The Lending System for A State Financial Corporation

by

Mr. Wuthi Amornvut

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

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ABSTRACT

The financial markets and institutions have undergone the significant changes in recent years. The transformation has been driven by the technology, the innovation, the deregulation, the competition and the financial crises. The growth of the international trade and the flexible exchange rates have escalated the development of the international currency markets. The financial institutions have entered the nontraditional venues on both the liabilities and the assets sides of their balance sheets. Laws forbidding interstate banking have been overturned. Market participants have developed the creative ways to hedge risks. Controversy continues over monetary policy and the increasing need for the international coordination. In the late 1980s, the taxpayers and regulators struggled to deal with the financial instability brought on by the savings and loan debacle and the problems within other intermediaries. All of these anomalies are taking place in a world with competing views regarding the linkages between the real and financial sectors and the formulation and execution of the monetary policy.

In this project we present "The Lending System for A State Financial Corporation", which is Small Industry Finance Corporation (SIFC) in the project, to best meet the present and the expected future business and the information needs with the currently manual lending system. The prime determinants in developing the application are :

1. Compatability of application functionality to fit a Small Industry Finance Corporation business and information needs.
2. Compatability with technical strategic direction.
3. Intention in heading towards an integrated system.

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Financial liberalization has ranked among the top priorities of most developing countries' development agenda. It has become more and more obvious that in this globalization era of the free market economy, neither the international trade nor the economic development is likely to be achieved unless a country develops and sustains the efficient domestic financial market and effectively links it with the international world. The stable domestic financial front and its strong ties with the international markets will draw in the foreign capital to fill in the gap between the domestic investment and savings.

Furthermore, with the advanced communication technology at their disposals, many investors can choose to invest at any corners of the world where the high rates of return are guaranteed with the low investment costs. As a result, constant growth is witnessed in the international businesses of many countries. Asia and the Pacific, Hong Kong and Singapore are among the first two nations which explore the liberalization of the financial market. The restrictions over interest rates are minimized and finally cancelled. The control over the foreign exchange rate was revoked in the middle of 1970s. Toward the end of the 1970s, Japan and Malaysia started to adopt the concept of the financial liberalization. The Philippines, Australia, New Zealand and Indonesia soon flowed at the beginning of the 1980s. Financial liberalization has finally taken place in South Korea, Taiwan and Thailand since the late 1980s.

In Thailand, the financial liberalization has played the deregulation on the various financial restrictions since 1991, such as the restrictions on the interest rates, on the foreign exchange control, on the financial institutions' asset management, and on the expansion roles of the financial institutions. Thailand in compliance with the IMF Article VIII in 1990 marked an important step towards the financial reform. It has been 6 years since the agreement, and changes are becoming more evident. The international financial transactions have largely increased, particularly in an area of the capital movement which is a significant indicator of the financial liberalization. Interestingly, a majority of the net capital movement was in a form of short-term investment increase. There was a decrease in the volume of the foreign direct investment. Non-resident Baht Account-the reserved cash which was to be an indicator of the short-term speculative capital was high and fluctuated.

Under the global trend where demands and supplies of the different markets interrelate, the domestic interest rate has been fluctuated even more closely in response to the foreign interest rate. Undeniably, Thailand financial front is more closely linked with the world financial market than ever before. This kind of blurring boundaries not only requires adjustments in the country's monetary and fiscal policies, but also delicacies in the management of the domestic savings and investment. Accordingly, consideration must also be given to the external factors in drawing and implementing the country's macroeconomic policies.

Although the relaxation of the financial restrictions has led to satisfactory outcome of the financial liberalization, it has also caused the higher reliance on the foreign capital, particularly in the short-term investment. The economic instability, therefore, has come to a threshold. The external shocks have had the higher and faster

impact on the domestic financial market. The Mexican financial crisis, the devaluation of the dollar currency, and even the rumor regarding the devaluation of the Baht currency all stirred the volatility of the money on capital markets, resulting in the massive capital outflow, arbitrage in the foreign interest rates, less liquidity, and high interbank loan rate.

It is more obvious that Thailand's economic turmoil since the late 1997 is still in the recovery condition that is unsure to be solved in this period of time. Financial liberalization is the most possible cause of the problem. The international capital inflow and outflow cause the big change in Thailand. Lending system is the easiest way that many of the public bankers use as a mechanism to make loan extension in a weak manner.

1.2 The Existing Corporation Department

The scope of the existing lending system is defined by the following related departments as shown below :

1. Lending Department proposes the customer information and the approval report and receives the customer lending review information for editing the customer status.
2. Lending Control Department is the center of all information in controlling the activities of the account officer and follow up the problem loan. The department receives the regulatory reports and the information on on-line basis.
3. Lending Administration Department handles the customer and authorizes in lending approval. The department has the information of the lending type

movement for each customer and also such lending approval to be recorded into the system.

4. Funding Department calls money from the customer deposit for use in the company business and has money move into the transaction.
5. Treasury Department issues call money movement transaction and matches money for the company business.
6. Legal Department receives the problem loan for resolution and makes the legal action for the default customers.

1.3 Objectives of the Project

The major objectives of the project are stated as follows :

1. To analyze and design the lending system in SIFC.
2. To improve and streamline the efficiency of the lending system.
3. To strengthen the internal control.
4. To best improve the timeliness and effectiveness of management report and simplify the preparation of the external reports.
5. To facilitate to allow interface with existing financial company system and capacity to provide or link with the proposed future system.
6. To propose future direction of the application in line with the direction of the information strategies of the financial company.
7. To automate the lending system.

1.4 Scope of the Project

To understand the scope of this project and where it fits into the final product of a computerized lending system, it is important to see it in relation to a full project development life cycle. The focus is specifically on :

1. Computerizing all necessary information into computer-based information system.
2. Replacing the existing system by the computerized system.
3. Developing the existing lending system by using the new application software.
4. Creating computer-based solution, gathering the lending information of all customers.

1.5 Deliverables

The deliverables of the project is the software package for the lending system that gives the following advantages :

1. Reducing unnecessary process.
2. Controlling the job to be accomplished within a desirable time.
3. Reducing error from the existing lending system.
4. Making more efficiency in the communication among the relevant departments.
5. Minimizing paperwork and conflict information.
6. Initiating the appropriate report for the executive level.
7. Reducing the cycle time to support users.
8. Better increasing the smooth of the job flow.

II. THE EXISTING SYSTEM

2.1 Background of the Organization

Small Industry Finance Corporation (SIFC) is a special financial institution for the promotion and development of small industries in the country according to the Small Industry Finance Corporation Act 1991, where its total shares of 300 million Baht are equally held by the public sector and the private sector. SIFC, thus, has its status of special juridical person, called "Corporation".

At the end of 1998, Small Industry Finance Corporation has its total outstanding loan of 2,026 million Baht and total assets of 2,674 million Baht, without any change in its registered capital. The income of this year totals 348.40 million Baht, increased by 132.38 million Baht or 61.28% from the previous year. Meanwhile, the net profits is decreased from 38.28 million Baht in 1997 to 30.08 million Baht due to the increase of loan expenses, totaling 238.02 million Baht, or increased by 120%. And the reserves of potential bad debts are increased from 33.29 million Baht to 65.09 million Baht. The return of assets is increased from 8.07% to 11.99%.

Due to the economic crisis, financial institutions, in general, including SIFC, suffer from the increase of non-performing loans (NPL). In particular, SIFC has been severely affected by the problem because the majority of weak debtors in terms of profit-making, competitiveness, limited revolving funds, dependence on the medium and large industries which severely suffer from the economic crisis, is in the category of small industries. However, SIFC has paid the most attention to solving this problem urgently and the rate of NPL at the end of 1998 was equal to 46.51% which was lower than the general financial institutions at the same period of time.

