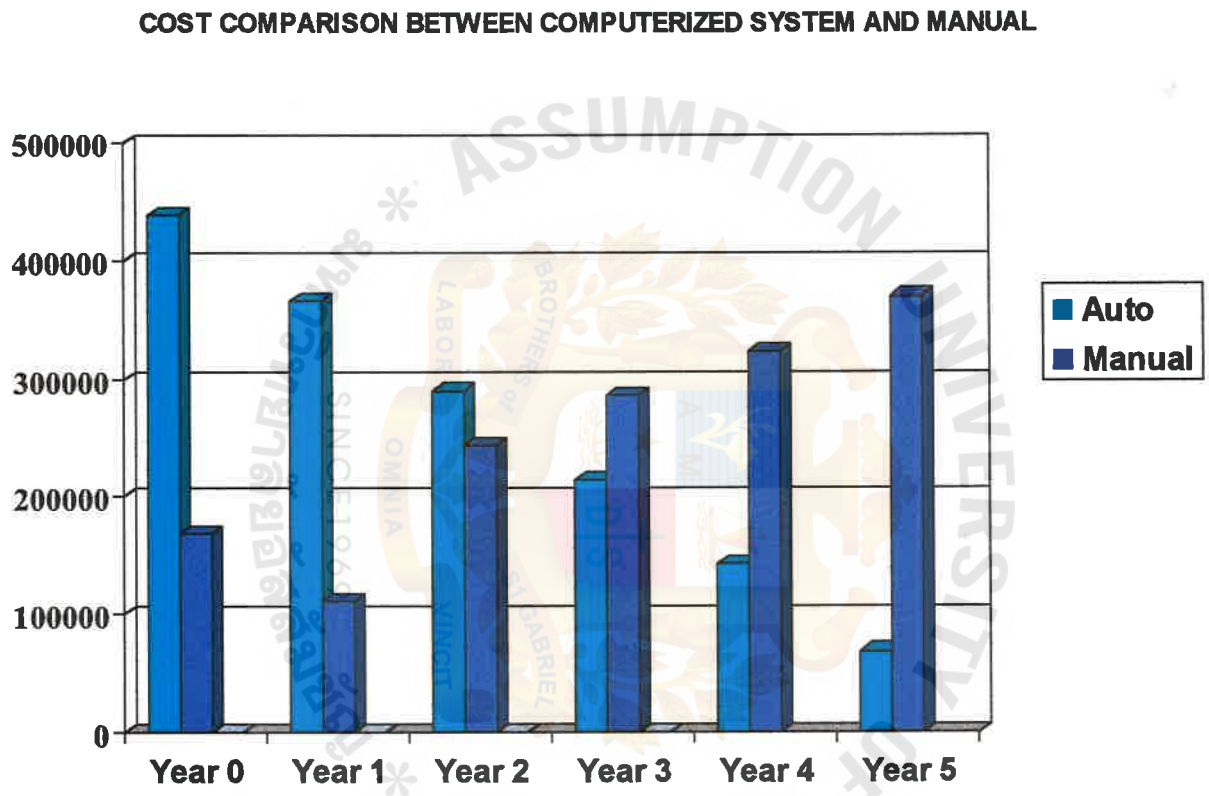

Figure 3.2 Cost Comparison Between Computerized and Manual

3.4 SECURITY CONTROLS

The security control of the proposed system have been designed with LAN Untility and the access control of the system. Firstly, the unauthorized users can not log into the LAN (by checking the user name and password) The password will be expired every three months and the new password can not be the same as the previous one. Secondly, each level of user will be assigned to have different access level into the system. Some users can only add the data but he/she is not allowed to update/modify data. Every transaction record will have the user id and input date for back tracking.

4.IMPLEMENTATION

4.1 Implemantation Schedule

Activities	June				July				August				September				November				December			
	w1	w2	w3	w4	w1	w2	w3	w4	w1	w2	w3	w4	w1	w2	w3	w4	w1	w2	w3	w4	w1	w2	w3	w4
Detail Analysis and Design																								
1. Survey users' requirements																								
2. Develop DFD																								
3. Develop structure charts																								
4. Design Screen Layouts																								
5. Design File layouts																								
6. Design programs specifications																								
7. Coding programs																								
8. Testing by system analyst																								
Implementation																								
9. Testing by users																								
10. Training																								
11. Users acceptance																								
12. Documentation																								

Table 4.1 : Schedule of Project Implementation

4.2 PROGRAMMING

The tools for programming are prior designed of all Process Specifications (are shown in Appendix E). The Process Specification will be the guideline for coding programs which is related to all the designed database, input screens, output reports and all the calculation and procedures.

4.3 TESTING AND IMPLEMENTATION

4.3.1 Testing the new system

Testing of specific programs, sub systems and total system is essential to quality assurance. All system modules have to carefully tested before actual use. The users would play the main roles for system testing.

Testing Procedures should include the following tasks :

- Testing individual program :
  This task has always been done by the programmer and maybe system analyst as well
- Creating test data :
  To test both valid and invalid data , all the conditions which could occur in the real-life situations. Test data should be created in the large range i.e. minimum to maximum values.
- Link Testing :
  Some programs might link together with the same flow of data. This very important task to test that each program passes data to another correctly.
- System testing :
  To make sure that the entire system works correctly and meets user requirements. This task will need some adequate documents to run the system.
- Backup and restart testing :
  To prevent the contingency situation, we should back up the system regularly. This task is to make sure that the system will work after restoring the back up.
- Documentation
  The system manual or user's guide should have been prepared before User Acceptance
- User Acceptance testing
  To ensure that the proposed system will have all the functions in the production environment without adversely affecting existing system.

4.3.2 IMPLEMENTATION

The implementation phase should include the parallel run with the existing system for awhile until all the users understand the proposed system and all the outcome are completely correct. The implementation phase also has the following tasks :

- Training Users and related parties
  All the operation users and the related personnel should be trained to understand how the system works and flow to each area of responsibility for the users.
- Writing procedures
  The document to explain what is to be done, who is supposed to do it, and how it will be done. This task is included in user manual
- Data conversion
  Data from existing system should be converted partailly until it complete. The users and the development team have to work closely together to prepare data and re-check whether the data conversion worked correctly.
- Periodic backup
  The backup of the entire system should be backup regularly. The data should be backup in daily, weekly and monthly basis. For the programs, they should be back up at least monthly.
- Follow up
  The development team should also check all the output to reassure that the system generate the output correctly by comparing with the output from the existing system.

5. CONCLUSION AND RECOMMENDATION

5.1 CONCLUSION

The Proposed system has been carefully designed and developed to solve the problems of the existing system. The main part of designing phase is to survey the user requirements to get the exact requirements in order to avoid any changes after system implementation. This task will include the interviewing the users in detail. The prototypes should be prepared for the users to visualize the expectation of the system screens and make some recommendation.

The solutions for the existing problems have been solved by working closely with the users would gain as much as information of the existing system and then would conclude with the solutions from the proposed system.

The proposed system also designed and developed to fit the Company Installment Business. The appropriate screens, reports and the calculation procedures have been carefully developed and tested. Moreover, all the related database have been designed in order to gather as much as data and information which might be useful in the future without any extension of the existing database.

5.2 RECOMMENDATION

The proposed system has developed in focus to fit the Installment Business. However, it could be further developed in order to be interfaced with another systems within the affiliate group of companies. For example :

1. If the company staff becomes the customer by purchasing the product, the general customer information should have been transferred from employee information file from payroll system (the interface should extract only *general* information not *confidential*)
2. The subsequent of 1, the payment could be performed in income deduction. The Installment system task should transfer the installed amount to the payroll system for deduct *'Other Loan'* from the salary. This task will be very convenience for both customer payment and the company to receive the payment on time.
3. The information which related to Accounting system should be posted to the Accounting System directly in the future.
4. As the system has been used for awhile, the more focus on bed-debt custmers should be taken, the different kinds of aging reports and inquiry screens should be developed. The control procedures of bad-debt customers should be discussed and set up.

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2. Page Jones, Meilir. The Practical Guide To Structured System Design. Prentice-Hall International Editions., 1993

APPENDIX A

Dataflow Diagram

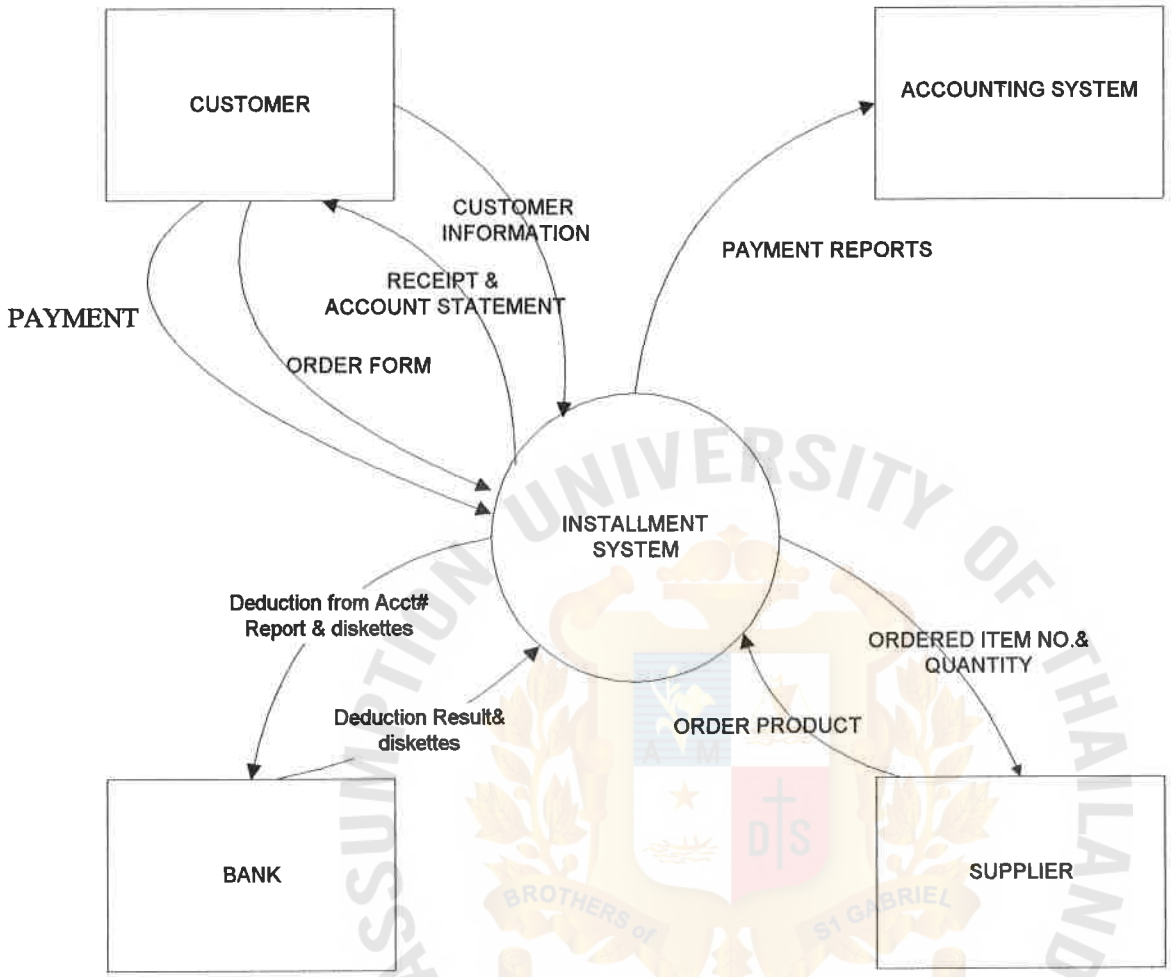

FIGURE A-1 : CONTEXT DIAGRAM OF INSTALLMENT SYSTEM

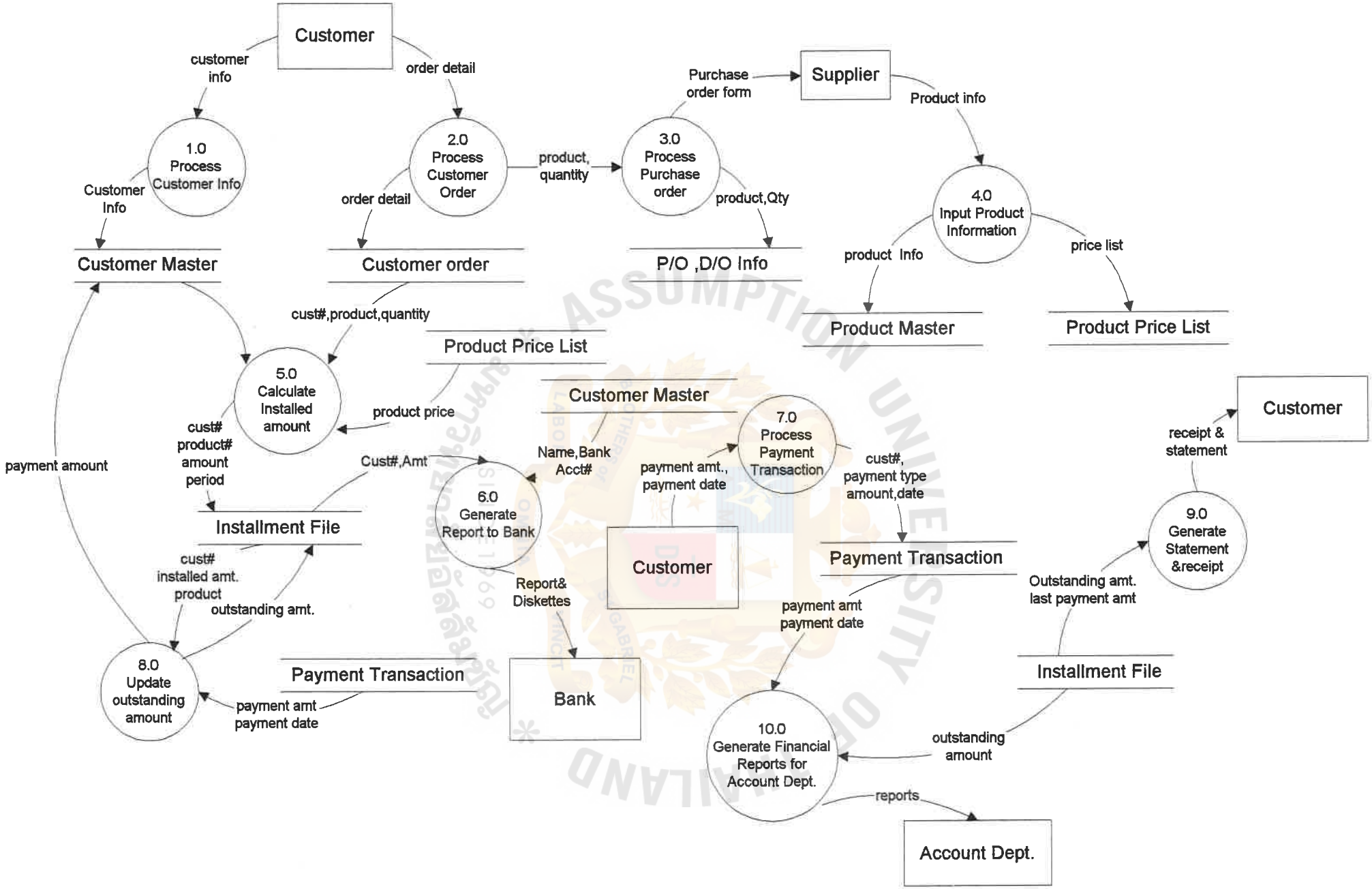

Figure A-2 : Data Flow Diagram Level 0

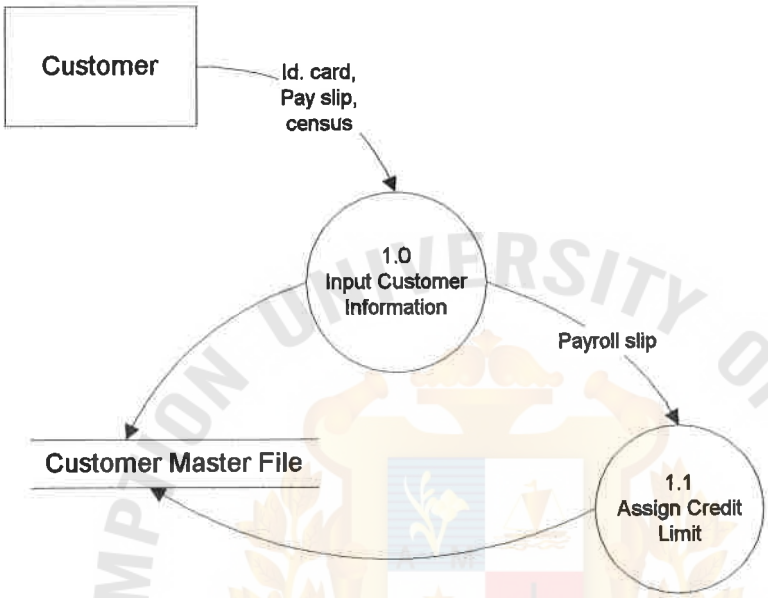

Figure A-3 : Process Customer Information

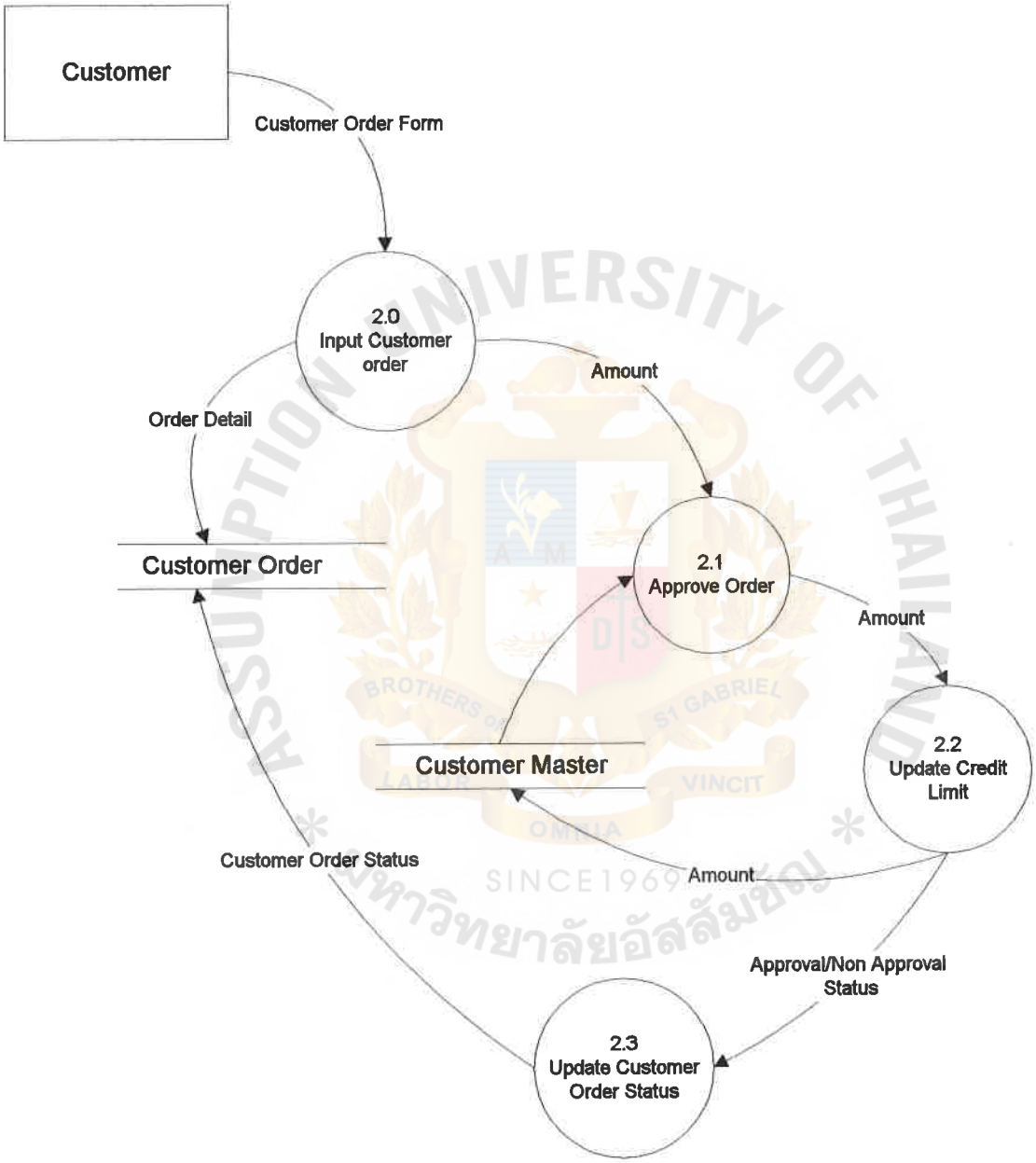

Figure A-4 : Process Customer Order

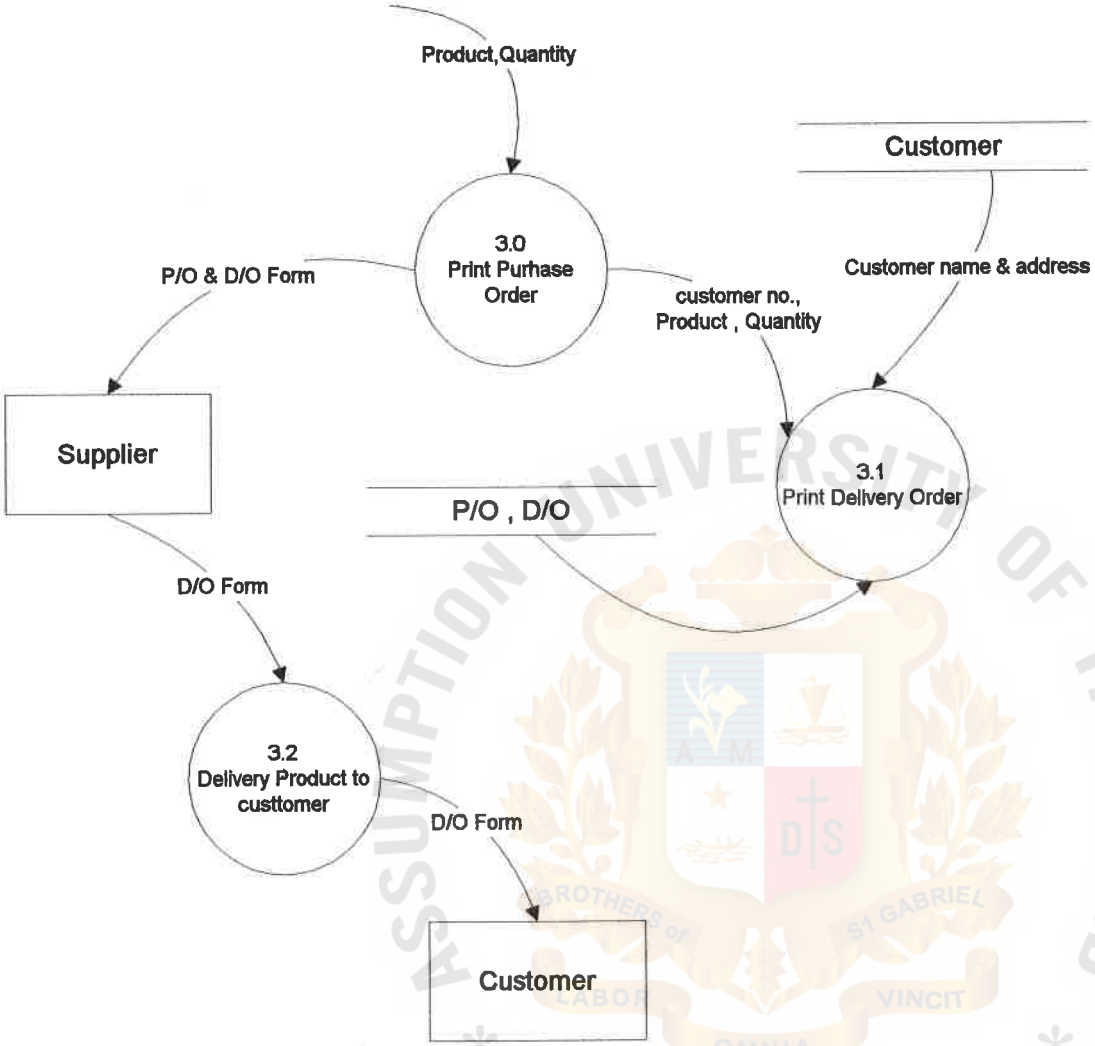

Figure A-5 : Process Purchase Order and Delivery Order

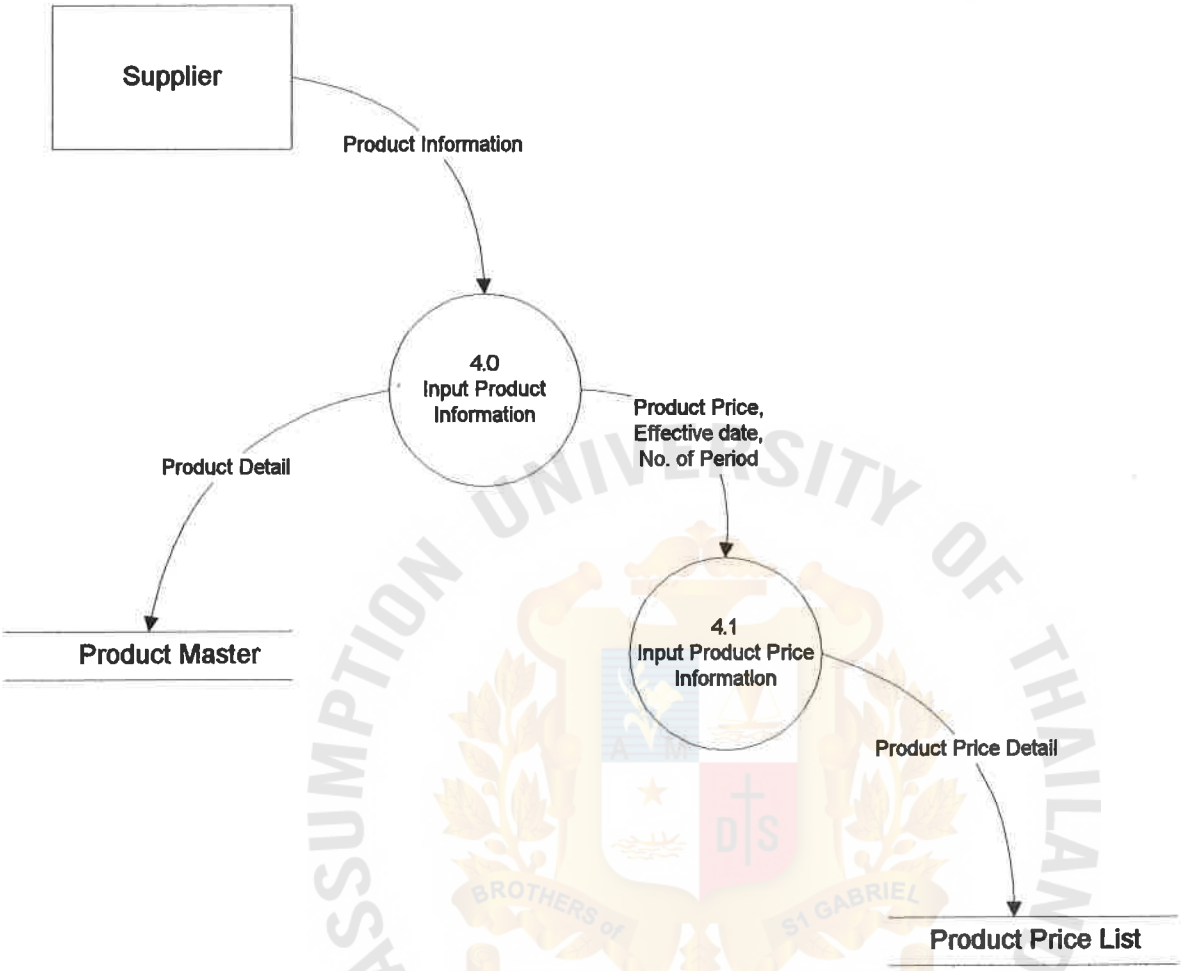

Figure A-6 : Process Input Product Information

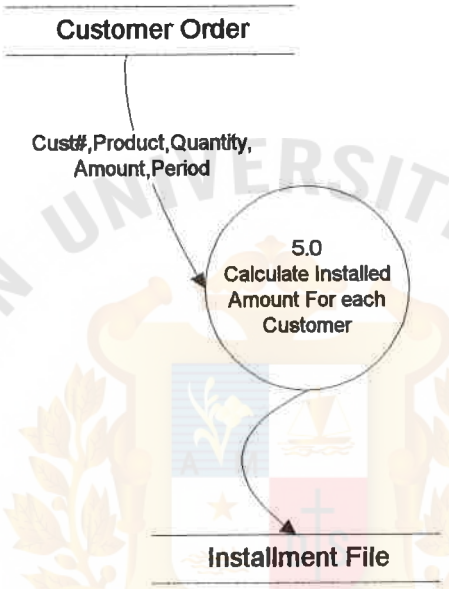

Figure A-7 : Calculate Installed Amount

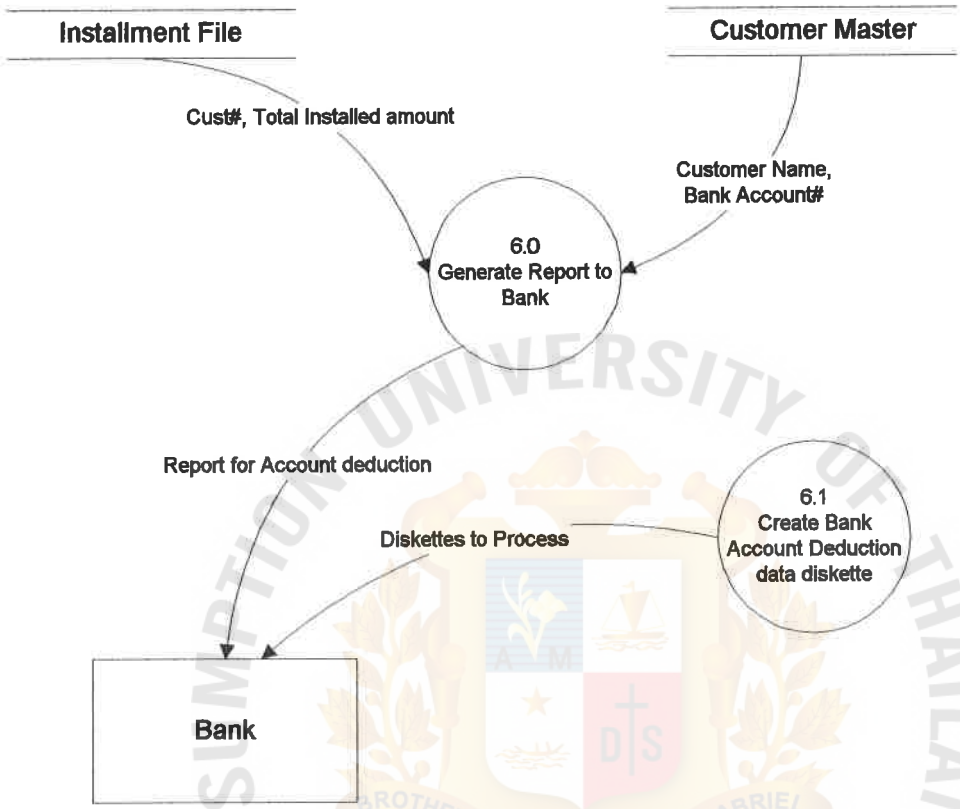

Figure A-8 : Process Generate Report to Bank

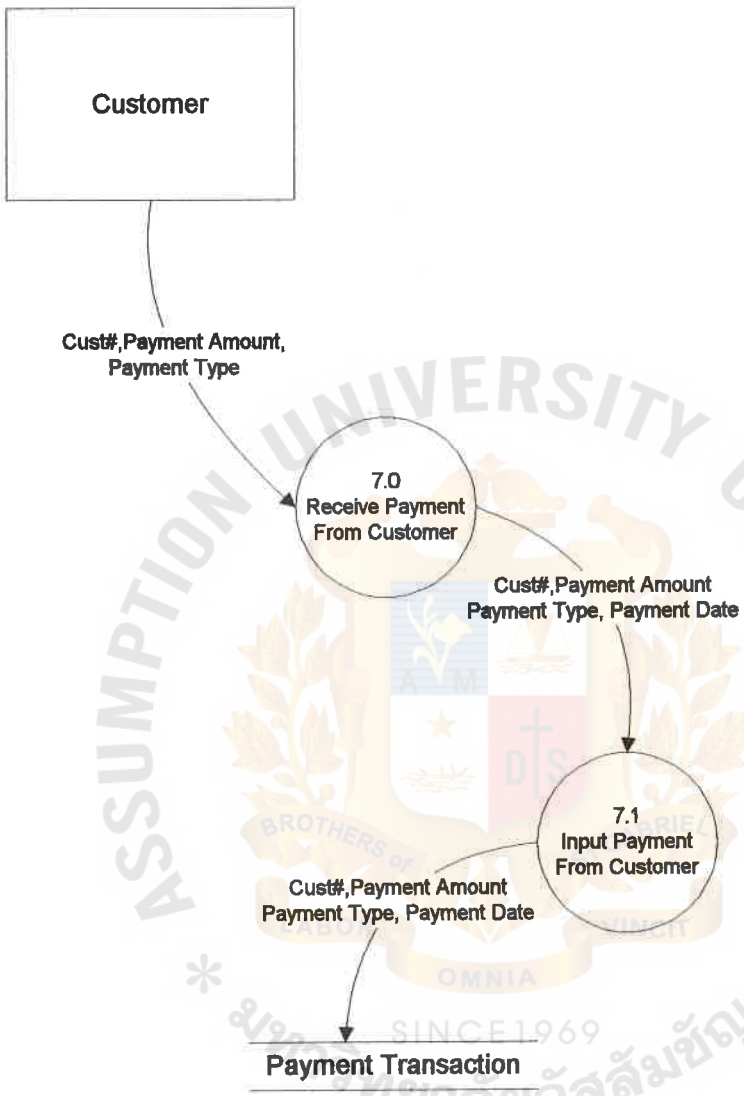

Figure A-9 : Process Payment Transaction

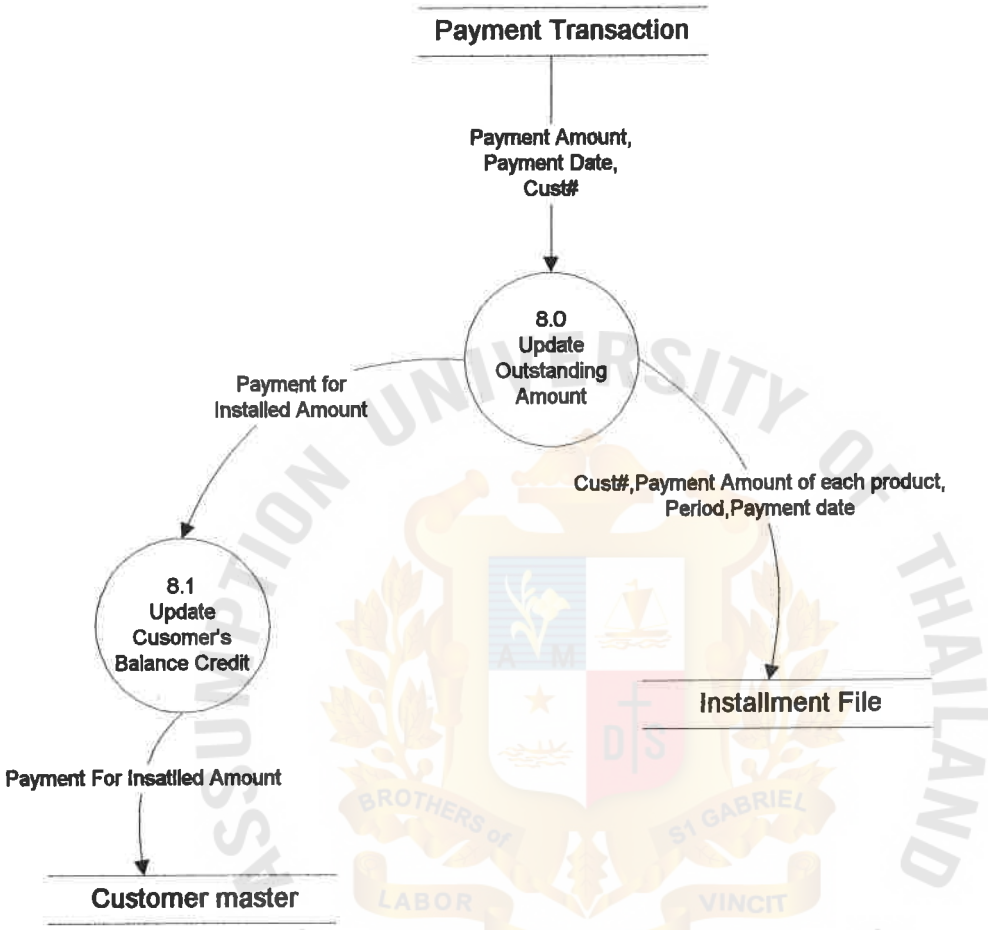

Figure A-10 : Process Update Outstanding Amount

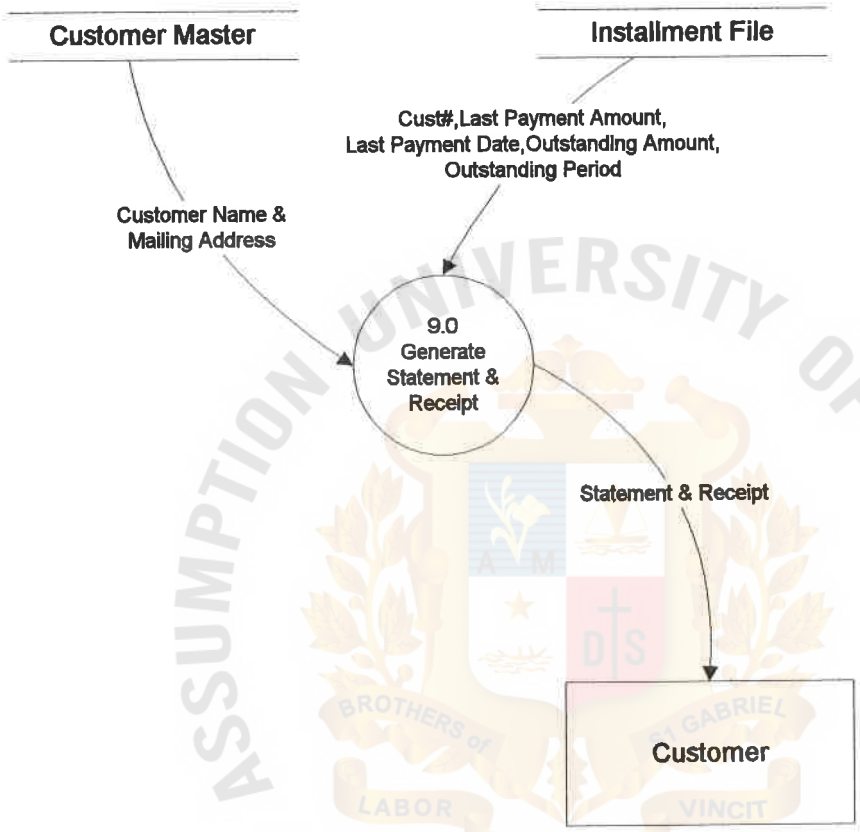

Figure A-11 : Process Generate Statement & Receipt

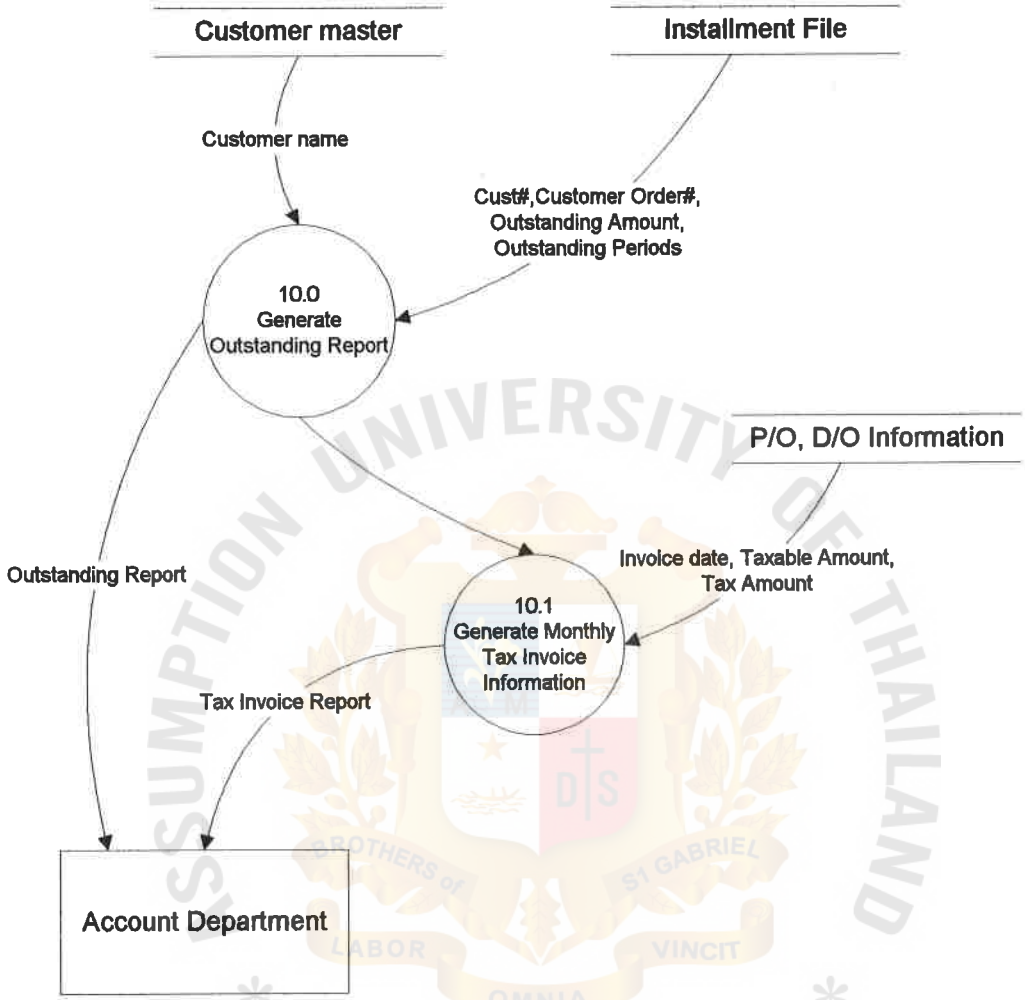

Figure A-12 : Process Generate Financial Reports For Account Department

APPENDIX B

File Layout

File Layouts

Table 1 Customer Master File

Column Name	Data Type	Length	Description
Cust_Id	Numeric	6	Customer Identification Code
F_name	Character	30	Customer First Name
L_name	Character	30	Customer Last Name
Title	Numeric	2	Title Code
Occu	Numeric	2	Occupation Code
Sex	Character	1	Sex
B_date	Date	6	Date of Birth
H_add1	Character	30	Home Address Line 1
H_add2	Character	30	Home Address Line 2
H_add3	Character	30	Home Address Line 3
H_add4	Character	30	Home Address Line 4
H_phone	Character	30	Home Phone Number
Off_name	Character	30	Office Name
O_add1	Character	30	Office Address Line 1
O_add2	Character	30	Office Address Line 2
O_add3	Character	30	Office Address Line 3
O_add4	Character	30	Office Address Line 4
O_phone	Character	30	Office Phone Number
Tax_Id	Numeric	10	Tax Id number
Income	Numeric	2	Income Range Code
Pay_met	Character	2	Payment Method Code
Bank	Character	3	Bank Code
Branch	Numeric	3	Branch Code
Delivery	Character	1	Delivery Document To
Bank_Acct#	Numeric	10	Bank Account Number
Credit	Numeric	7	Credit Limit Amount
Bal_credit	Numeric	9,2	Balance Credit Limit Amount
Over_lim	Numeric	9,2	Over Credit Limit Amount

Table 2 Supplier Master File

Column Name	Data Type	Length	Description
Supp#	Numeric	6	Supplier Identification Code
S_name	Character	30	Supplier Name
S_add1	Character	30	Supplier Address Line 1
S_add2	Character	30	Supplier Address Line 2
S_add3	Character	30	Supplier Address Line 3
S_add4	Character	30	Supplier Address Line 4
S_phone	Character	30	Supplier Phone Number
S_fax	Character	30	Supplier Fasimile Number
Tax_Id	Numeric	10	Supplier Tax Id Code
Contact	Character	30	Name of Contact Person
Lead_time	Numeric	3	Lead Time (days)
Credit_term	Numeric	3	Credits Term (days)

Table 3 Product Master File

Column Name	Data Type	Length	Description
Prod_id	Numeric	6	Product Identification Code
Prod_Desc	Character	30	Product Description
Prod_type	Numeric	2	Product Type
Measure	Numeric	2	Unit of Measurement Code
Brand	Numeric	3	Product Brand Code
Model	Numeric	3	Product Model Code
R_sts	Character	1	Record Status

Table 4 Product Price Master File

Column Name	Data Type	Length	Description
Prod_id	Numeric	6	Product Identification Code
Supp#	Numeric	6	Suppler Identification Code
S_date	Date	6	Start of Effective Date
E_date	Date	6	End of Effective Date
Cost	Numeric	6	Product Cost
Price	Numeric	6	Product Price
No_month	Numeric	2	Number of Months