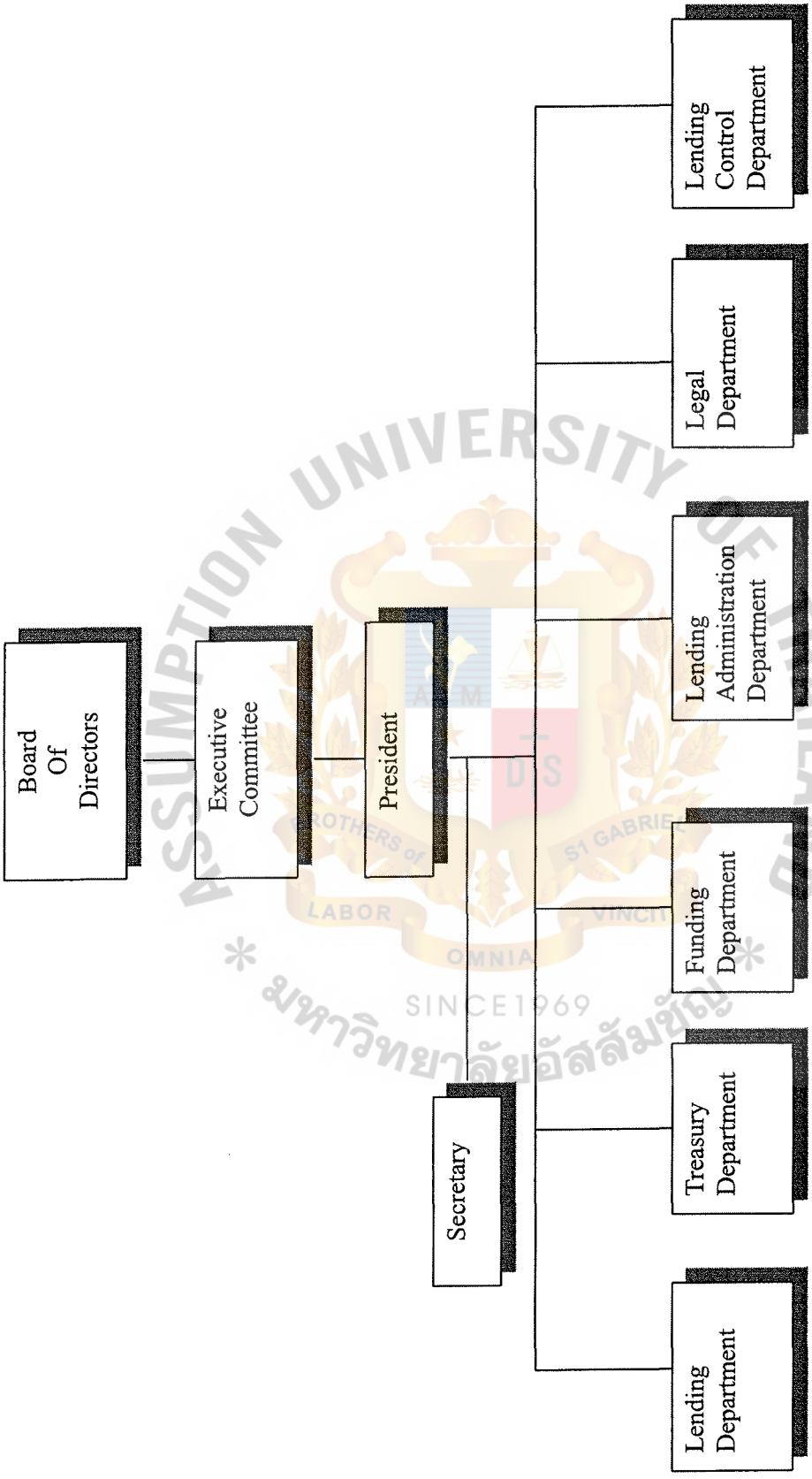

Figure 2.1. Organization Chart.

2.2 Existing Business Functions

Small Industry Finance Corporation (SIFC) is similar to others in the financial industry with some basic aspects. We have the stockholders, the director, the president, and the vice presidents. Like other business practices, we submit the annual reports to the stockholder, and conduct our business affairs in a structured manner. There are, however, certain characteristics of a state financial corporation which are different from those of other business practices.

One important difference is the extremely liquid nature of the stock in trade namely, money and other negotiable items which make safeguarding assets a more important task than in other corporations. Accordingly, the daily controls must be especially effective.

A second unique feature of SIFC is the large volume of the daily transactions for which the source data physically leaves a state financial corporation many times on the same day. (It comes from depositing money in the from of P/N transaction and drawdown lending facility transaction). This necessitates SIFC balancing the books and preparing the financial statements or the summaries every day.

A third important difference is that because of the important impact of SIFC on the national economy and other state financial corporations' fiduciary responsibilities to the depositors, SIFC is more closely regulated by the governmental authorities than most other industries.

2.3 Committee

The major groups in the organizational structure of SIFC are the stockholders, the board of directors, the major committees, and the officers and the management team. As previously mentioned, the ownership of SIFC is vested in its stockholders, who elect

the Board of Directors to represent their interests. The Board, in turn, delegates the authority necessary for the bank's operations to the officers and the management team.

The functions of the SIFC Board of Directors are essentially the same as those in any other financial institutions. There are, however, several Board functions unique to the financial industry. They are to :

1. determine and approve lending loan limitations.
2. approve the amount of surety and other blanket bond coverage carried by Small Industry Finance Corporation.
3. establish the Small Industry Finance Corporation loans and the investment policies, including the guidelines for the amounts of certain loans, investments and other assets.
4. approval all loans made to the SIFC officers and directors.
5. authorize and establish relationships with other state financial corporations and financial institutions.
6. perform, or delegate the authority to perform, periodic examinations of SIFC at least annually.

The Board of Directors establishes several committees to study, implement, and review its policies and practices. These committees are charged with the responsibilities of maintaining the quality of Small Industry Finance Corporation operations and planning for growth and changes in the Small Industry Finance Corporation practices. The following paragraphs discuss the function of the principal committees that might be found in Small Industry Finance Corporation.

2.3.1 Executive Committee

The executive committee consists of three or more directors and usually includes the board chairperson and the Small Industry Finance Corporation president. The executive committee acts as a standing committee of the board of directors whenever the full board is unable to meet. Within the general policies established by the board, the executive committee has four special functions :

- Review and approve loan committee reports and authorize loans and renewals that exceed the loan committee.
- Lend limitations.
- Approve all loan applications submitted to it.
- Determine the interest rates for special customers.

2.3.2 Loan Committee

The loan committee normally has from five to ten members and usually includes the officers in charge of the lending function and the senior lending officers. The loan committee's principal functions are to approve of all loans and lending line, to approve before all loans are disbursed that exceeds a lending officer's authority, to submit to the executive committee all loans that exceed the lending committee's authority, and to recommend to the executive committee interest rates, types of loans to be acquired, lending limitations, and other matters related to the lending function.

2.3.3 Management Committee

The membership of the management committee might include the Board chairperson or the president, the administrative vice-president, and the officers in charge of the administrative department. The principal functions of the management committee are to review and make recommendations to the executive committee on the

administrative matters, and to discuss and make the recommendations on those changes in operating procedures submitted by the operating committee.

2.3.4 Operating Committee

The operating committee might include the administrative vice president, the officer in charge of the operating department, the controller, the cashier, the head of internal audit, and the officers in charge of the various operating divisions. Among the principal functions of the operating committee are to periodically review the corporation operating methods and procedures, to review reports prepared by subcommittees on departmental operations, to recommend the operating procedures to the management committee, to establish the employee job descriptions and classification, and to establish the policies and practices for hiring and training employees.

2.4 Loans

Approximately 85.0% of the SIFC assets are invested in loans. Loans are usually the largest single category of the SIFC assets and revenue but also provide the greatest risk of loss. Loan can normally be classified into one of four general categories:

2.4.1 Commercial Loan

These are business loans made to the individual, the partnership, or the corporations. The business loans are usually sought to finance current operations of capital expenditures. Commercial loans can range from 500,000 Baht to 25 million Baht. SIFC is limited by law as to the total amount we can loan to any person, partnership association, or corporation. This amount is usually limited to 25.0% of capital and surplus. Exceptions to this general rule are allowed if certain types of the collateral are pledged by the borrower.

The interest rate charged on the commercial loans can either be fixed or variable. In many cases, the rate charged will be tied to the bank's prime lending rate plus 2.0 to 3.0%. The prime rate is based on the banking system's creditworthy customers. This rate is based on the banking system's incremental cost of funds and changes as the economic conditions change. For loan customers whose lending risk is greater than that of the bank's most creditworthy customer, a premium over the prime rate will be charged. For all loans tied to prime, the rate charged on the loan will change each time the prime rate changes.

2.4.2 Industrial Loan

There are loans to entrepreneurs who have their own business types as the industrial products. These loans support both the entrepreneurs who want to expand their business practices and the entrepreneurs who have the new projects. So we can classify the industrial loan into two types :

1. Working capital loan : it is the loan that supports the entrepreneurs in the form of lumpsum cash in order to make the high liquidity for their industrial business practices.
2. Project loan : it is the loan that supports the entrepreneurs to build their own factories, machineries and raw materials in order to produce the new products.

2.4.3 Financial Loan

There are some loans to other financial intermediaries. Like any business, the financial intermediaries have the operational cash demands and borrow money from time to time. These loans can be made on either a time or demand basis and bear interest at either a fixed or variable rate.

2.4.4 Real Estate

Real estate loan is secured primarily with the real estate. SIFC may make real estate loan secured by mortgaging on real estate, on improved real estate including improve farmland and improved business and residential properties, or on real estate to be improved by building or building stated for or under construction. The amount lent on any one project or property is usually limited to a certain percentage of the appraised value of the property less any outstanding mortgages, or encumbrances. SIFC regulators specify certain percentage ratios for the various real estate lending arrangements. We may have a policy that limits the funding of the real estate loan to 85.0% of real estate's appraised value. This 15.0% margin provides SIFC with added security should the loan customer be unable to repay the loan.

2.5 Lending Policies and Procedures

SIFC has established formal written loan policies. The number and types of loans granted are matters of operating philosophy and include the SIFC overall approach toward acquiring and using funs. Lending policies are established within the financial overall operating policy framework.

The lending policies are the responsibility of the Board of Directors, the Board of Committee will often delegate the responsibility to a senior loan committee. This committee, usually composed of senior lending officers, recommends lending policies to the Board and/or Executive committee. In establishing lending policies and procedures, many factors should be considered, for instance, lending territories, types of loans, creditworthiness of customers, collateral, tenor, interest rates, compensating balances, loan commitments, lending lines, revolving lending, officers' lending limitations.

2.6 Loan Application Processing

Loan processing begins when a potential borrower contacts the financial intermediaries. SIFC uses some types of loan application form. The information on the loan application varies depending on the type of loan and the SIFC application processing procedures. However, the form will generally be the information about the borrower and other information necessary to perform the lending review. The form may also provide space for comments and disclosure of information on the interest rate being charged. The application must be signed by the borrower as an indication that the information on it is true and complete.

2.7 Accumulating Information

After the loan application is completed, we begin the accumulating information to process the loan. The purpose of the loan on how the proceeds will be used should be documented. SIFC will request that a corporate application project its future operation, both on an overall basis and with regard to the specific purpose of the loan. These projections help determine its exact financial needs and help us determine whether future operations provide adequate fund to repay the loan.

By far the most important phase of lending is determining the creditworthiness of the borrower. SIFC has separate lending department to help accumulate and evaluate information about prospective borrowers. If such a department exists, the loan officer will propose the loan and the lending department will coordinate gathering and analyzing lending information. Some portion of the lending review is performed by the loan officer, however, a substantial portion usually is performed independently by the lending department. This independent lending review creates a vital control in determining the creditworthiness of the borrowers.

A review of an applicant's creditworthiness may be performed in various ways, depending on the information on the application and the type of loan requested. The initiating loan officer, or a member of the lending department, often visits the corporate location to survey the physical facilities and interview the various operating and management personnel. These visits help SIFC determine the adequacy of plant and equipment for collateral purposes, and become acquainted with the capabilities of those responsible for managing and operating the business. Other sources of information may be available. Also, the quality available is a major factor. Before any loan is granted, SIFC should be satisfied that the individual has the ability to repay the loan.

2.8 Collateral

By offering assets as security, the business can often borrow fund not available to them on an unsecured basis because their lending rating would not warrant it. SIFC security interest in the borrower's collateral helps to ensure that, at least to the extent of the value of the collateral, we are protected from any loss on the borrower's nonpayment on the loan. Collateral can take on a variety of forms such as the securities, the certificates of deposit, the property plant and equipment, the warehouse receipts, the trust receipts, the real estate is based on a certain percentage of the real estate appraised value, and the security being the assignment of a title for items which is the basis for the installment loans.

2.9 Loan Documentation

To provide SIFC with the necessary information to evaluate a loan request, a lending file is maintained for each borrower. The necessary information depends on many factors, such as the type of loan, the amount, the type of borrower, and the repayment term and condition.

2.10 Evaluation and Approval

The SIFC loan approval process varies according to the organizational structure of the policies, the type of loans offered, and the management's policies and procedures. To monitor the loan approval process, we establish the loan committees and the lending authorities for the lending loan officers. After all pertinent information is gathered and the lending review is completed, the lending loan officer who handles the application decides whether the loan should be granted, providing the loan request is within the lending officer's lending limit. If not, the department head, the loan committee, and/or the Board's approval may be required. Normally, the loan committee, and/or the Board's approval may be required. Normally, SIFC must determine that the loan is maintained and repaid according to the loan agreement.

2.11 Follow-up Approval

SIFC has some follow-up system of the lending loan review and approval which may be required for all commercial and real estate loans, regardless of size, and for all installments or the consumer loans over a stipulated amount.

2.12 Lending Loan Review

One of the most important functions in SIFC is the lending loan review. Lending loan review involves examining the existing loans for continuing creditworthiness and identifying loans which could be potential collection problems. Early identification of problem loans allows us to take the necessary steps and precaution to minimize any potential loan losses.

SIFC has a separate lending department responsible for administering and performing the lending loan review function. While lending loan officers make the initial lending analysis, they also perform a continuing lending loan review by obtaining

what is often referred to as direct information. This is information gathered during personal or telephone contacts with the customer. Documentation of these contacts becomes a part of the customer's lending file. In addition to the lending department, SIFC has an independent lending loan review function. Typically, an independent group periodically reviews each loan on the related lending file documentation and report the results of their review to a senior loan committee and/or the Board. This independent lending loan review function serves to verify that established procedures for lending and loan administration are being followed and helps to identify any existing or potential problem loans.

2.13 Other Loans Especially Mentioned

These are loans with risk increasing that at which the loan would have been made. They are currently protected but could become potentially the weak lending manner.

1. Substandard Loans

These have a well-defined weakness or weaknesses that jeopardize liquidation the debt. They are characterized by the distinct possibility that SIFC will sustain some loss if the deficiencies are not corrected.

2. Doubtful Loans

These are loans from which collection or liquidation in full is highly questionable and improbable.

3. Loss Loans

These are considered uncollectably and of such little value that their continuance as active assets of SIFC is not warranted. This classification does not mean that the loan has absolutely no recovery or salvage value, but rather, it is not practical to defer writing off the assets.

2.14 Current Problems and Area for Improvement

Small Industry Finance Corporation has realized the importance and necessity of the application of the information technology in the work place and has established the working group to encounter with the huge change in the financial business practice. Our lending system is still in the beginning era, the manual system, comparing with the private financial institutions. They are at least 3 to 5 years ahead of Small Industry Finance Corporation. They can make international fund raising for more than over thousands of million Baht whereas Small Industry Finance Corporation has no such kind of mechanism. Due to the economic turmoil, most of the financial intermediaries including SIFC have to improve the lending system to counteract with the new era of the financial business that has never existed in history. Our current problems are :

- The paper work that might cause lots of data redundancy.
- Inappropriate manual system in the corporation.
- The existing customer information is outdated.
- The lack of better data and costs operations.
- The lack of competence and comparative advantages.

The departments that are necessary to the lending system are the lending department, the lending administration department, the funding department, the treasury department, the lending control department, and the legal department. Nevertheless, if we want to be one of the most successful in the financial business, we have to be the computer-based state financial corporation which have a tremendous idea to adapt the manual system in the corporation.

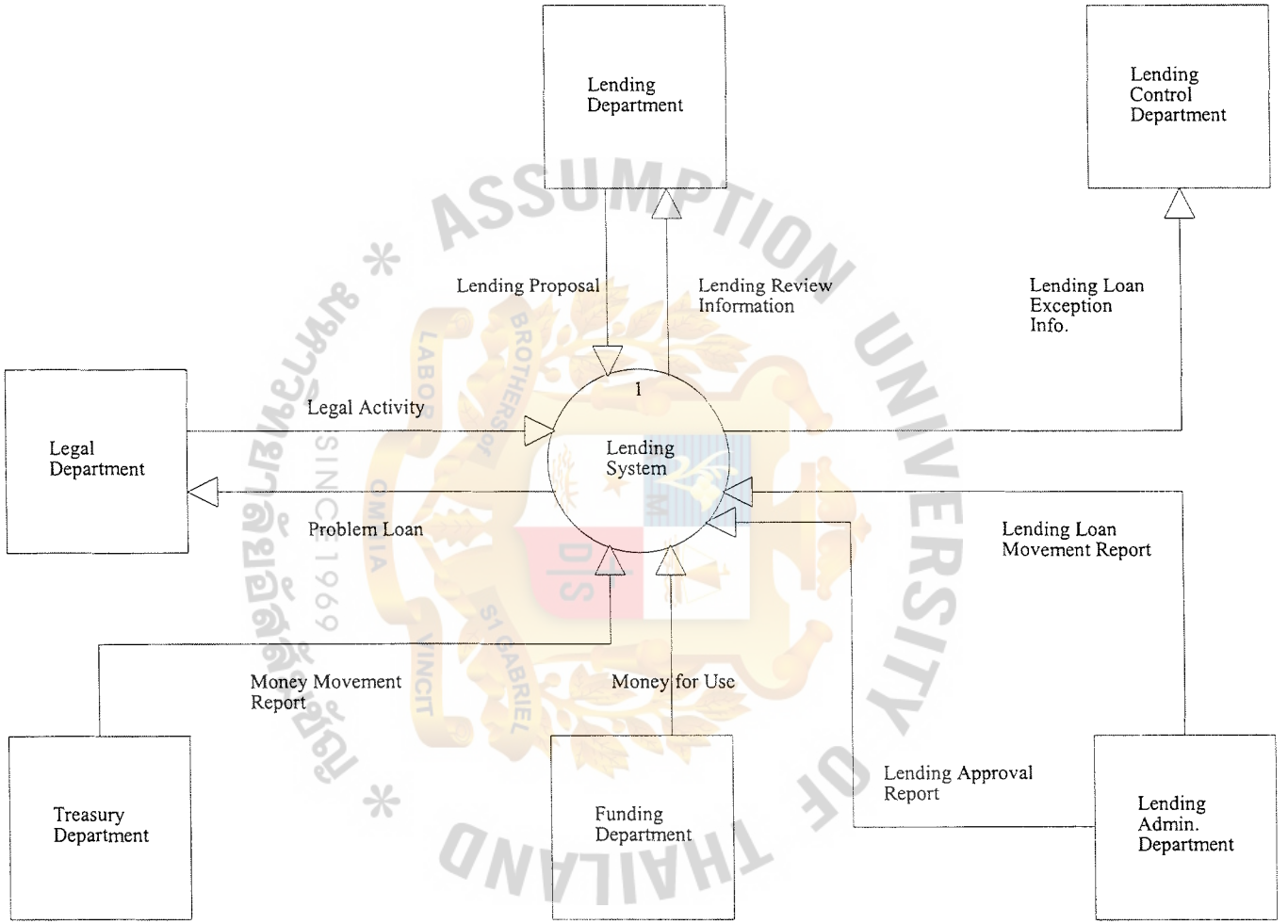

Figure 2.2. Existing System Context Diagram.