Discount	Numeric	2	Discount Percent

Table 5 Customer Order File

Column Name	Data Type	Length	Description
CO#	Numeric	8	Customer OrderCode
Cust_id	Numeric	6	Customer Identification Code
Prod_id	Numeric	6	Product Identification Code
O_Date	Date	6	Start of Effective Date
No_month	Numeric	2	Number of Months
No_unit	Numeric	3	Number of Unit
Inst_amt	Numeric	6	Installed Amount
CO_sts	Character	1	Customer Order Status
User_Id	Character	10	User Id for Key In Data

Table 6 Payment Transaction File

Column Name	Data Type	Length	Description
Cust_id	Numeric	6	Customer Identification Code
Pay_date	Date	6	Payment Date
Pay_amt	Numeric	8,2	Payment Amount
Pay_met	Character	2	Payment Method
Cheq#	Numeric	10	Cheque Number
Bank	Character	3	Bank Code
Branch	Numeric	3	Bank Branch Code
R_sts	Character	1	Record Status
User_ Id	Character	10	User Id for Key In Data
Input_date	Date	6	Input Date

Table 7 Installment File

Column Name	Data Type	Length	Description
Cust_id	Numeric	6	Customer Identification Code
CO#	Numeric	8	Customer Order Code
Prod_id	Numeric	6	Product Code
Inst_amt	Numeric	6	Installed Amount
S_date	Date	6	Start Date of Payment
L_date	Date	6	Last Date of Payment
No_month	Numeric	2	Number of Month
Accu_amt	Numeric	8,2	Accumulative Amount
Pen_amt	Numeric	8,2	Penalty Amount
Bal_amt	Numeric	8,2	Balance Amount
Bal_month	Numeric	2	No of Balance Month

Table 8 P/O, D/O File

Column Name	Data Type	Length	Description
PO#	Numeric	8	P/O Number
DO#	Numeric	8	D/O Number
Supp#	Numeric	6	Supplier
Cust_Id	Numeric	6	Customer Identification Code
CO#	Numeric	8	Customer Order Code
Prod_Id	Numeric	6	Product Code
PO_date	Date	6	P/O Date
Deli_date	Date	6	Delivery Date
No_units	Numeric	3	Number of Units
PO_amt	Numeric	9,2	P/O Amount
PO_sts	Character	1	P/O Status
Rea_cod	Numeric	2	Reason Code
User_Id	Character	10	User Id. For Issur Invoice
PO_issue	Date	6	P/O Issue Date
Prt_sts	Character	1	Print P/O & D/O Status

Table 9 Bank Code File

Column Name	Data Type	Length	Description
Bank_code	Character	3	Bank Code
Bank_name	Character	30	Bank Name

Table 10 Bank Branch File

Column Name	Data Type	Length	Description
Bank_code	Character	3	Bank Code
Branch_code	Numeric	3	Branch Code
Branch_name	Character	30	Branch Name

Table 11 Brand Code File

Column Name	Data Type	Length	Description
Brand	Numeric	3	Brand Code
Brand_des	Character	30	Brand Description

Table 12 Model File

Column Name	Data Type	Length	Description
Brand	Numeric	3	Brand Code
Model	Numeric	3	Model Code
Model_des	Character	30	Model Description

Table 13 Title Code File

Column Name	Data Type	Length	Description
Title	Numeric	2	Title Code
Title_des	Character	20	Title Description

Table 14 Income Range File

Column Name	Data Type	Length	Description
Income	Numeric	2	Income Range Code
Income_ran	Character	20	Income Range

Table 15 Occupation File

Column Name	Data Type	Length	Description
Occu	Numeric	3	Occupation Code
Occu_des	Character	30	Occupation Description

Table 16 Payment Method File

Column Name	Data Type	Length	Description
Pay_met	Character	2	Payment Method Code
Pay_des	Character	30	Payment Method Description

Table 17 Product Type File

Column Name	Data Type	Length	Description
Prod_type	Numeric	2	Product Type Code
Type_des	Character	30	Product Type Description

Table 18 Reason Code File

Column Name	Data Type	Length	Description
Rea_cod	Numeric	3	Reason Code
Rea_des	Character	30	Reason Code Description

Table 19 Unit of Measurement File

Column Name	Data Type	Length	Description
Unit	Numeric	2	Unit of Measurement Code
Unit_des	Character	15	Unit of Measurement Description