III. THE PROPOSED SYSTEM

At this phase, the information from the key-management interview is pulled to define the fundamental requirement. It is the beginning of the detail analysis and design. The conversion of ideas to realities requires the methods and resources to transform the system from the analysis state to the actual operation.

The objectives of this phase are shown as follows :

1. To review the requirements of the information gathered from every department.
2. To produce the benefit analysis and the formulation of the computerized lending system.
3. To produce the details for the new control, the procedure, and the workflow.

3.1 User Requirement

The lending function involves the process of monitoring the customer lending status and performing the follow-up actions.

3.2 Key Requirements

- To record the lending approval documentation for the customer information.
- To record new customer details of the update of the existing customer details.
- To display the existing customer details.
- To provide also the on-line tracking of the lending exposure to a single customer or group of customers.
- To provide the on-line tracking for the customer lending utilization, the outstanding lending line, and the historical lending status.
- To record the details for the lending utilization.

- To determine the utilization of the lending line approval.
- To check the account officers/executives with the appropriate lending authority to approve lending amount above the approval lending line or when the lending line is already expired.
- To provide facility to identify and to classify lending accounts by grade.
- To generate the report for follow-up the problem loan.
- To record the workout and legal action.
- To generate the summary and exception reports to provide the information for the decision making.

3.3 System Documentation

The data dictionary entry for the system's input and output documentation. The documentation is described logically, in terms of the data components and the relationship. No attention has been given to the physical layout of the source, input, output, and transaction documents.

The system documentation also includes the process narratives for all of the processes identified in the data flow diagram. They describe the general patterns of processing activities that comprise the processing events, along with the data files and the data elements that are involved in the processing. In most cases, these narratives outline the business functions that are performed rather than the specific computer processing tasks. A major part of the design, then, will be to specify how the computer will implement the processes that are chosen for automation.

3.4 Database and File Design

The database model for this system is the relational model. Each table is kept in one file and physically structured as the index sequential file. The indexes are created to match the primary key, primary index. All relations are mapped into the third normal form.

3.5 System Design

In this phase, the information collected earlier is to accomplish the logical design of the information system. The accurate data-entry procedures, the effective input, the user interface, the files, and the output are designed here.

During the design phase, the flexibility, the maintainability, and the expandability should be considered. Put in another way, the system's procedures should be able to meet new needs over a period of time and they should be open-ended to allow for growth.

The objective of this phase are as follows :

- To maximize -to get the highest possible degree of use out of the system without regard to other systems.
- To optimize -to get the most favorable degree of use out of a system taking into account all other systems.
- To satisfy -to choose a particular level of performance for which to strive and for which management is willing to settle.

3.6 File Specification

It specifies the file organization, the access methods, the storage media, and the appropriate volumes of stored data. File specification is listed as follows :

- Customer File.

- Customer Index File.
- Lending Line File.
- Lending Movement File.

3.7 Form and Screen Specification

For the system inputs, both the input forms and the visual display terminal (VDT) screens are designed to meet the objectives of the effectiveness, the accuracy, the way for usage, the consistency, the simplicity, and the attractiveness.

The guidelines used in designing input forms are :

- must be easy to fill out.
- must meet the purpose for which they are designed.
- must be designed to assure accurate completion.
- must be attractive.

The four guidelines used in designing VDT screen are :

- must be simply kept.
- must be consistent from screen to screen.
- must facilitate movement between screen.
- must be attractive.

3.8 Report Specification

For system output printed report layout, the main objectives in designing are :

- serving the intended purpose and fitting the users.
- delivering it to the right place.
- providing it on time.

The printed reports are designed with the use of the printer layout sheets. The data dictionary serves as the source for the necessary data on each report. It also uses the layout sheet to communicate the physical design to the programmer.

3.9 Hardware Configuration

The normal personal computer (PC) will be used to run the finished program. All of the computers will be connected to one another on a small LAN network. One set of computer will be dedicated to be a file server and the storage on this file server computer will be used to store to information shared by all the computers. The network will be Ethernet type connecting to concentrator (Hub) using thin coaxial cable. The network adapter cards are installed in all computers. There will be approximately three printers for six departments in the system. All of the terminal computers will have access to any printers since the computers that the printers are connected to will be set to be the print servers.

The configurations of the hardware are as follows :

1. File Server 1 set
   - IBM Net finity 3000
   - Pentium III 500 MHz
   - Ram 128 MB SDRAM ECC
   - HDD 9.1 GBX 2 Units
   - Cache 512 KB
   - IBM 14" Color Monitor
2. Workstation(IBM 300 GL) 30 sets
   - Intel Celeron 333 MHz Processor
   - 32 MB SDRAM up to 384 MB

- 3.2 GB Ultra ATA/PCI EIDE Controller

- HP 14" Color Monitor

- 1.44 MB 3.5" FDD

- D-Link Fast Ethernet 10/100 PCI

3. LaserJet Printer 4000T 6 sets

4. Dot Matrix Printer 12 sets

5. Hub 6 sets

- 3 com 101100 Dual speed 12 Ports

6. Network Interface Card & UTP Cable 30 sets

7. UPS 6 sets

- Backup 30 mins, full 1250 VA
- Backup 15 mins, full 600 VA

3.10 Software Configuration

The lending system will be implemented by using a network program. This program allows programmers to build a small business environment for the organization. The profile developes are equipped with the graphic user interface (GUI). This allows the programs to be developed with user friendly features.

The list of software requirement is as follows :

1. Window NT 4.0 Workstation (Thai Edition)

2. Novell Netware Version 4.11

- Network operating system

3. MicroSoft-Word 97 (Thai Edition)

- Word processing

4. MicroSoft-Excel 97 (Thai Edition)

- Spread Sheet

- Interface and output report

5. Micorsoft-Access 97 (Thai Edition)

6. Window NT Server 4.0 (Thai Edition)

3.11 Network Configuration

The network configuration is connected in the star form which uses Hub as the concentrator. The system uses only one file server. One department has five working stations, one laser printer, two dotted matrix, one Hub and six network interface cards and 1 UTP.

3.12 Security and Control Design

Consideration is given to input, backup, and recovery procedures. The necessary routine is added to the incorporate adequate audit trails and logging procedures. Control in the computer environment can be subdivided into 3 different categories :

3.12.1 Administrative Control

1. Physical Asset Security

The consideration should be given to the security of, and access to application programs; data files; system software, including utilities; and hardware. It is ensured by :

- Authorization for access to application programs and files by using Application Security Sign on System.
- Access restriction on the computer room.
- Control over the general system software usage related to the degree of loss or corruption of the data possible through misuse.

2. Back-up Facilities

- The data files can be reconstructed in the event of the master file loss or any kind of corruption.
- The application and system software can be reinstated in the event of loss or any kind of corruption.

3. Stand-by Facilities

The consideration is given to an alternative facility which carry out the critical processing for a period of time, in the event of an extended breakdown of any part of the computer machinery.

4. File Controls

Files are stored in a library. The entry to this library is controlled so that the unauthorized persons cannot gain access to the files held.

5. On-line Security

Passwords are used to restrict access to the system. Dedicated terminals are used by the authorized users. Write-protect facilities are provided at the data file level.

6. Control over Personnel

- Logging all transactions with time stamp and user id.
- Scheduling operations so that unusual runs are noticeable.
- Authorization over transaction of maintenance.
- Controlling output distribution.
- Defining personnel access restrictions.
- Setting standard procedures for activities.

7. Division of Responsibility

EDP management, the user, operations, system design and programming, librarian, and the software assurance functions are all separated.

3.12.2 System Development Controls

1. Documentation

The project provides a secure record of the system design, programming, and maintenance activities, as well as the user procedures, and the recovery procedures by setting the standard documentation form and the manual of use in the corporation

2.Testing

The team is set from the related departments and all data test is provided from the current situation and error case that can occurr.

3.12.3 Processing Controls

1. Input Controls

- Input documents have to be approved before keying in.
- The control totals must be checked after the keying of each batch.
- At the end of each batch in the computer input run, the counts and totals are shown for the accurate check.
- After the program runs, all input are printed for recheck.
- Amendment to or update of a master file is recorded before and after the run is retained on hard copy as a visible history of the file.
- The computer-printed output is clearly identifiable by labeling of every sheet of the print with the appropriate captions, the date, and the page number.

2. Programmed Controls

All data first entering a computer system is edited. The objective is to detect by means of the logic checks every conceivable form of error.

- Limit check.
- Restricted valued check.
- Format check.
- Check digit.

3. Output Controls

The major concern is to ensure that output is distributed to the authorized persons only, and that the data contained in that output have been reconciled with the controls established over the input and file.