APPENDIX C

Screen Layout

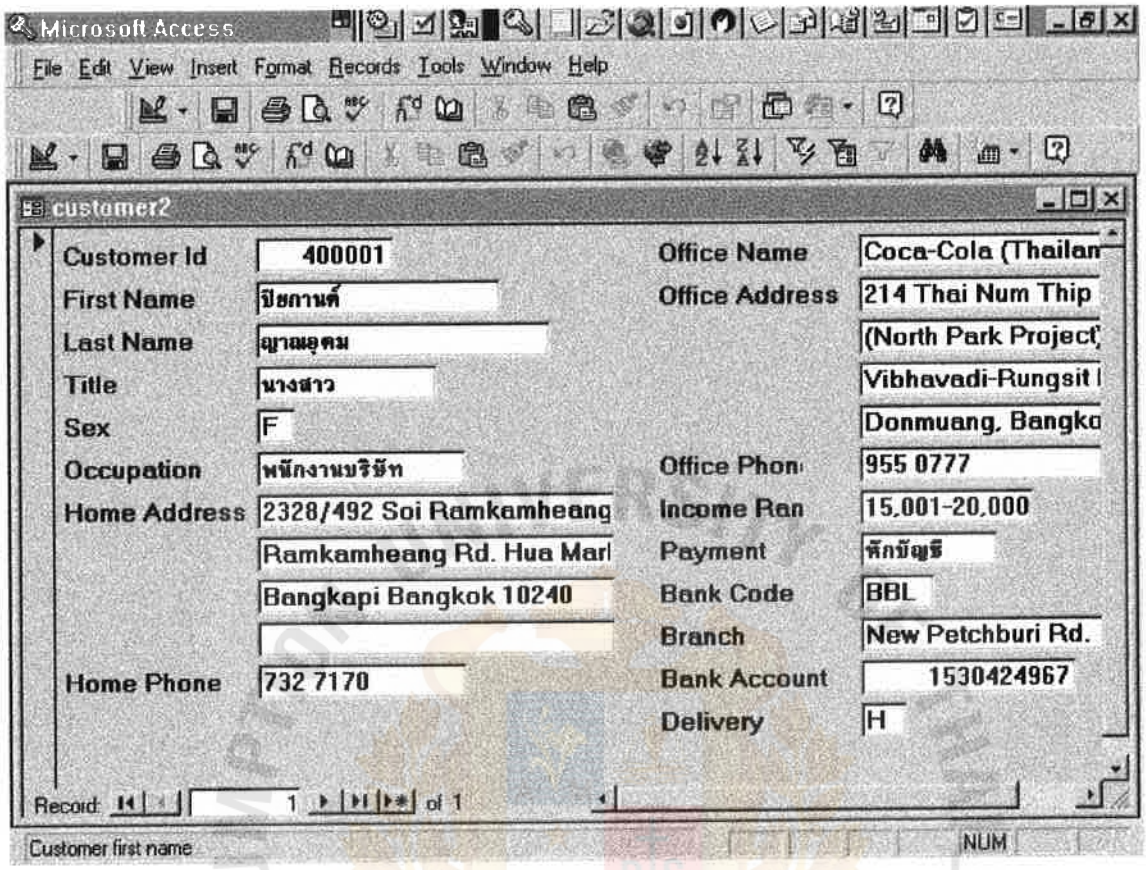

Figure C-1 : Customer Information Entry

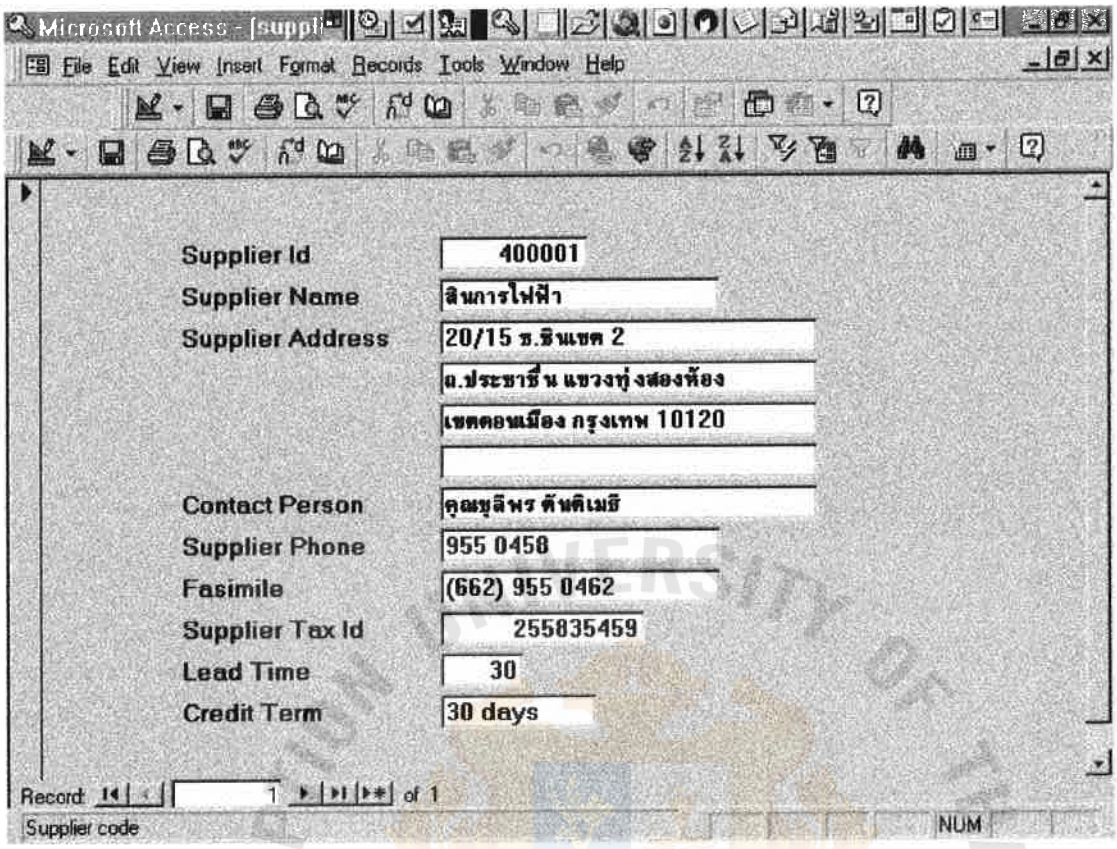

Figure C-2 : Supplier Information Entry Screen

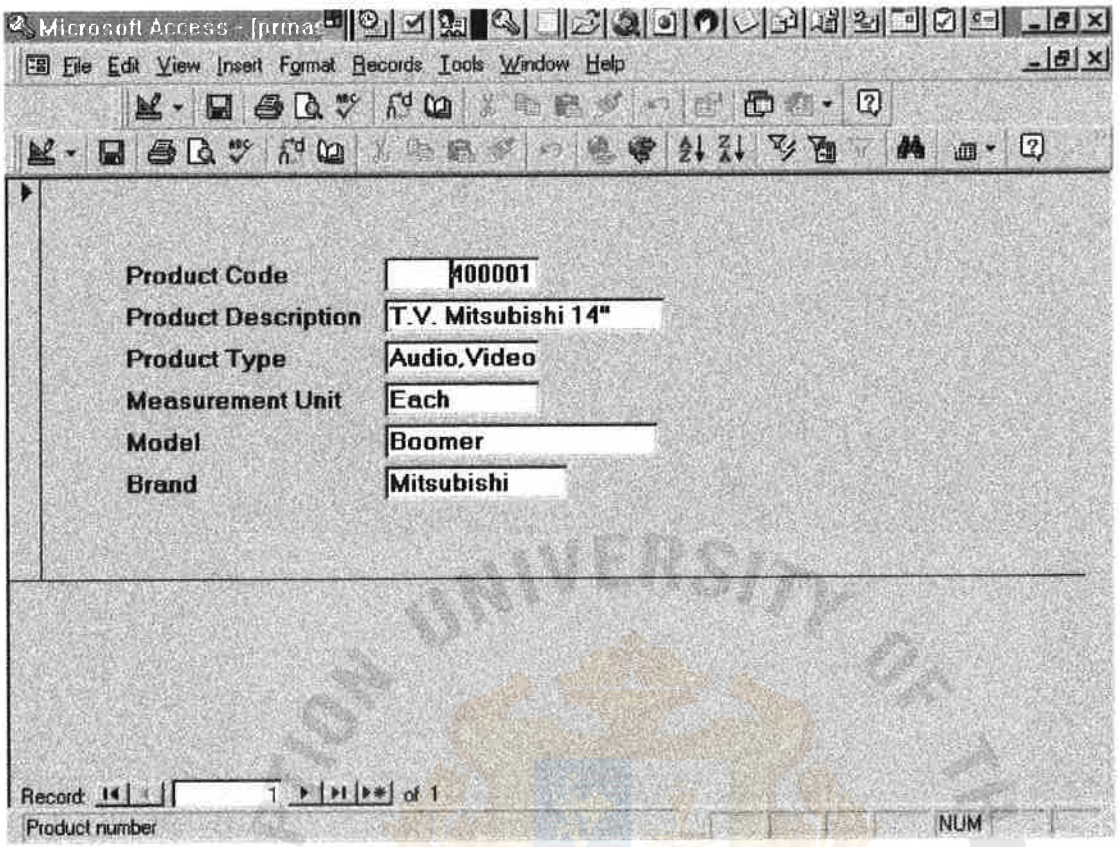

Figure C-3 : Product Master Information Entry Screen

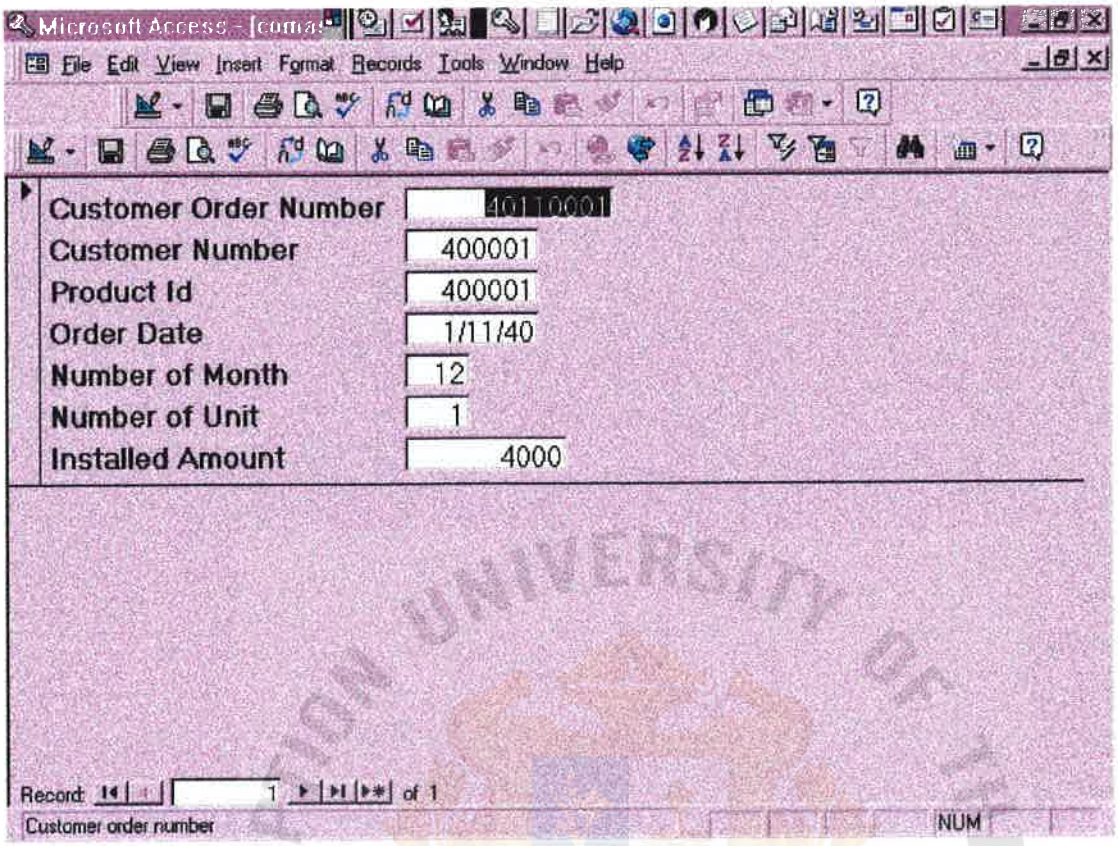

Figure C-4 : Customer Order Information Entry Screen

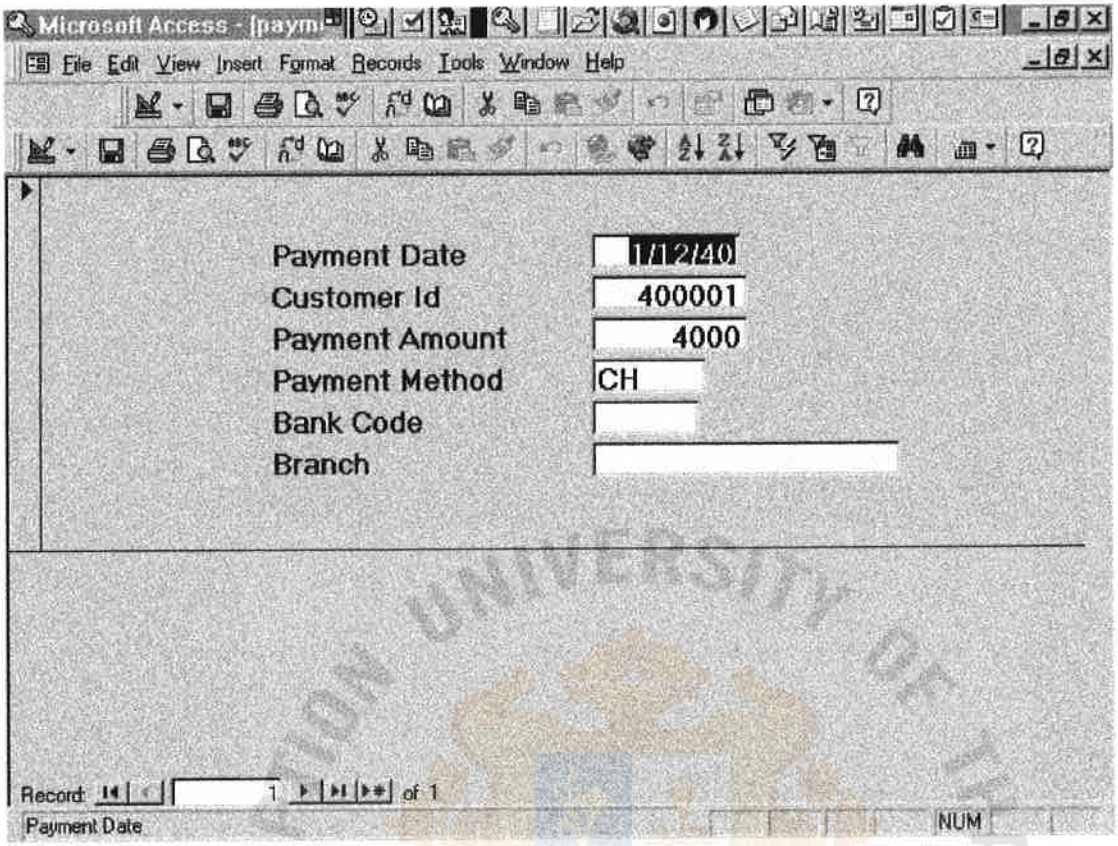

Figure C-5 : Payment Transaction Information Entry

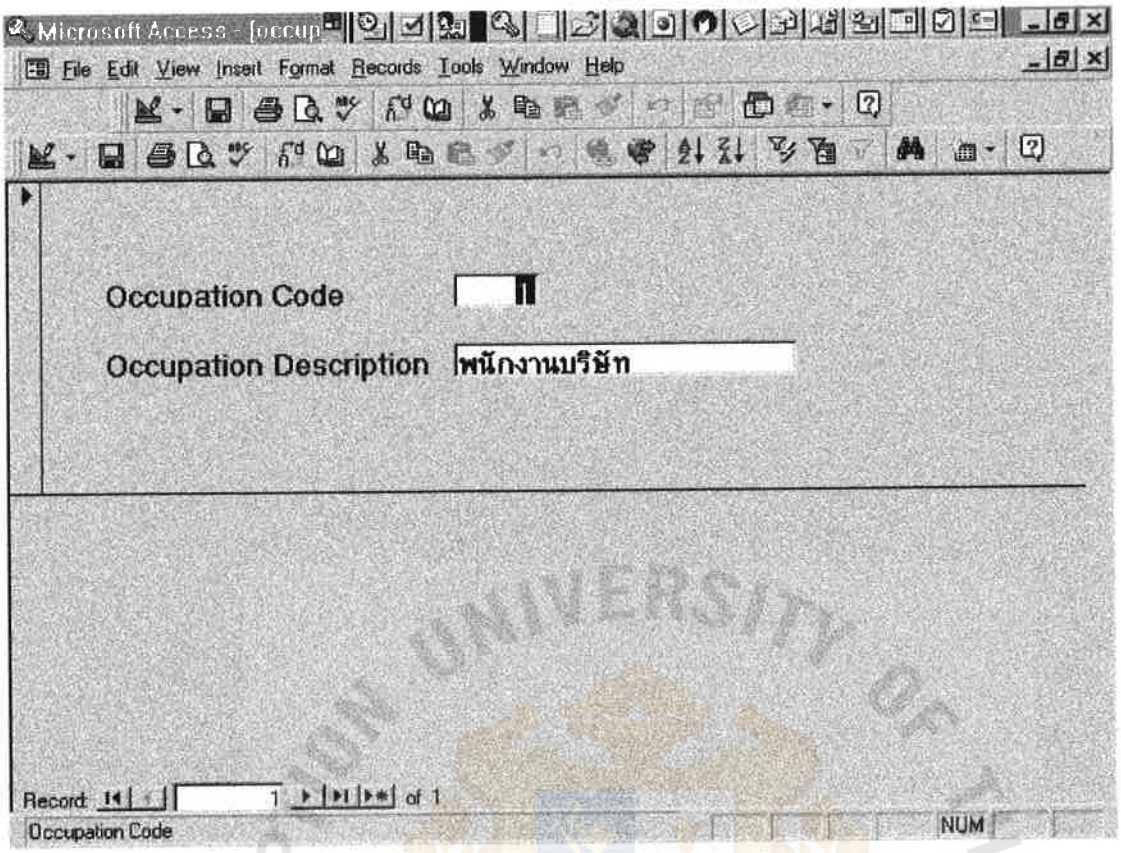

Figure C-6 : Occupation Code Entry Screen

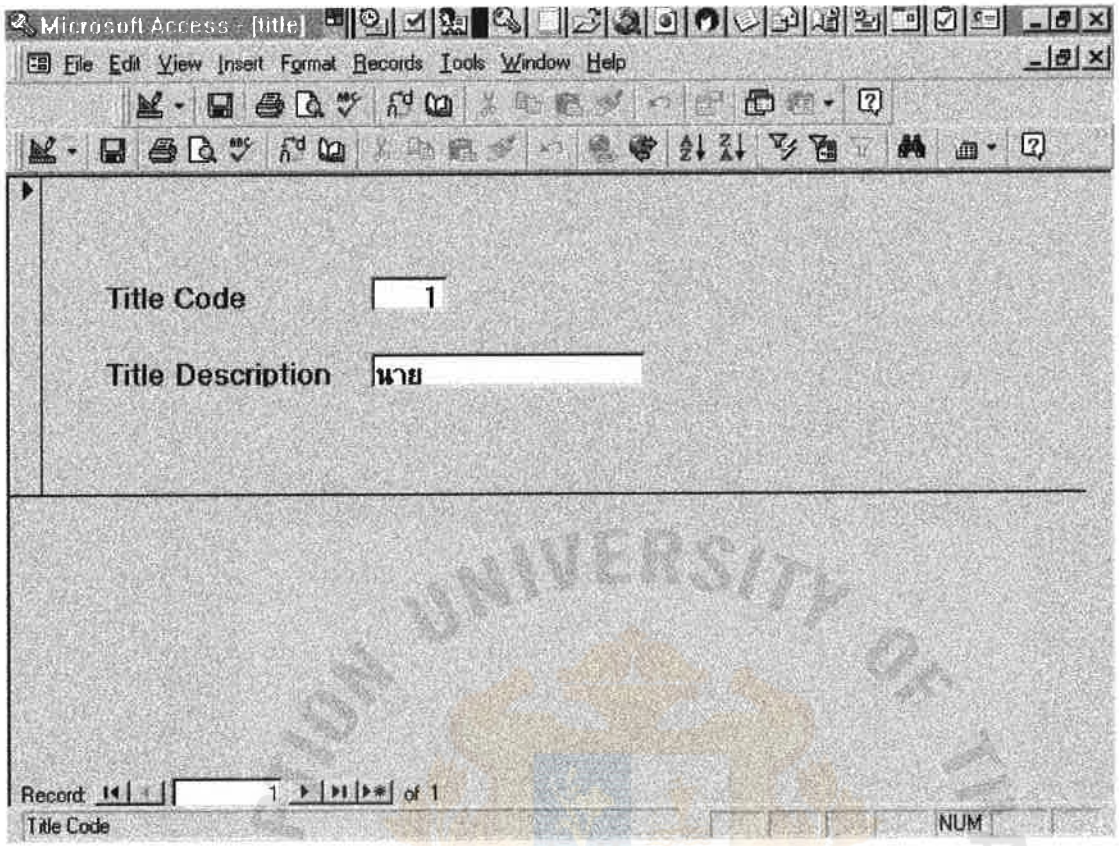

Figure C-7 : Title Code Entry Screen

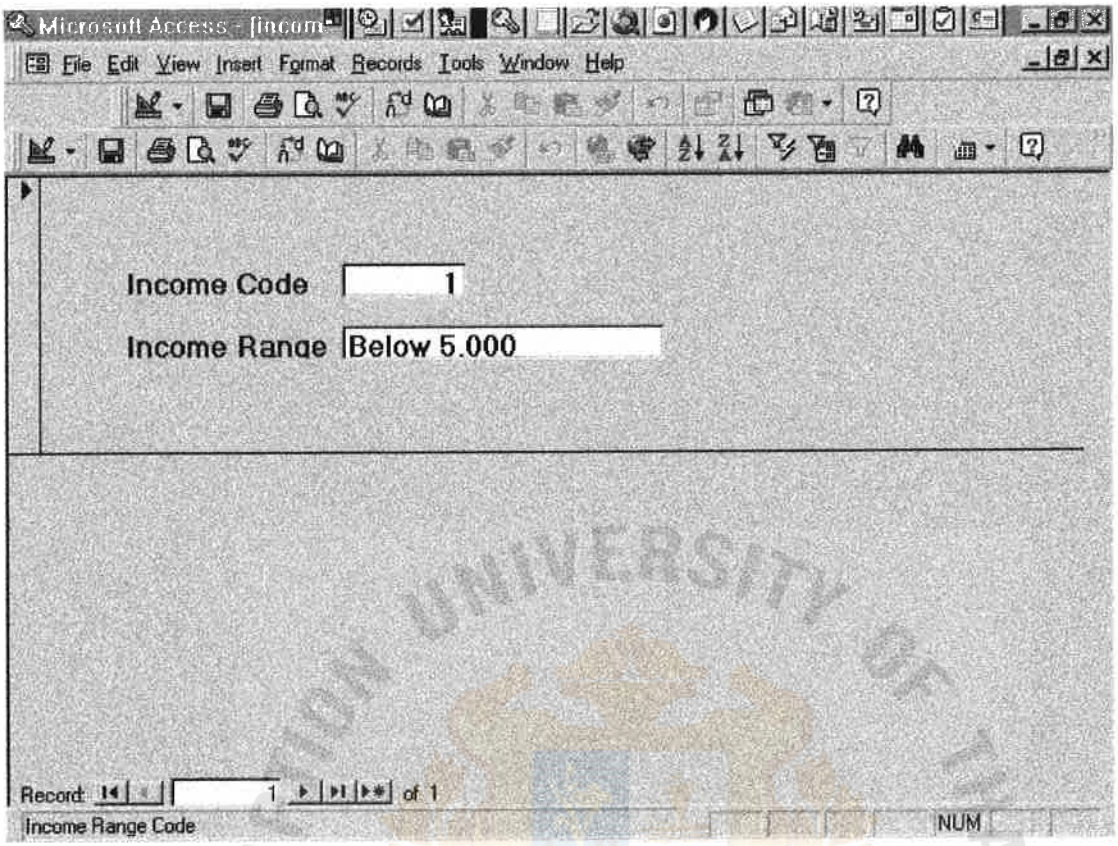

Figure C-8 : Income Range Entry Screen

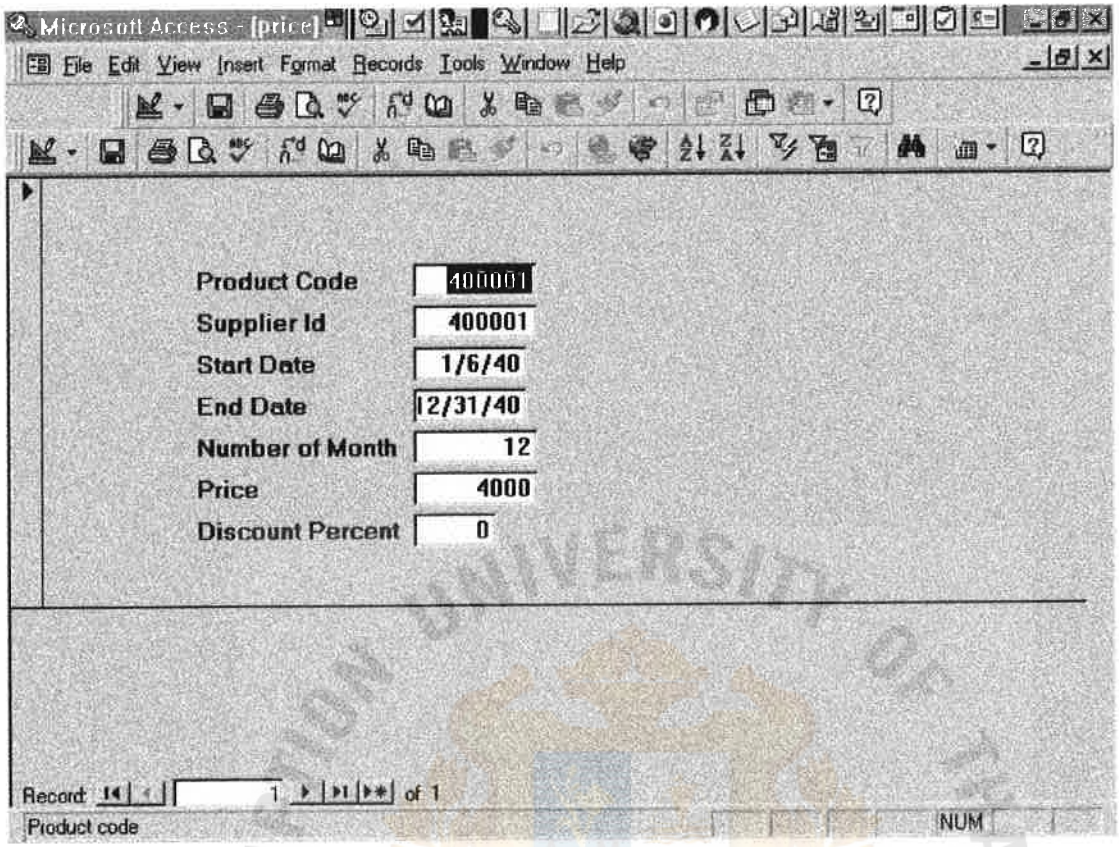

Figure C-9 : Product Price Entry Screen

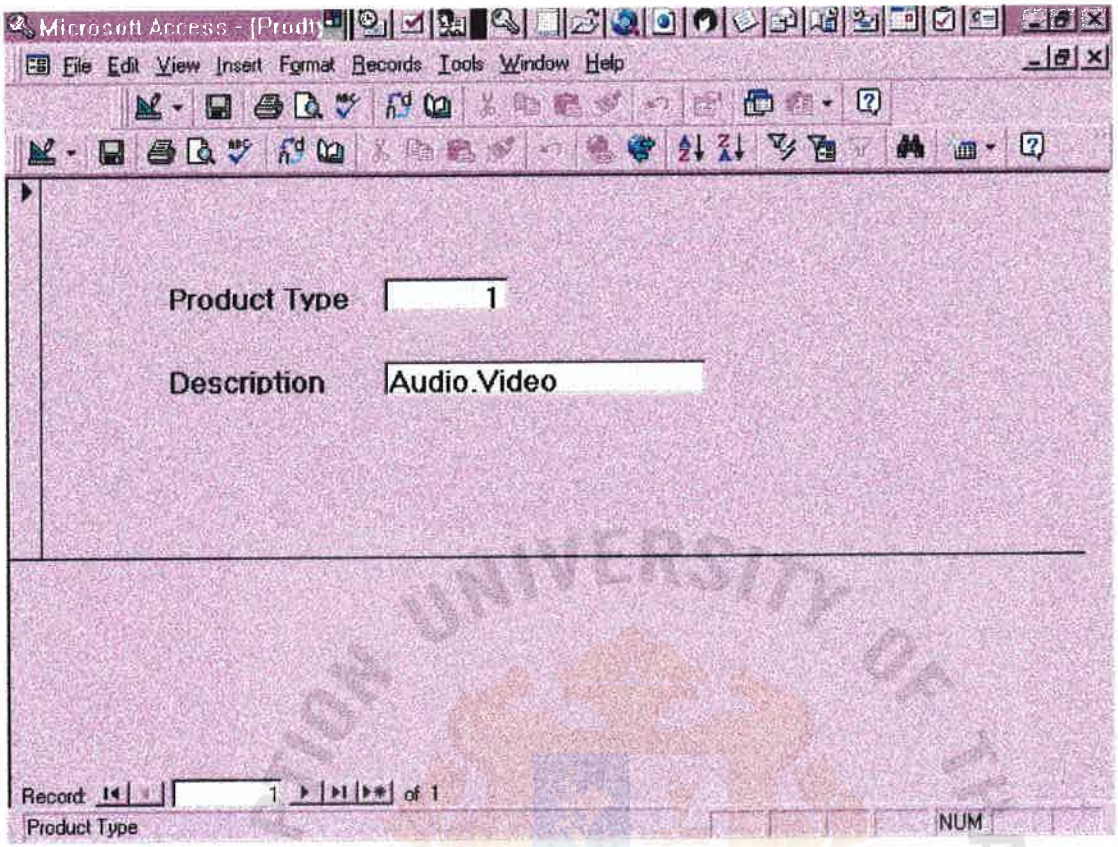

Figure C-10 : Product Type Entry Screen

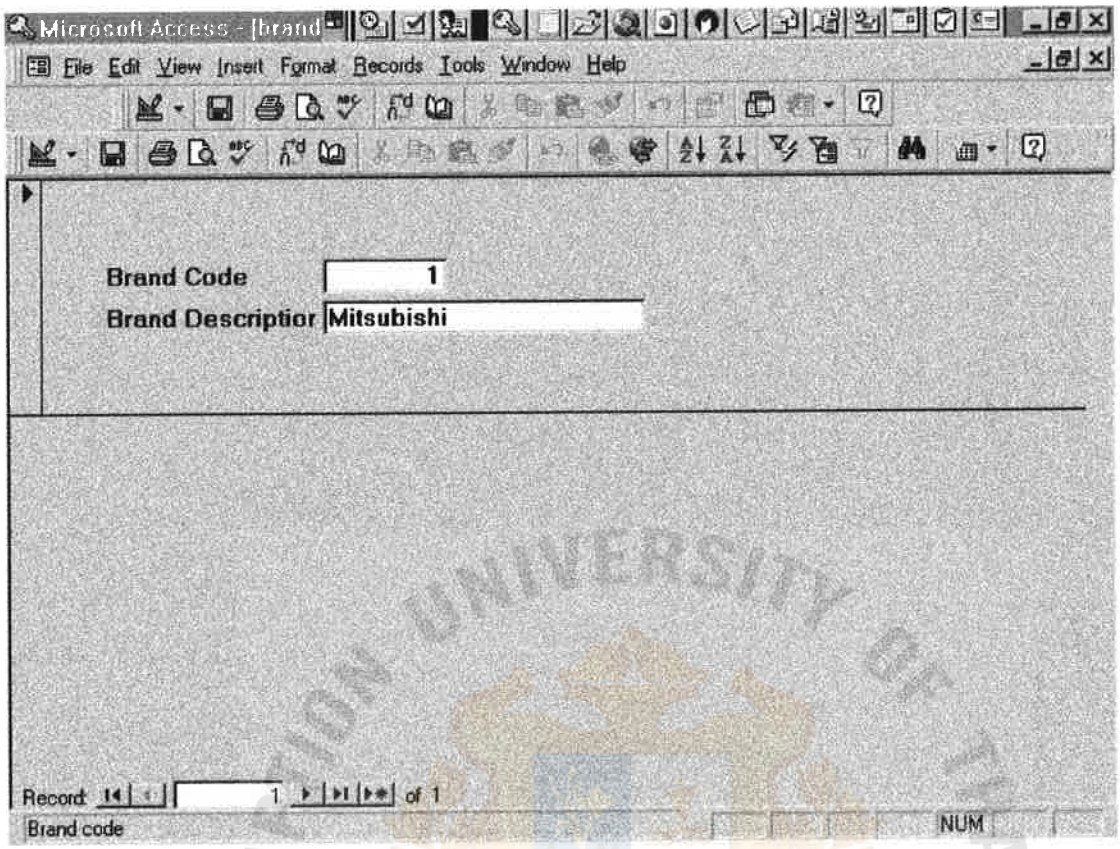

Figure C-11 : Brand Code Entry Screen

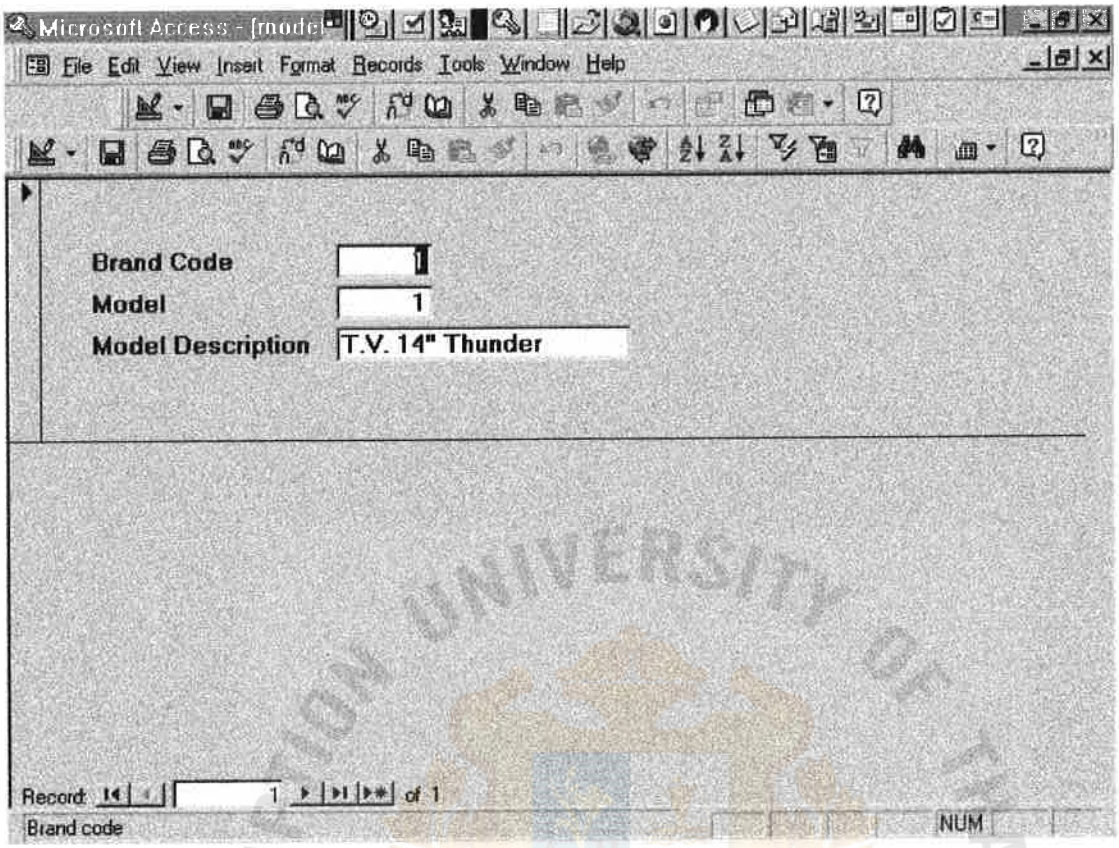

Figure C-12 : Model Code Entry Screen

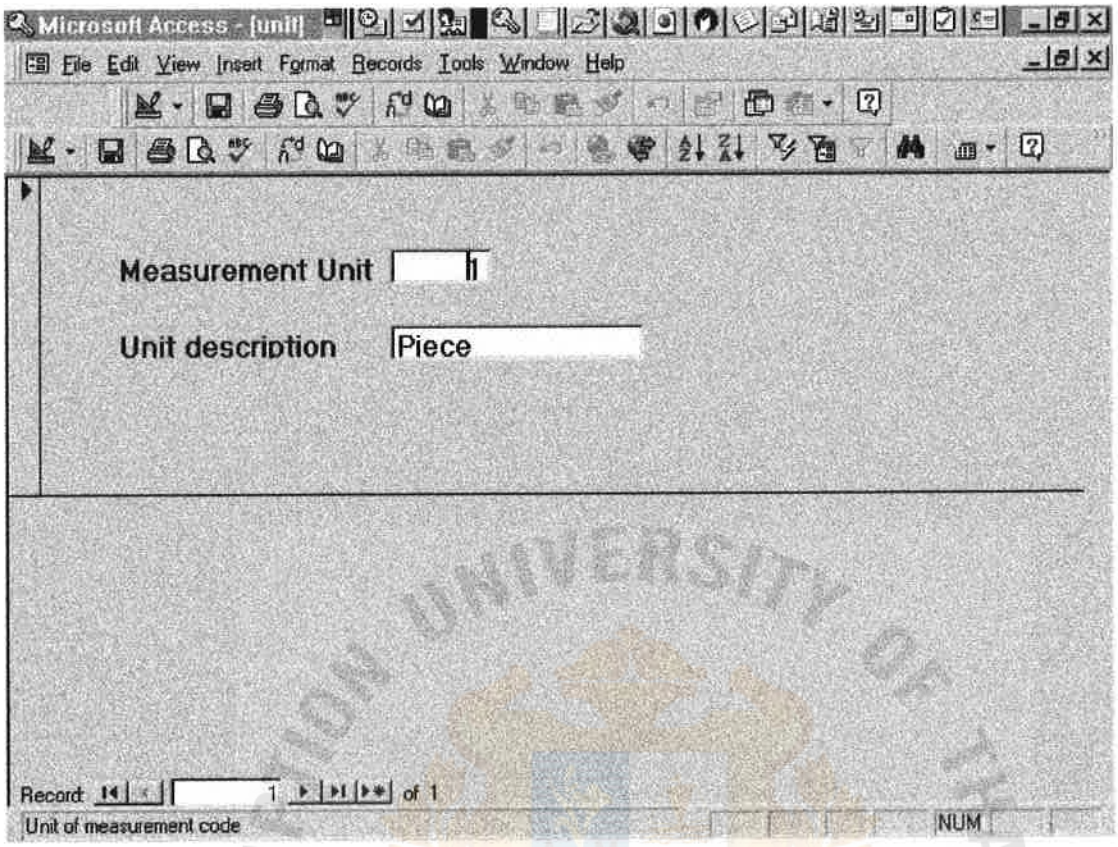

Figure C-13 : Unit of Measurement Entry Screen

APPENDIX D

Report Layout

Program Id : INSP001

User Id : Montikarn

Best Choice Co. Ltd.