4. File Controls

The project is using VSE/VSAM which is a file management system that is designed for the virtual system environment; it consists of VSAM (Virtual Storage Access Method) and Access Method Services. VSAM is used to process files that reside on direct access storage devices. Access Method Service is a multifunction utility program that creates and maintains files on direct access storage divices.

3.13 Back up and Data Recovery

3.13.1 Back up Process

Back up process is one of the most important parts in computer processing because at the time that any malfunction occurs, the damaged part of information can be recovery. If there is no back up, any damages cannot be recovered and may cause the loss of valuable integrity data.

3.13.2 Daily Back up

Everyday staffs have to process batch at the end of the day. In that step, transaction data will be saved to tape before issue daily report. If some problems occur

while processing, the damage will not be great. Staffs can restore back up data and process only change or new data.

3.13.3 Monthly Back up

Staffs have to save data like daily process, but in monthly process, the additional part is master file back up. The reason why master file is saved at the end of the month that master file has a few changes between month so once a month is enough.

3.13.4 Recovery Planing

If information was damaged from any disaster, staffs have to restore the back up data file to computer and reprocessing, after that user can continue processing with out any problems.

3.14 Cost-Benefit Analysis

The cost and benefit is the crucial part to consider in the investment and the benefit must be returned in the most effectively in he way of using the computerized system instead of the manual system. However, there are two categories to understand for the whole picture and vision in briefly.

Direct Cost

- Hardware and software cost throughout the computerized system.
- System support and maintenance to take care hardware and software.
- Implementation cost and cost of development staffs.
- Cost of implementation during pre and post testing.

Indirect Cost

- Staffs training and development.
- Transferring system and staffs to operate system.

3.14.1 Cost Analysis

The most important to evaluate the cost analysis is hardware and software as well as the operation cost that the company must invest for the fundamental business of improving and using the computerized system in the proposed system. However, we must have the standard criteria to adjust and measure the both hardware and software in the computerized system.

- The technology support in the computerized system.
- The life cycle of the computer changing.
- The convenience and available expansion and modification.
- The user interface between the user and the system operation.

The following is the hardware and software's solution that had been choosing according to the new proposed system requirements.

Description	Price	Q'ty	Total
1. File Server			
- Pentium III 500 MHz, 128 MB SDRAM	180,000	1	180,000
2. Workstation			
- IBM 300 GL, Intel Celeron 333 MHz	35,000	30	1,050,000
3. LaserJet Printer			
- 4000T	35,000	6	210,000
4. Dot Matrix Printer	8,000	12	96,000
5. Hub			
- 3 com 101100 Dual speed 12 Ports	18,000	6	108,000
6. Network Interface Card & UTP Cable	3,000	30	90,000
7. UPS			
- Backup 30 mins, full 1250 VA,	12,000	2	24,000
- Backup 15 mins, full 600 VA,	3,000	3	9,000
8. Software			
- Windows NT 4.0 Server (Thai Edition)	28,000	6	168,000
- Window NT 4.0 Workstation	12,000	30	360,000
- Office Professional 97 (Thai Edition)	12,000	30	360,000
- Novell Netware Version 4.11	20,000	6	120,000
Grand Total Cost (Baht)			2,775,000

3.14.2 Benefit Analysis

The benefit is reflected the proposed system after the implementation had been utilized. It may be that at the beginning stage, the existing manual system cost is less than the proposed system. However, in the long term, the proposed system will provide some tangible and intangible benefit. Details are shown as follows :

Benefits

-	Direct Personal Cost Saving	90,000	Baht/year
-	Indirect Personal Cost Saving	83,000	Baht/year
-	Paper and Document Cost Saving	85,000	Baht/year
-	Overtime Expense Saving	80,000	Baht/year
-	Office Facilities Cost Saving	85,000	Baht/year
-	Operation Cost Saving	902,400	Baht/year
Total		1,325,400	Baht/year

Intangible Benefits

1. The computerized system can support the faster management decision making process by providing a faster access time to reach the information.
2. Improve the operation procedures to be quicker.
3. Increase the customer satisfaction.
4. Ensure the information provided by the system that will be accurate and on time.
5. Data must be integrity and consistency.
6. Better planning information.

3.14.3 Cost-Benefit Analysis

The development of the computerized system is to consume the long term investment which will represent the sizable outlays of fund that commit a company to some course of action, procedures are needed to analyze and select it properly. Attention must be given to measure relevant cash flow and apply appropriate decision making techniques. The capital budget is the process of evaluating and selecting the long term investment in consistency with the firm's goal of owner wealth maximization. There are two most popular capital budget techniques which are payback period and net present value.

1. Payback Period

Payback Period determines the exact amount of time required for the firm to recover the initial investment as calculated from cash inflow. The payback period formula is shown as follows :

	P	=	I / (1-T) R
Where	P	=	Payback Period (Year)
	I	=	Initial Investment or Capital Expenditure
	T	=	Corporate Tax Rate in Percentage (30%)
	R	=	Annual Saving Realized by Investment
Payback Period		=	2,775,000 / (1-0.3) 1,325,400
		=	2.99 years or approximately 3 years.

The payback analysis and the net present value analysis will be shown in the Table 3.1. and Table 3.2. which will show the result of payback period approximately 3 years.

2. Break-even Point Analysis

Break-even Point Analysis is the most important to measure and evaluate between the existing system and the proposed system in term of the representing the optimal cost of investment. The reason is profitable to return in business term of cost investment.

The assumption is that the cost in the first year of the proposed system will be considerable significantly because the hardware and software installation. In the second year and later on, the cost will be slightly and continuously decreased. Maintenance cost is estimated to be 10% of the hardware cost and will be increased approximately 10% a year. In the mean time, the promotion rate for staff increases approximately 12% a year and the inflation rate and the annual operation cost of the existing system will increase about 7% a year.

The cost comparison between the existing system and the proposed system is shown in Table 3.3. and Table 3.4. The result shows that the proposed system will be higher than the existing system in the first year. The assumption is as follows :

1. Total income of the corporation is 30,080,000 Baht/year
2. The first year operation cost of the existing system is 15.0% of income
3. The first year operation cost of the proposed system is 12.0% of income
4. The first year development cost of the existing system is 0 Baht/year
5. The first year development cost of the proposed system is 500,000 Baht/year
6. The first year maintenance cost of the existing system is 0 Baht/year
7. The first year maintenance cost of the proposed system is 250,000 Baht/year
8. The first year salary per year of the existing system is 3,200,000 Baht/year
9. The first year salary per year of the proposed system is 2,500,000 Baht/year

Table 3.1. Payback Analysis.

Cash flow description	Year 0	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Development costs:	(2,775,000)						
Operation & maintenance costs:		(250,000)	(252,500)	(255,025)	(257,575)	(260,151)	(262,753)
Discount factors for 12%:	1.000	0.893	0.797	0.712	0.638	0.587	0.507
Time-adjusted costs (adjusted to present value):	(2,775,000)	(223,250)	(201,243)	(181,578)	(164,333)	(152,709)	(133,216)
Cummulative time-adjusted costs over lifetime:	(2,775,000)	(2,998,250)	(3,199,493)	(3,381,070)	(3,545,403)	(3,698,112)	(3,831,327)
Benefit derived from operation of new system:	0	1,325,400	1,457,940	1,530,837	1,607,379	1,687,748	1,772,135
Discount factor for 12%:	1.000	0.893	0.797	0.712	0.638	0.587	0.507
Time-adjusted benefits (adjusted to present value):	0	1,183,582	1,161,978	1,089,956	1,025,508	990,708	898,473
ummulative time-adjusted benefits over lifetime:	0	1,183,582	2,345,560	3,435,516	4,461,024	5,451,732	6,350,205
ummulative lifetime time-adjusted costs + benefits:	(2,775,000)	(1,814,668)	(853,932)	54,446	915,621	1,753,620	2,518,877