Installment System

Daily Customer Order Report

As of date : 1/11/40

Page : 1

Date : 1/12/40

Time : 15:20:05

No.	Order Date	C/O#	Customer Id.	Customer Name	Product Code	Product Description	No. of Units	No. of Month	C/O Amount	Installed Amount
1	1/11/40	40110001	400001	ปิยกานต์ ญาณอุดม	400001	T.V. Mitsubishi 14" Thunder	1	6	9,000.00	1,500.00
2	1/11/40	40110002	400012	จารุมน ลิ่วเฉลิม	400020	Air Conditioned National 12000 BTU	1	12	30,000.00	2,500.00
3	1/11/40	40110003	400105	จิตรา สาครศรี	400050	Washing Machine Toshiba Turbo	1	10	15,000.00	1,500.00
						*** Total ***			54,000.00	5,500.00

Program Id : INSP002

User Id : Nuthanart

Best Choice Co. Ltd.

Installment System

Daily Payment Transaction Report

As of date : 15/11/40

Page : 1

Date : 15/11/40

Time : 15:20:05

No.	Payment Date	Customer Id.	Customer Name	Payment Method	Payment Amount	Bank Code	Branch	User Id.	Input Date	Record Status
1	15/11/40	400001	ปิยกานต์ ญาณอุดม	CH	3,000.00			Montikarn	15/11/40	
2	15/11/40	400012	จารุมน ลิ่วเฉลิม	AC	2,500.00	BBL	Surawongse	Montikarn	15/11/40	
3	15/11/40	400105	จิตรา สาครศรี	AC	1,500.00	BBL	Samyod	Montikarn	15/11/40	
			*** TOTAL ***		7,000.00					

Program Id : INSP016
User Id : Montikarn

Best Choice Co. Ltd.
Installment System
Payment History by Customer
As of date : 1/12/40

Page : 1
Date : 1/12/40
Time : 16:40:15

Customer : 40020 นาย สุชาติ เจริญชัยกุล

No.	Payment Date	Payment Method	Payment Amount	Bank Code	Bank Branch	Input Date	User Id.
1	1/6/40	AC	1,500.00	BBL	Plubplachai	1/6/40	Nuthanart
2	1/7/40	AC	1,500.00	BBL	Plubplachai	1/7/40	Nuthanart
3	1/8/40	AC	1,500.00	BBL	Plubplachai	2/8/40	Montikarn
4	1/9/40	AC	1,500.00	BBL	Plubplachai	1/9/40	Nuthanart
5	1/10/40	AC	1,500.00	BBL	Plubplachai	1/10/40	Nuthanart
6	1/11/40	AC	1,500.00	BBL	Plubplachai	1/11/40	Nuthanart
7	1/12/40	AC	1,500.00	BBL	Plubplachai	1/12/40	Nuthanart
	TOTAL		**10,500.00**				

Program Id : INSP022
User Id : Thamanart

Best Choice Co. Ltd.
Installment System
Customer Credit Information
As of date : 1/12/40

Page : 1
Date : 1/12/40
Time : 11:20:12

No.	Customer Id.	Customer Name	Occupation	Income Range	Credit Limit	Balance Credit	Over Credit
1	400001	ปิยกานต์ ญาณอุดม	Company Staff	15,001-20,000	30,000	24,000.00	0
2	400012	จารุมน ลิ่วเฉลิม	รับราชการ	10,001-15,000	30,000	2,500.00	0
3	400105	จิตรา สาครศรี	Company Staff	20,001-25,000	50,000	36,500.00	0

Program Id : INSP010

User Id : Thamanart

Best Choice Co. Ltd.

Installment System

Installment Information by Customer

As of date : 30/11/40

Page : 1

Date : 1/12/40

Time : 15:20:05

No.	Customer Id.	Customer Name	C/O#	Product Id.	Installed Amount	Start Date	End Date	No. of Months	Accumulative Amount	Penalty Amount	Balance Amount	Balance Months
1	400001	ปิยกานต์ ญาณอุดม	40110001	400001	9,000.00	15/11/40	15/4/41	6	3,000.00	0	6,000.00	4
2	400012	จารุมน ลิ่วเฉลิม	40110002	400020	30,000.00	15/11/40	15/10/41	12	2,500.00	0	27,500.00	11
3	400105	จิตรา สาครศรี	40110003	400050	15,000.00	15/11/40	15/8/41	10	1,500.00	0	13,500.00	9
		***TOTAL ***			54,000.00				7,000.00		47,000.00	

Program Id : INSP020

User Id : Montikarn

Best Choice Co. Ltd.

Installment System

Outstanding Report by Customer

As of date : 30/11/40

Page : 1

Date : 1/12/40

Time : 15:20:05

No.	Customer Id.	Customer Name	C/O Number	Product Code	Product Description	No. of Month	C/O Amount	Installed Amount	Accu. Amount	Last Pay Date	Outstanding Amount
1	390110	สิทธิกร นพคุณ	40010028	390069	T.V. Mitsubishi 29" Boomer	12	30,000	2,500	7,500.00	1/3/40	22,500.00
2	390280	เอกพจน์ เจนกิจการ	40010040	400020	Air Conditioned National 24000 BT	12	36,000	3,000	12,000.00	1/4/40	24,000.00
3	390984	ใหม่ คงดี	40010076	400050	Washing Machine Toshiba Turbo	10	15,000	1,500	3,000.00	1/2/40	12,000.00
					*** Total ***		81,000	7,000	22,500.00		58,500.00

Program Id : INSP021
User Id : Montikarn

Best Choice Co. Ltd.
Installment System
Daily P/O, D/O Report
As of date : 30/11/40

Page : 1
Date : 1/12/40
Time : 13:20:10

No.	Order Date	C/O#	Customer Id.	Customer Name	P/O#	D/O#	Product Code	Product Description	No. of Units	P/O Amount	Delivery Date
1	1/11/40	40110010	400020	ปฐมพร ขุนทองเอก	400030	400030	400001	T.V. Mitsubishi 14" Thunder	1	9,000.00	10/11/40
					400031	400031	400078	Video Karaoke Panasonic	1	15,000.00	12/11/40
2	1/11/40	40110002	400012	จารุมน ลิ่วเฉลิม	400032	400032	400020	Air Conditioned National 12000 BTU	1	30,000.00	15/11/40
3	1/11/40	40110003	400105	จิตรา สาครศรี	400033	400033	400050	Washing Machine Toshiba Turbo	1	15,000.00	15/11/40
								*** Total ***		69,000.00	

Program Id : INSP023
User Id : Nuthanart

Best Choice Co. Ltd.
Installment System
Report to BBL for Account Deduction
Due date : 1/12/40

Page : 1
Date : 27/11/40
Time : 09:40:15

No.	Customer Id	Customer Name	Due Amount	Bank Account#
1	400200	นาย สุชาติ เจริญชัยกุล	1,500.00	1530424967
2	400020	นาย ปฐมพร ขุนทองเอก	3,000.00	1010654834
3	400012	น.ส.จารุมน ลิ่วเฉลิม	1,500.00	1640854597
4	400105	นางจิตรา สาครศรี	1,500.00	1750954573
		Total	7,500.00	

Program Id : INSP025 **Best Choice Co. Ltd.** Page : 1

User Id : Thamanart **Installment System** Date : 1/12/40

Purchased Product by Product & Brand Time : 15:20:05

As of date : 1/6/40 - 30/9/40

Product Type : Audio, Video

Brand	Product Code	Product Description	No. of Units	C/O Amount
Mitsubishi	400001	T.V. Mitsubishi 14" Thunder	30	270,000.00
	400010	CompactDisc Player	20	50,000.00
Panasonic	400031	Video Karaoke Panasonic	15	15,000.00
	400033	Laser Disc Player	10	250,000.00
		*** Total ***		585,000.00

Product Type : Home Appliance

Brand	Product Code	Product Description	No. of Units	C/O Amount
Toshiba	400050	Washing Machine Toshiba Turbo	10	150,000.00
	400062	Vacuum Cleaner	8	40000
		*** Total ***		190,000.00

Program Id : INSP026

User Id : Montikarn

Best Choice Co. Ltd.

Installment System

Aging Payment Report by Customer (< 30 days)

As of date : 30/11/40

Page : 1

Date : 1/12/40

Time : 15:20:05

No.	Customer Id.	Customer Name	C/O Number	Product Code	Product Description	No. of Month	C/O Amount	Installed Amount	Accu. Amount	Last Pay Date	Outstanding Amount
1	390110	สราวุธ อุดมกิจ	40010045	390069	T.V. Mitsubishi 29" Boomer	12	30,000	2,500	7,500.00	1/11/40	22,500.00
2	390280	เอกพจน์ เจนกิจการ	40010040	400020	Air Conditioned National 24000 BT	12	36,000	3,000	12,000.00	1/11/40	24,000.00
3	390984	ใหม่ คงดี	40010076	400050	Washing Machine Toshiba Turbo	10	15,000	1,500	3,000.00	1/11/40	12,000.00
					*** Total ***		81,000	7,000	22,500.00		58,500.00

Program Id : INSP026
User Id : Montikam

Best Choice Co. Ltd.
Installment System
Aging Payment Report by Customer (31-60 days)
As of date : 30/11/40

Page : 1
Date : 1/12/40
Time : 15:20:05

No.	Customer Id.	Customer Name	C/O Number	Product Code	Product Description	No. of Month	C/O Amount	Installed Amount	Accu. Amount	Last Pay Date	Outstanding Amount
1	390025	ถิระชัย จารุวัฒนา	40010026	390043	Whirlpool Refrigerator	12	30,000	2,500	5,000.00	15/10/40	25,000.00
2	390048	วิไล สินที	40010041	400020	Air Conditioned National 24000 BT	12	36,000	3,000	12,000.00	20/10/40	24,000.00
3	390059	จิราพร อรุณนภา	40010096	400050	Washing Machine Toshiba Turbo	10	15,000	1,500	3,000.00	5/10/40	12,000.00
					*** Total ***		81,000	7,000	20,000.00		61,000.00

Program Id : INSP026

User Id : Montikarn

Best Choice Co. Ltd.

Installment System

Aging Payment Report by Customer (> 60 days)

As of date : 30/11/40

Page : 1

Date : 1/12/40

Time : 15:20:05

No.	Customer Id.	Customer Name	C/O Number	Product Code	Product Description	No. of Month	C/O Amount	Installed Amount	Accu. Amount	Last Pay Date	Outstanding Amount
1	390012	นภาพร บัวคำ	40010091	390067	Audio Set Panasonic	10	25,000	2,500	5,000.00	25/9/40	20,000.00
2	390047	ธรรมนูญ จิตต์มั่น	40010107	400014	Ericsson 338	12	36,000	3,000	12,000.00	15/9/40	24,000.00
3	400043	นพรัตน์ นามเนือง	4001029	400050	Washing Machine Toshiba Turbo	10	15,000	1,500	3,000.00	1/8/40	12,000.00
					*** Total ***		76,000	7,000	20,000.00		56,000.00

Program Id : INSP028 | **Best Choice Co. Ltd.** | Page : 1

User Id : Thamanart | **Installment System** | Date : 1/12/40

Product Margin by Product Type | Time : 15:20:05

As of date : 1/6/40 - 30/9/40

Product Type : Audio, Video

Brand	Product Code	Product Description	No of Month	Cost	Sales Price	Margin
Mitsubishi	400001	T.V. Mitsubishi 14" Thunde	6	8,000.00	9,000.00	1,000.00
			12	8,000.00	12,000.00	4,000.00
	400010	LaserDisc Player	5	8,500.00	10,000.00	1,500.00
			10	8,500.00	12,000.00	3,500.00

Program Id : INSP025

User Id : Thamanart

Best Choice Co. Ltd.

Installment System

Customer Over Credit Information

As of date : 1/12/40

Page : 1

Date : 1/12/40

Time : 11:20:12

No.	Customer Id.	Customer Name	Occupation	Credit Limit	Balance Credit	Over Credit	Authorizer
1	400001	ปิยกานต์ ญาณอุดม	Company Staff	30,000	0.00	6000	Tanit
2	400012	จารุมน ลิ่วเฉลิม	รับราชการ	30,000	0.00	7000	Somchai
3	400105	จิตรา สาครศรี	Company Staff	50,000	0.00	1000	Tirachai

APPENDIX E

Process Specification

PROCESS SPECIFICATION

Process 1.0 : Process Customer Information

```
BEGIN
        INPUT Cust_id
        FIND Cust_id IN Customer Master File
        IF Not Found
                APPEND New Customer Information
                ADD New Customer Information Record
        ELSE
                MODIFY Customer Information
                UPDATE Customer Information Record
        ENDIF
END
```

Process 2.0 : Process Customer Order

```
BEGIN
        INPUT Order Detail
        GENERATE CO#
        VALIDATE Cust_id
        VALIDATE Prod_id
        GET Product Price FROM Product Price File
        CALCULATE Inst_amt
        ADD New Customer Order Detail IN Customer Order File
END
```

Process 3.0 : Process Purchase Order

```
BEGIN
        READ Customer Order File
        GET Prod_id, No_unit
        READ Product Price File by Prod_id
        GET Supp#
        SEARCH for Supplier Detail FROM Supplier Master File
        GET Supplier Detail
        PRINT P/O , D/O Form
END
```

Process 4.0 : Process Input Product Information

```
BEGIN
        INPUT Prod_id
        FIND Product Information IN Product Master File
        IF Not Found
                APPEND New Product Information
                ADD New Product Information Record
        ELSE
                MODIFY Product Information
                UPDATE Product Information Record
        END
```

Process 4.1 : Process Input Product Price Information

```
BEGIN
        INPUT Prod_id
        FIND Prod_id IN Product Master File
        IF Not Found
                DISPLAY 'Invalid Product'
        ENDIF
        FIND Prod_id IN Product Price File
        IF Not Found
                APPEND New Product Price
                ADD New Product Price Record
        ELSE
                MODIFY Product Price Information
                UPDATE Product Price Record
        ENDIF
END
```

Process 5.0 : Process Calculate Installed Amount

```
BEGIN
        READ Customer Order Information with CO_sts = ' ' by CO# UNTIL EOF
        CALCULATE Inst_amt (Inst_amt=No_unit*Price)
        UPDATE Installment Record
        UPDATE Customer Order Record WITH CO_sts='C' (Completed)
END
```

Process 6.0 : Process Generate Report to Bank

```
BEGIN
        READ Installment File by Cust_id UNTIL EOF
        GET Cust_id
        SEARCH for Cust_id FROM Customer Master File
        IF Pay_met = 'AC'
                GET Bank_acct#
                CALCULATE Total Inst_amt
                PRINT Cust#, F_name, L_name, Bank_acct#, Total_amt
        ELSE
        READ Next Record
END
```

Process 7.0 : Process Payment Transaction

```
BEGIN
LABEL1: INPUT Cust_id, Pay_date
         SEARCH Cust_id FROM Customer Master File
         IF Not Found
                DISPLAY 'Invalid Cust_id' 'Do you wish to re-enter ? (Y/N)'
                IF INPUT='Y'
                        GOTO LBAEL1
                ELSE
                        GOTO END1
                ENDIF
         INPUT Pay_amt, Pay_met, Pay_date,
         UPDATE Payment Transaction Record
END1: END
```

Process 8.0 : Process Update Outstanding Amount

```
BEGIN
        READ Payment Transaction Record WITH R_sts=' ' by Cust_id UNTIL EOF
        SEARCH Cust_id FROM Installment File
        CALCULATE Bal_amt
        UPDATE Installment Record
        UPDATE Payment Transaction Record WITH R_sts='P' (Processed)
END
```

Process 9.0 : Process Generate Statement & Receipt

BEGIN

READ Installment Record by Cust_id UNTIL EOF

SEARH Cust_id FROM Customer Master File

GET Customer Name & Address

FOR each CO# & Prod_id, GET Bal_amt, Bal_month

CALCULATE Outstandind Amount

PRINT Statement of Account detail & Receipt

END

Process 10.0 : Process Generate Financial Reports for Account Department

BEGIN

READ Customer Order File

CALCULATE Total Installed Amount

GENERATE Sales Reports

READ Payment Transaction File

CALCULATE Sum of Payment Received by date

GENERATE Payment Received Report

END

APPENDIX F

Entity Relationship Diagrams

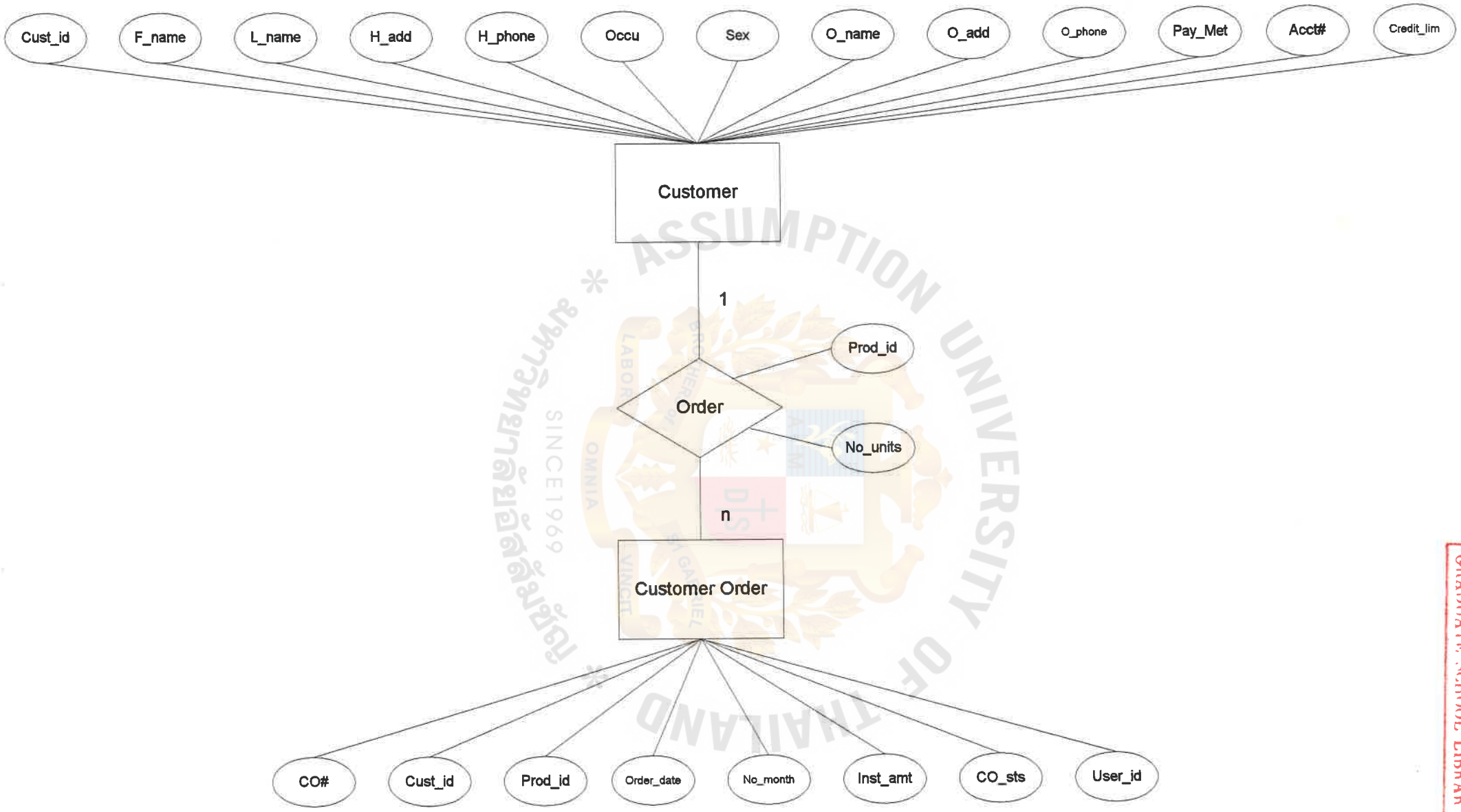

Figure F-1 : Entity Relationship Diagram

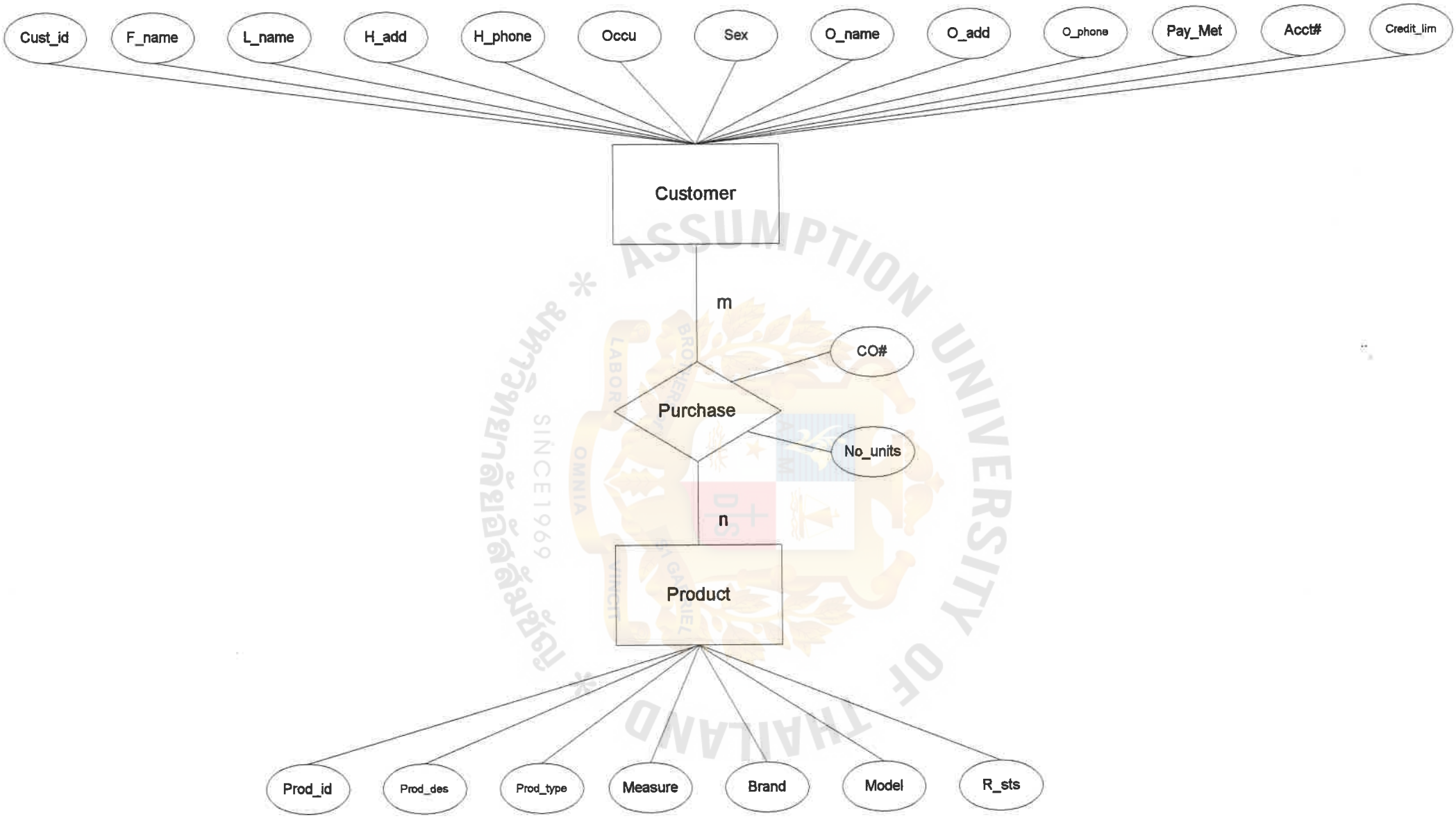

Figure F-2 : Entity Relationship Diagram

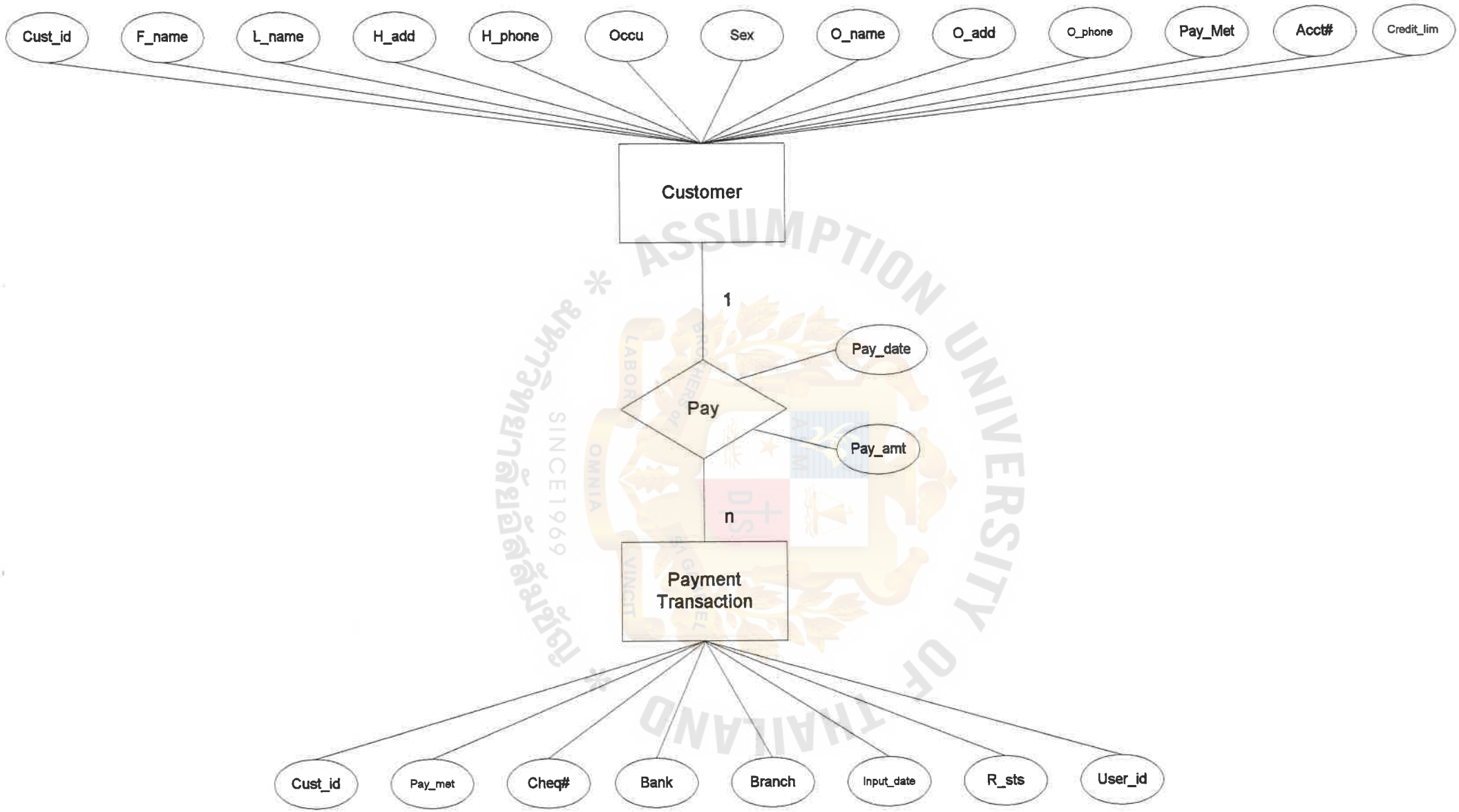

Figure F-3 : Entity Relationship Diagram

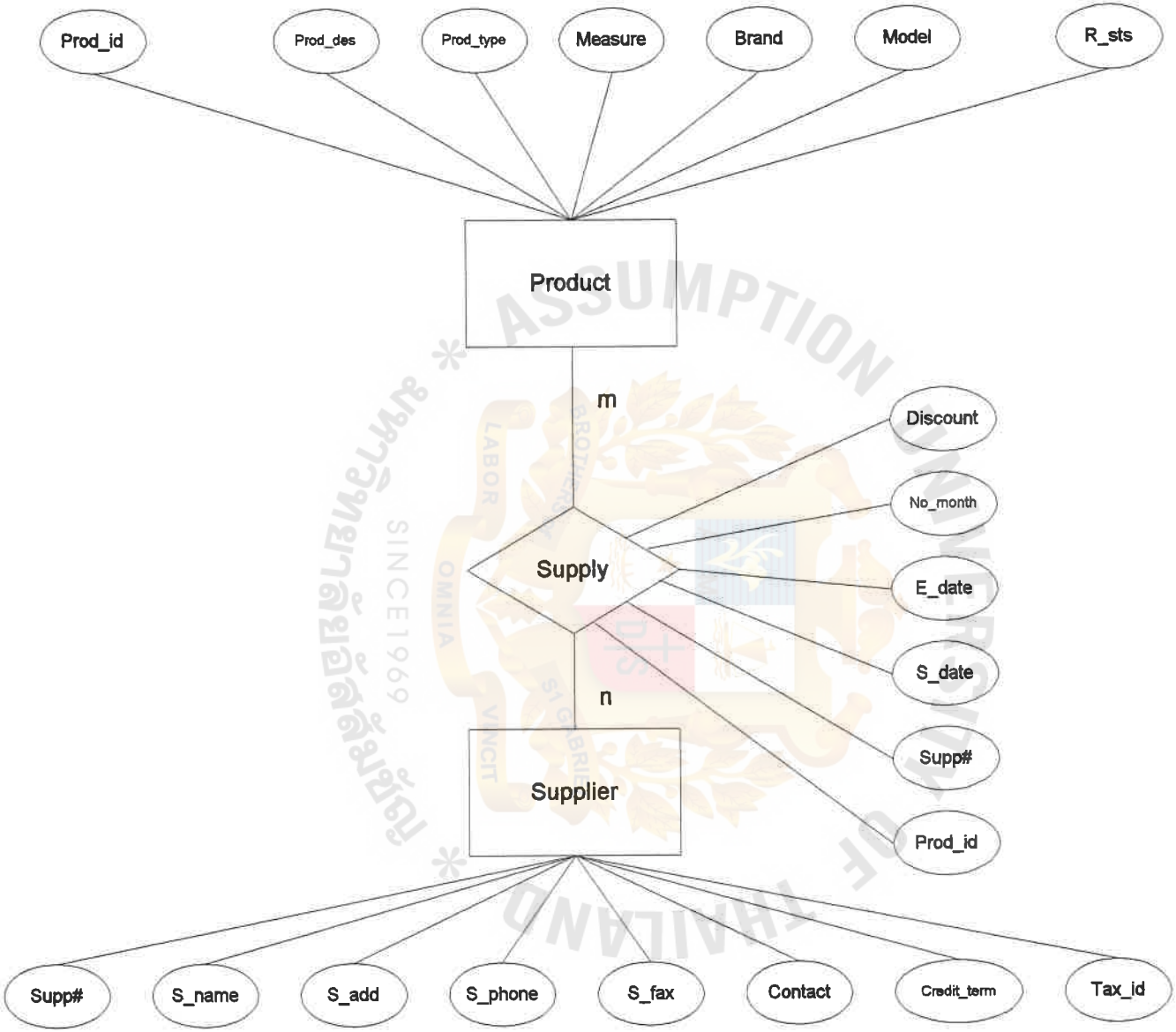

Figure F-4 : Entity Relationship Diagram

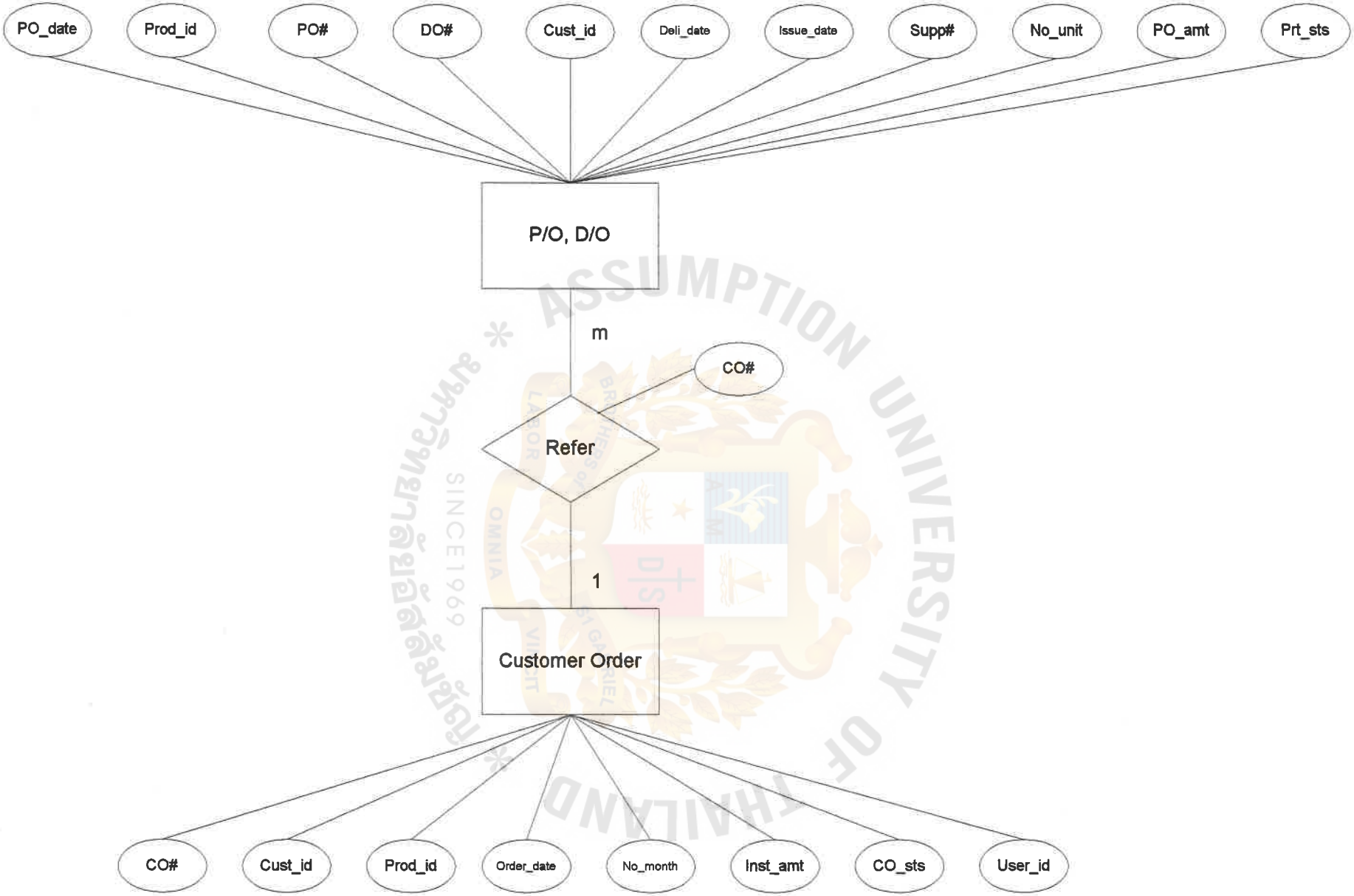

Figure F-5 : Entity Relationship Diagram

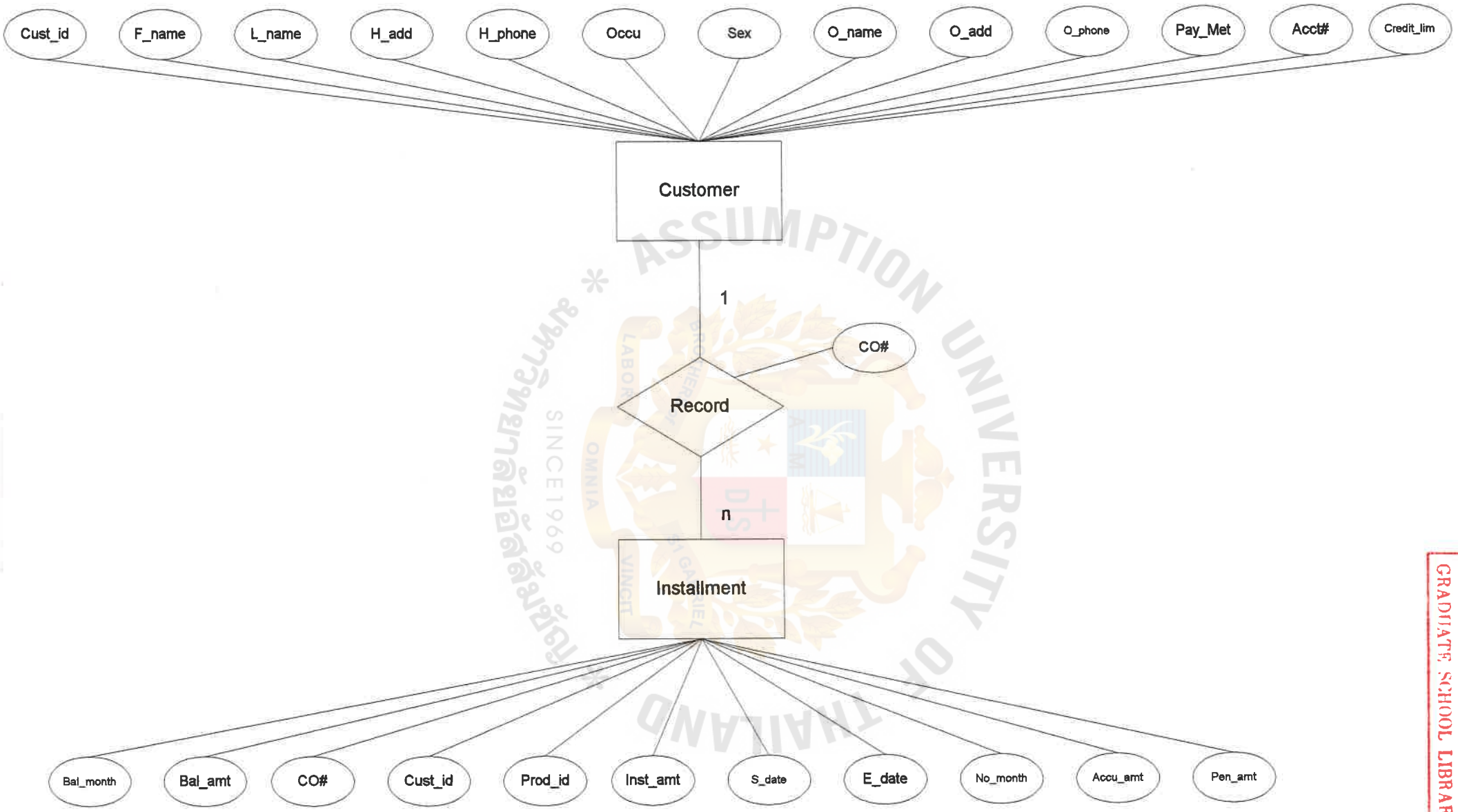

Figure F-6 : Entity Relationship Diagram

APPENDIX G

Menu Layout

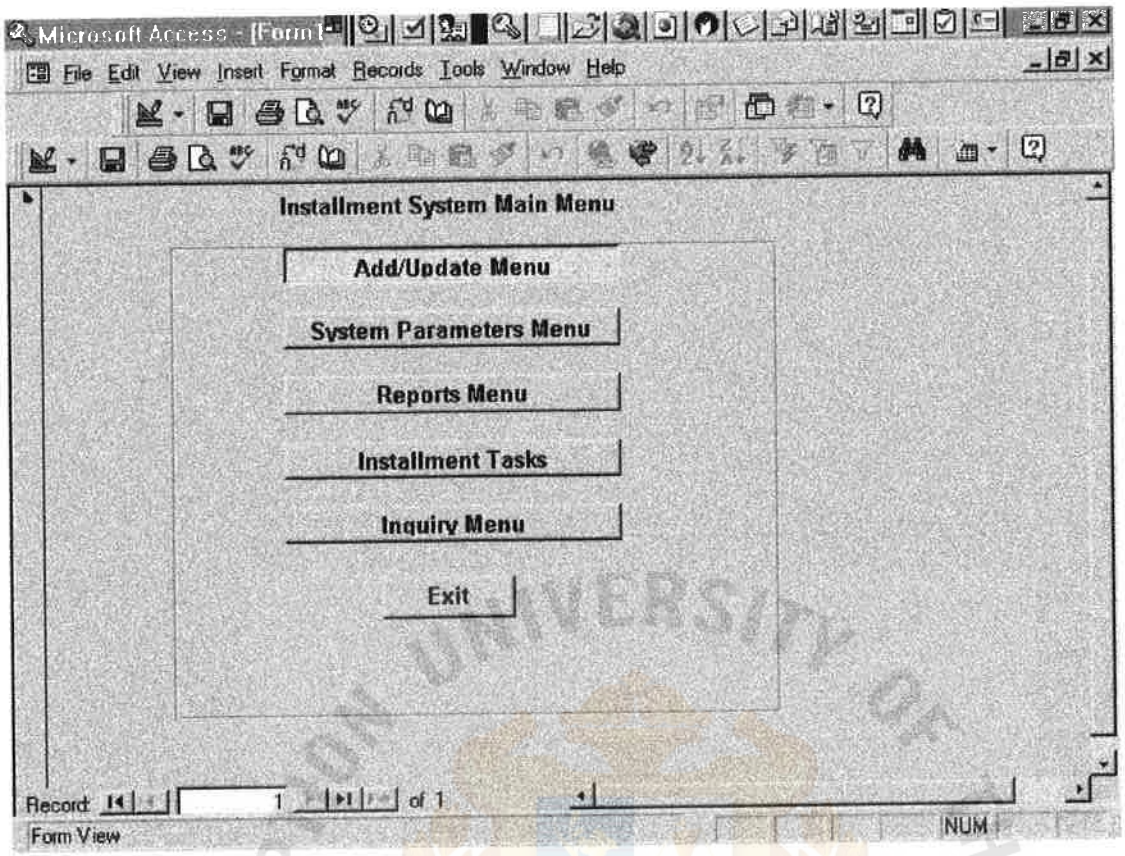

Figure G-1 : Main Menu Screen

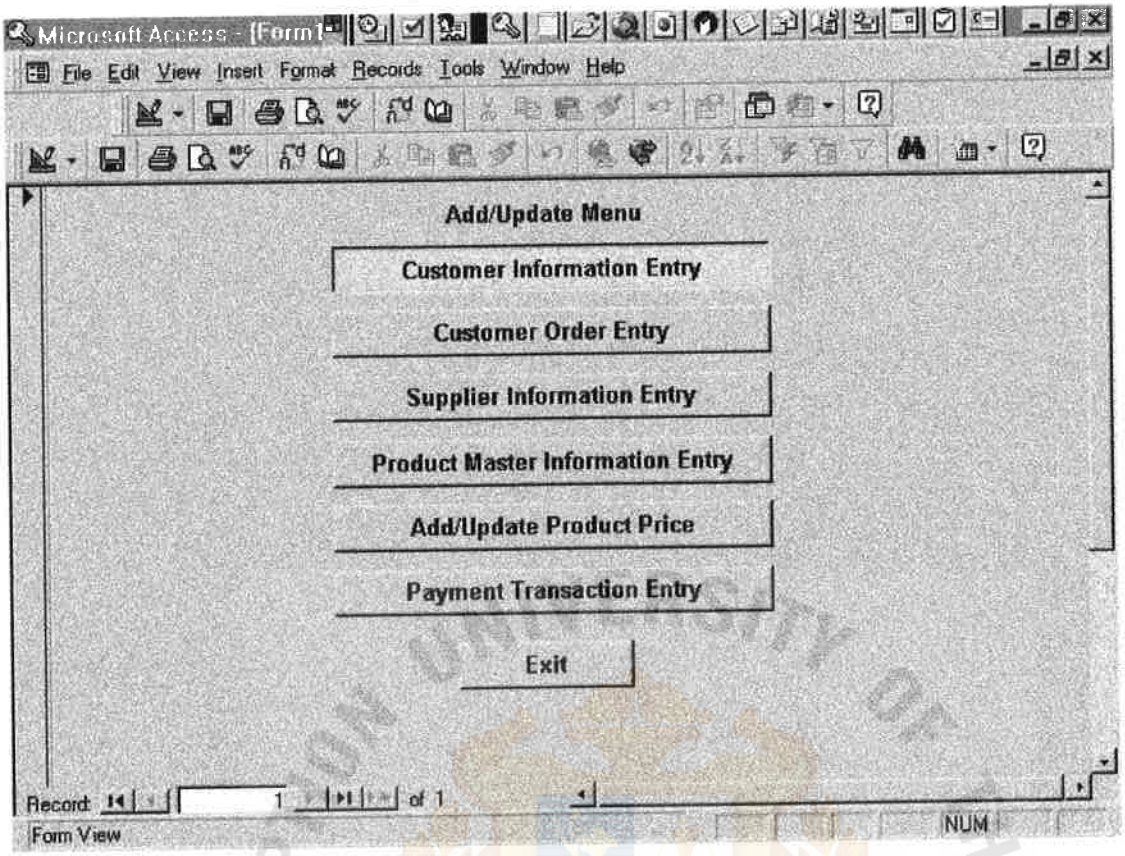

Figure G-2 : Add/Update Menu Screen

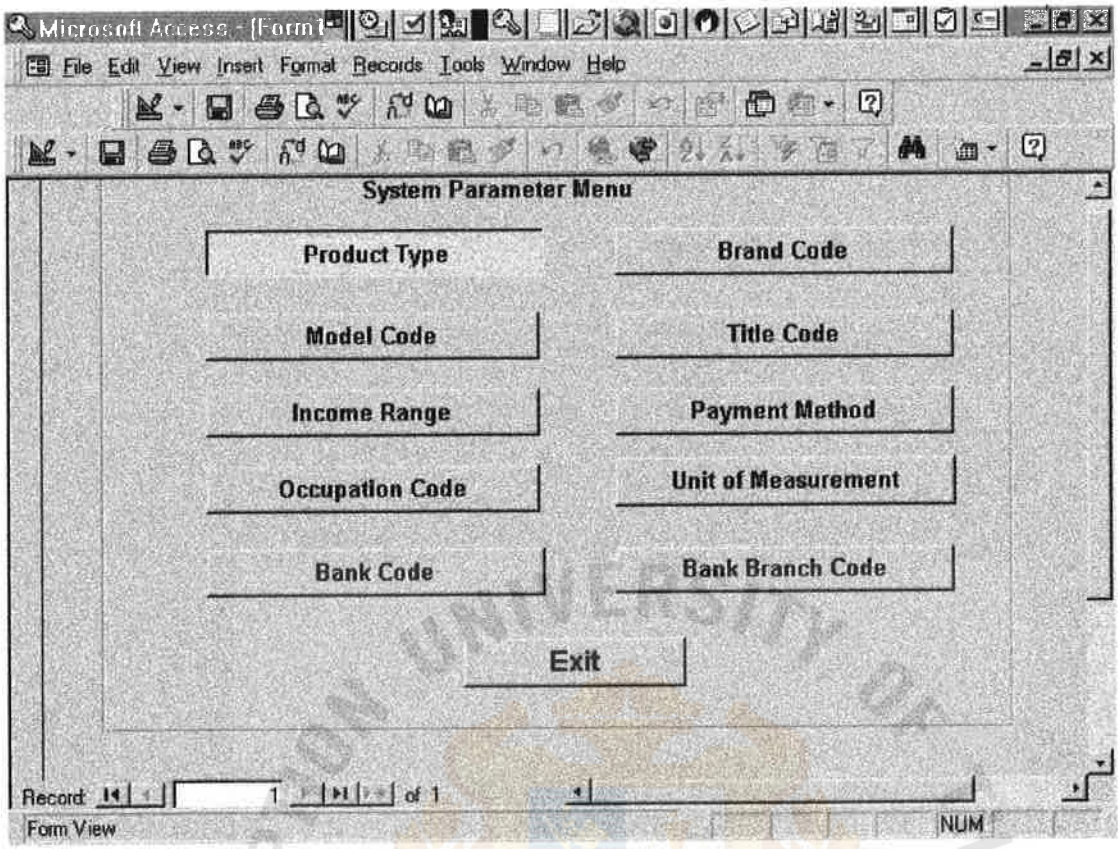

Figure G-3 : System Parameter Menu Screen

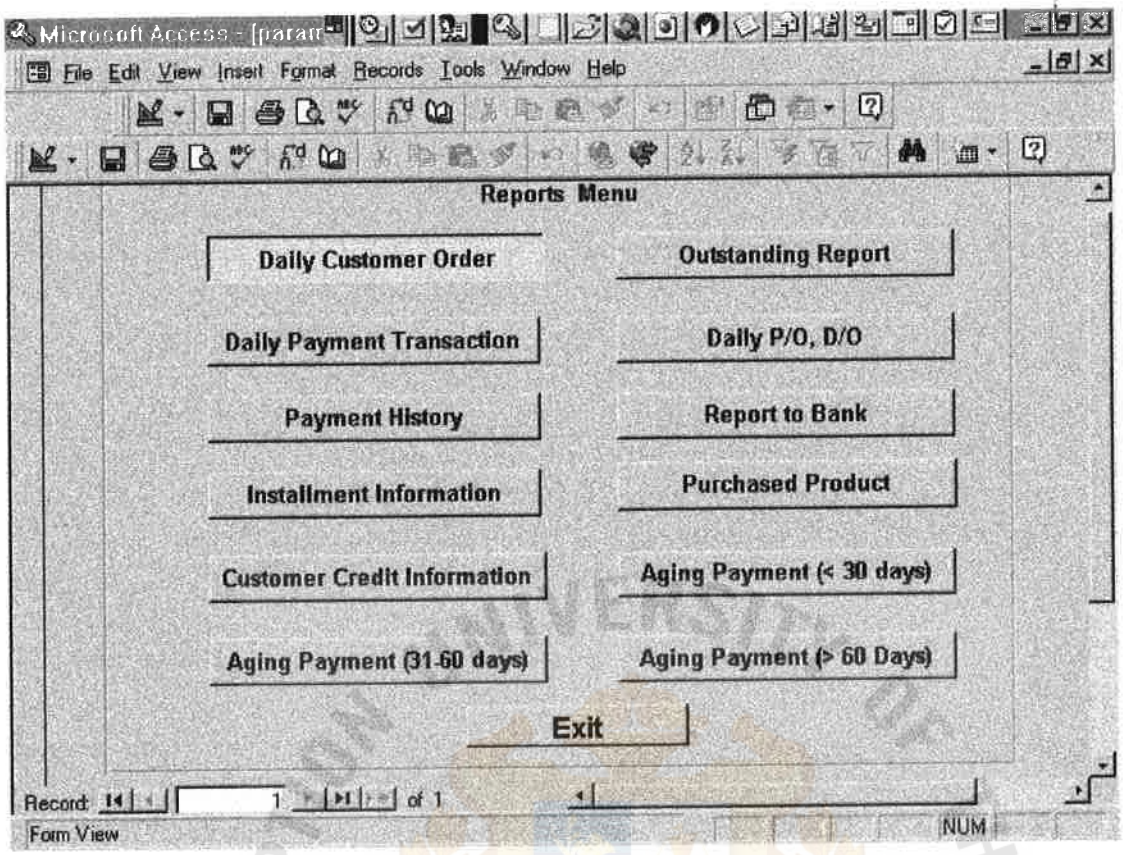

Figure G-4 : Reports Menu Screen

APPENDIX H

Data Dictionary

Data Dictionary

Acct#	= [1-9999999999]
Accu_amt	= [1-9,999,999]
Bal_amt	= [1-9,999,999]
Bal_credit	= *values [0-100,000]*
Bal_month	= [1-99]
Bank	= {Legal Character}
Bank_name	= {Legal Character}
Branch	= [1-999]
Branch_name	= {Legal Character}
Brand	= [1-999]