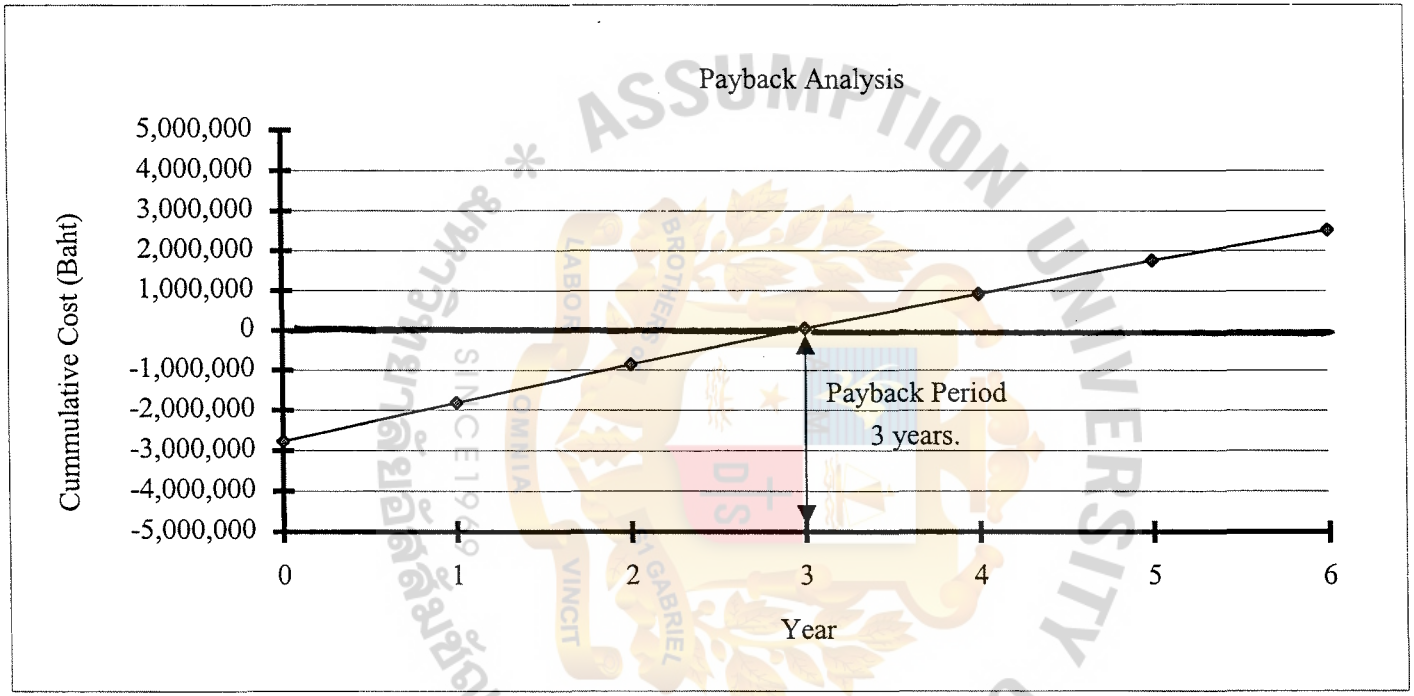

Figure 3.1. Payback Analysis.

Table 3.3. Total Cost of The Proposed System.

Cash Flow Description	Year 1	Year 2	Year 3	Year 4	Year 5
1. Investment Cost	2,775,000	0	0	0	0
2. Development Cost 10%	500,000	550,000	605,000	665,500	732,050
3. Maintenance Cost 10%	250,000	275,000	302,500	332,750	366,025
4. Operation Cost 7%	3,609,600	3,862,272	4,132,631	4,421,915	4,731,449
5. Salary per Year 12%	2,500,000	2,800,000	3,136,000	3,512,320	3,933,798
Total Cost	9,634,600	7,487,272	8,176,131	8,932,485	9,763,323
Accumulative Cost	9,634,600	17,121,872	25,298,003	34,230,488	43,993,811

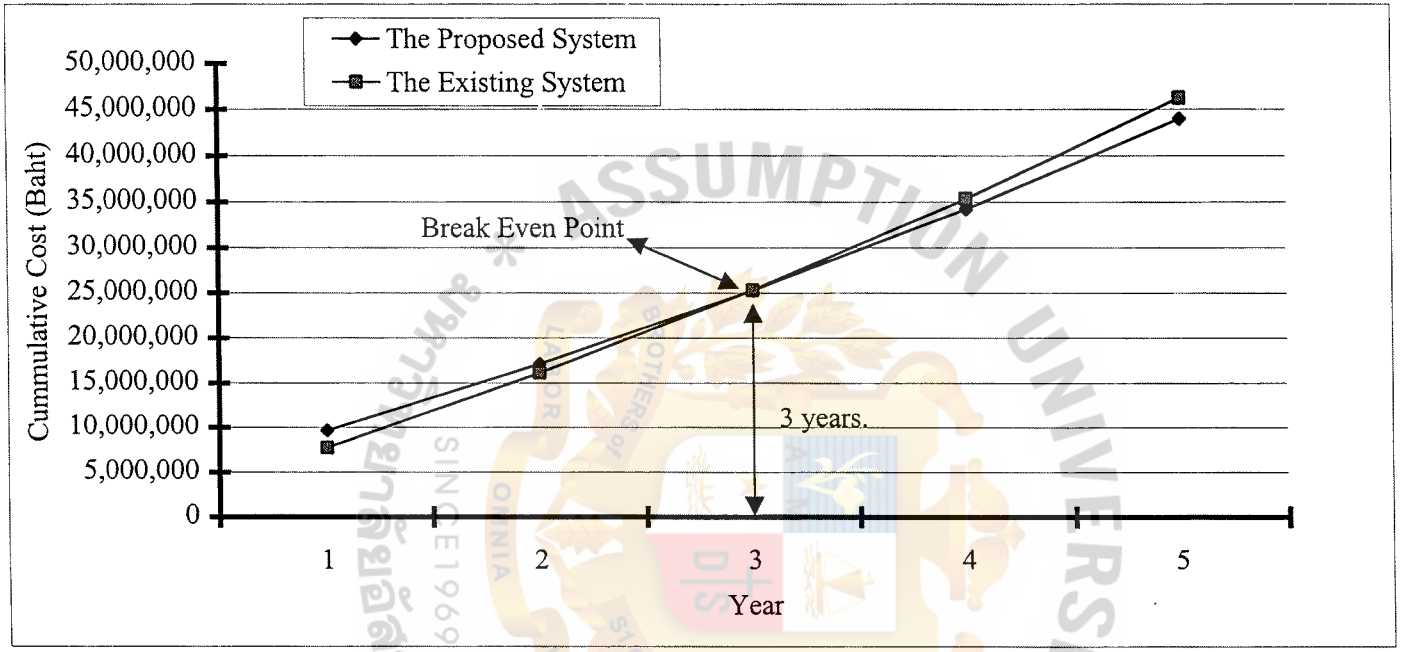

Figure 3.2. Cost Comparison Between The Existing System and The Proposed System.

IV. PROJECT IMPLEMENTATION

4.1 Conversion and Installation Plan

In the system conversion plan, the direct cut over method is applied to convert from the old to the new system. The entire system was implemented during one week period. And for the installation, we must prepare the locations for the hardware installation. The database server is the central computer that serves the information for all departments. After that, we will install the system software and the essential application software.

4.2 Training Plan

The in-house training will be conducted for several days in order to educate and improve personnel computer skill as follows :

Day 1	Computer Concept	Data Entry Personnel
	Hardware Introduction	Lending Personnel
	Software Functions Review	Other Related Departments Personnel
	Data Processing Procedures	Related Personnel
Day 2	System Features & Functions	Same as Day 1
Day 3	Files Set up, Report & Output	All Report Users
Day 4	System Supervising & Practicing	All Users

4.3 Detailed System Design

This part of the project adds the final technical details to the overall system design development and selection. In particular, the consideration is given to the human-machine interactions, the detailed file design and maintenance, the continuity of service

in case the computer goes down, and the additional security and the access controls. The major output of this part is a detailed design specification.

4.4 Physical File Design

The physical file design and layout is completed. The formal file organization techniques should be defined, and the size and the arrangement of the data fields within the records are specified. The data dictionary entry is updated to include these expanded definitions. The estimation of the disk space is made along with the specifications for blocking and the physical arrangements of files on the storage media.

4.5 Input and Output Design

The input and output design is completed. The format is developed for the source, the input, and the output documents and the screens based on the data dictionary definitions. The interactive pattern of the human machine communication is specified in terms of the menu, the error trapping and the recovery routines.

4.6 Project Schedule

This project is based on the principles of " Structured Analysis and Design " following a development life cycle. The activities are related to the transition from the system analysis into the system design, to the system design activities, and to the software design.

The objective of the case requires completion of design for the functional system. It also presents the opportunity for the supplemental design projects and point out the importance of having a completed, exacting set of the system specifications as the foundation for design. An understanding of the process of the system design is of greater benefit than an ability to develop a full set of the potential system and products.

The case has been divided into four major parts, corresponding generally to the life cycle activities that will :

- produce a completed and detailed system specification.
- provide a transition between the products of system analysis and the development of a general system design.
- produce a system design that documents the software products, data files and other hardware and software resources required to implement the system.
- develop a software design as the basis for programming the system.

4.7 Critical Success Factors for Consideration

There are a number of critical success factors that need to be addressed to guarantee a successful implementation of the lending system. These are as follows :

- Composition of the working team both business and tectonic.
- Organizational agreement and momentum for change.
- Well-defined business and computer plans.
- Understanding of the SIFC existing human resource pool.
- Setting of an implementation plan and timeframe for SIFC.
- Identification of a training program that best fits with SIFC.
- Establishing the documentation standards to be adopted for the duration of the project and all ensuring projects.
- Definition of an organization structure to best fit the future management and the operational needs.
- Defining and implementation plan in stages.

4.8 Expected Benefits to be Derived from Implementation

A number of the expected benefits Small Industry Finance Corporation should derive from a computerized system implementation such as :

1. Sharing of Information & One-time Data Capture

The majority of the lending information for Small Industry Finance Corporation is provided by each lending type system (loan, bill discount, and so on) and will arrive in the lending information via an overnight interface.

The computerization of the SIFC lending information will mean that the information captured at the time of a customer transaction will be available to all users' requirement of the information at the same time and will result from one-time data capture. This means the information will be shared by all decision makers.

2. Timeliness

The reports will be produced in a timely manner and await the recipient first thing in the morning; via the remote printer from EDP department distribution in the office.

3. Accuracy

Due to the sharing of the information and one-time data capture accuracy will be as perfect as the initial entry of the transaction. The integrity of the information is always only as good as the quality of the initial data entry and the document preparation.

4. Improved Management Information

The management within SIFC can expect to receive improved management information to support the decision making process. However, it must be stressed that the project is the lending project, and not a complete management information itself.

The completion of the management information is what is often referred to as an Executive Information System (EIS).

5. Reduction of Manual Effort

The manual effort in the compilation of the reports, the transmission of data and the duplication of effort will be significantly reduced from the computerization of the lending system.

4.9 Time Estimation (A Gantt Chart)

The time estimation for the project is shown in the figure 4.1 as follows :

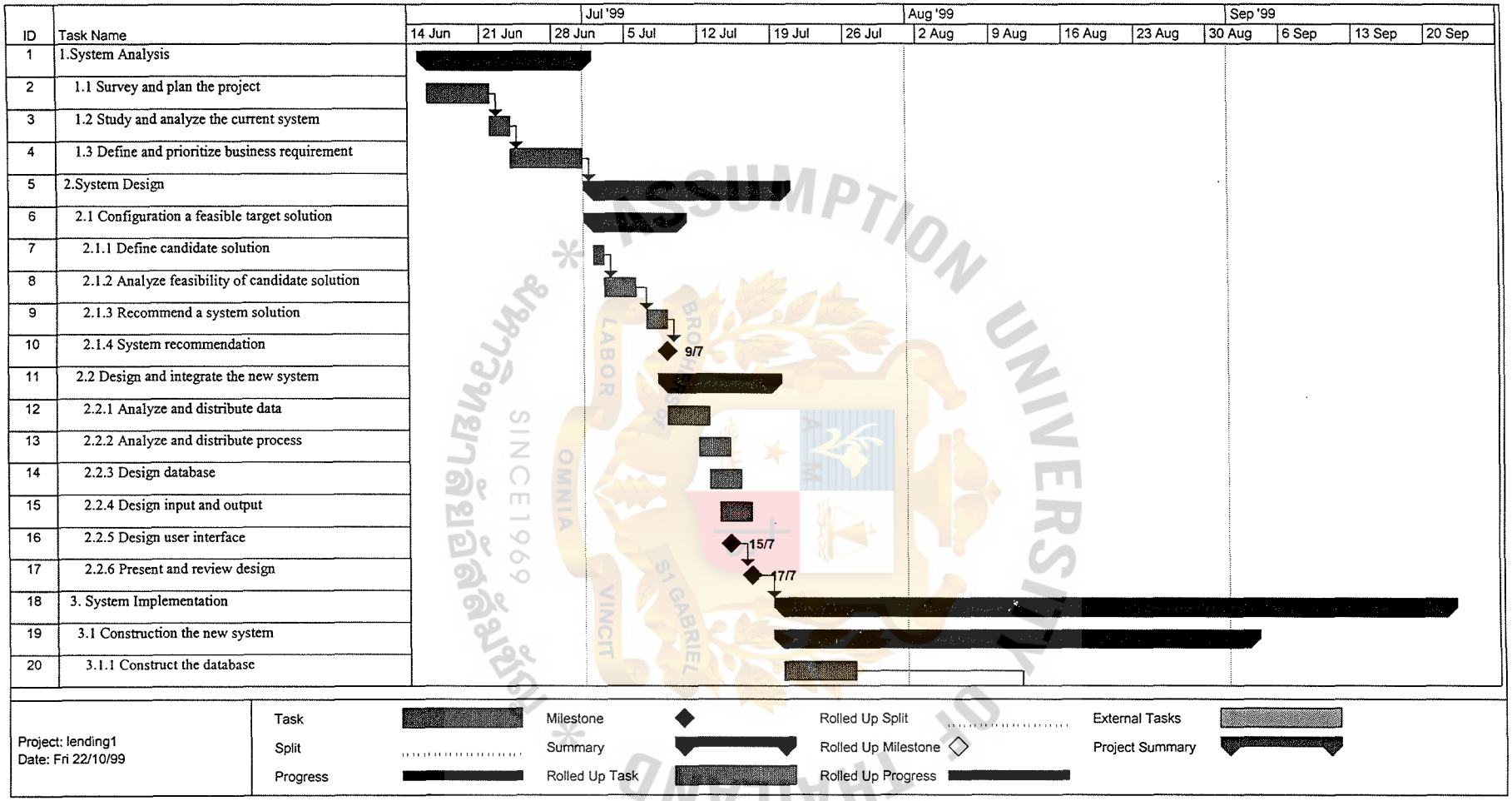

Figure 4.1. Time Estimation (A Gantt Chart).

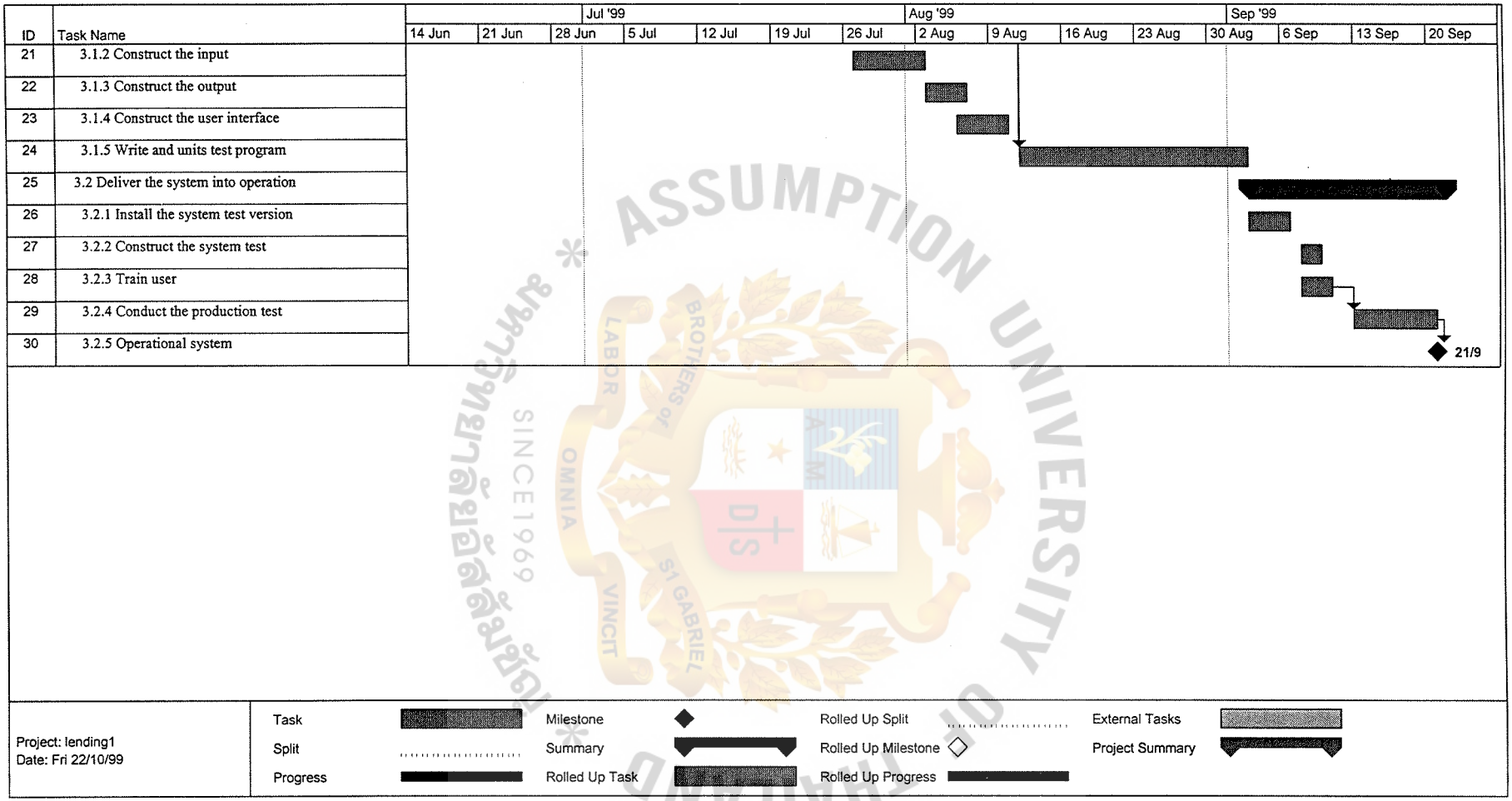

Figure 4.2. Time Estimation (A Gantt Chart) (continue).

V. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

As Small Industry Finance Corporation supplies a variety of services beyond the two typical of storing and lending money, the loan information is used as part of the integrated information for the management in reviewing the net return on each Baht available. The high technology is now the requirement for survival in the modern business to meet the power of competitors. It comes to the objectives in having a computer system to process the lending data and convert them to the information which are first, providing the economic and rapid storage and retrieval of data, and second, presenting information in easily understood formats and in a variety of media.