Brand_des	= {Legal Character}
Cheq#	= [1-99999999]
CO#	= [1-99999999]
CO_ sts	= *values [H|D]*
Contact	= {Legal Character}
Credit_lim	= *values [20,000-100,000]*
Credit_term	= [1-99]
Cust_id	= [1-999999]
Cust_name	= Title + F_name + L_name
Deli_date	= **
Delivery	= *values [H|O]
Description	= {Legal Character}
Discount	= [1-99]
DO#	= [1-99999999]
E_date	= **
F_name	= {Legal Character}
H_phone	= {Legal Character}
Home Address	= H_add1 + H_add2 + H_add3 + H_add4
Income_Ran	= *values [10,000-20,000|20,001-30,000|30,001-40,000|40,001-50,000|more]
Inst_Amt	= [1-999,999]

L_name	= {Legal Character}
Lead_time	= [1-99]
Legal Character	= [A-Z|a-z|0-9|'-| |]
Model	= [1-999]
Model_des	= {Legal Character}
No_month	= [1-99]
No_unit	= [1-99]
O_add1	= {Legal Character}
O_add2	= {Legal Character}
O_add3	= {Legal Character}
O_add4	= {Legal Character}
O_name	= {Legal Character}
O_Phone	= {Legal Character}
Occu	= [1-99]
Occu_Des	= {Legal Character}
Office Address	= O_add1 + O_add2 + O_add3 + O_add4
Order_Date	= **
Over_Lim	= *values [0-100,000]*
Pay_Amt	= [1-999,999]
Pay_met	= [CH|CQ|B]
Pay-date	= **
Penal_amt	= [1-999,999]
PO#	= [1-99999999]
PO_issue	= **
PO_sts	= *values [D|C|N]*
Price	= [1-9,999,999]
Prod_des	= {Legal Character}
Prod_id	= [1-999999]
Prod_type	= [1-99]
Prt_sts	= values [Y|N]
R_sts	= *values [D| | |]
Rea_cod	= [1-999]

Rea_des	= {Legal Character}
S_add1	= {Legal Character}
S_add2	= {Legal Character}
S_add3	= {Legal Character}
S_add4	= {Legal Character}
S_name	= {Legal Character}
S_phone	= {Legal Character}
S-date	= **
Sex	= *values [M|F]*
Supp#	= [1-999999]
Supplier Address	= S_add1 + S_add2 + S_add3 + S_add4
Tax_id	= [1-9999999999]
Title	= [1-99]
Title_des	= [Mr.|Mrs.|Miss|Ms|Dr]
Unit	=*values [piece]
User_id	= {Legal Character}