With the gathering of information from the related departments, the lending processes and data classes are performed. The processes are separated into 5 groups : the lending approval, the lending process, the lending monitoring and control, the lending workout, and the management information. The management steering committee is decided to reduce the problem loan amount for a certain period of time. The computer staffs and the lending management are communicated to set up the lending information flows. The lending managers give the ultimate purpose of the information. The computer staffs convert them into the data. The information will be completed within several months. The management will receive exception reports which will inform the potential payment problems that allow SIFC to take corrective action before the situation becomes more inflexible.

5.2 Recommendations

Whether the lending system will be successful or not, depends on the information structure or architecture. No matter how efficient other supporting tools are, if this is not good enough, the system will fail to be exited. It has to build up the good database in the information structure, the organization structure, the management team's capabilities, and to clearly identify the information system in the organization both now and in the future.

The project team, which is partly from the computer department of the organizational specialists or from the management team, must control and supervise the system according to the objectives of SIFC and must communicate with other departments when the consideration must also be made in terms of the facility supports: such as the software, the equipment that has been selected to suit the volume of data, or the data management to be applied.

The attitude in making use of the information system which means that the management should try to focus on the management oriented or the business oriented, rather than the technical oriented and if the organization has enough information, it should develop this project because the lending system will have the payback period approximately within 3 years which is very attractive to the development.

APPENDIX A

CONTEXT DIAGRAM

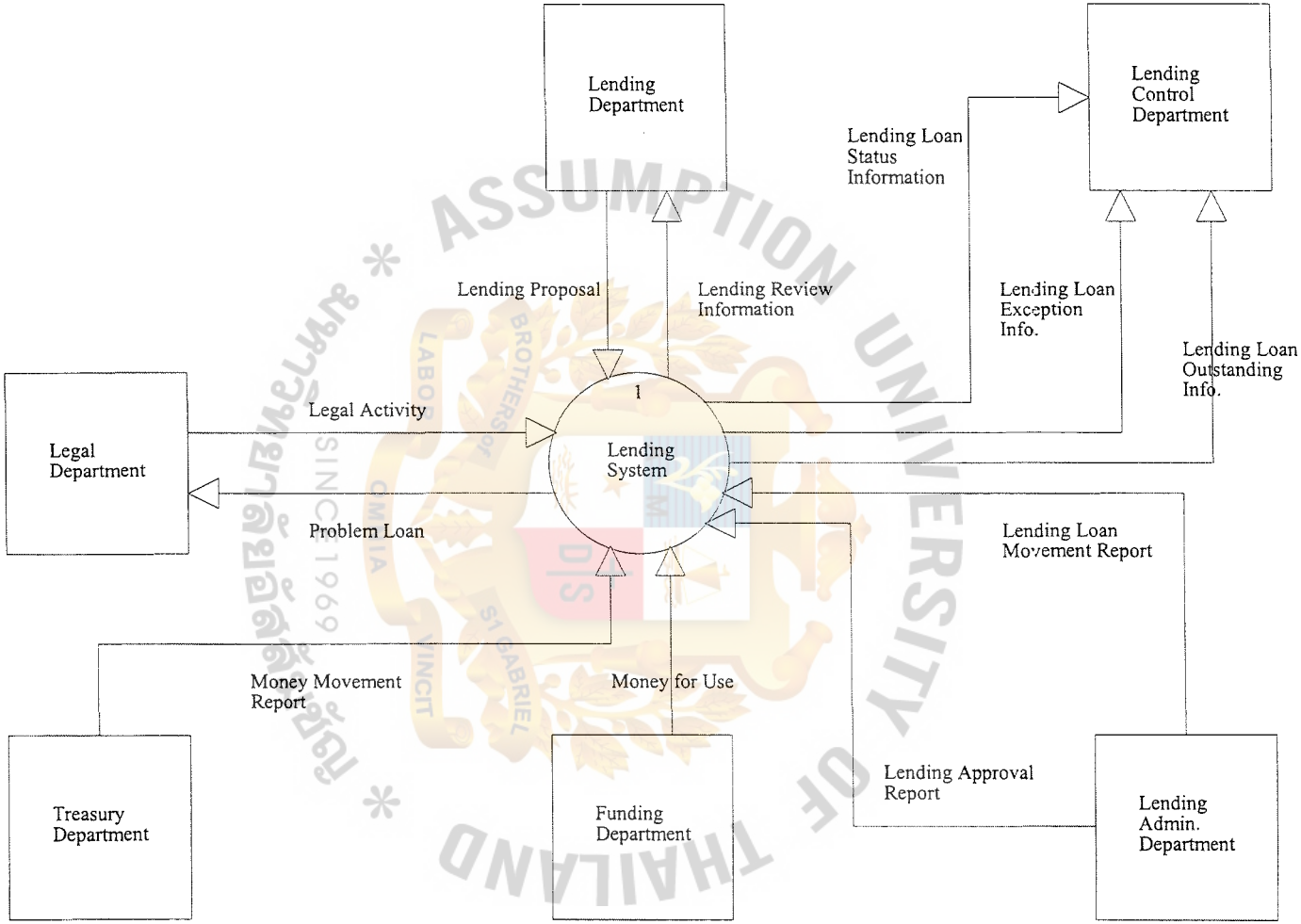

Figure A.1. Proposed System Context Diagram.

APPENDIX B

DATA FLOW DIAGRAM

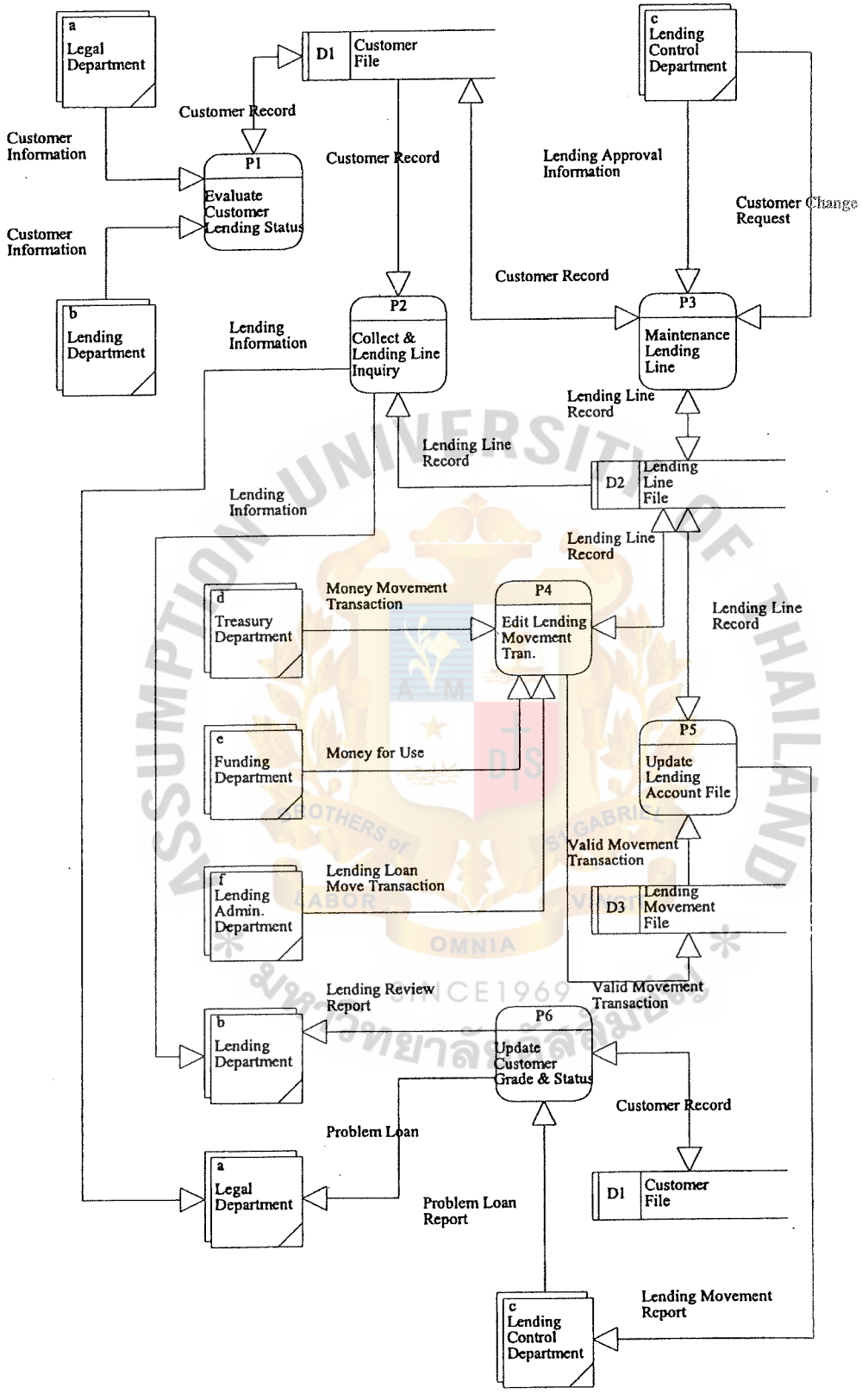

Figure B.1. Data Flow Diagram Level 0.

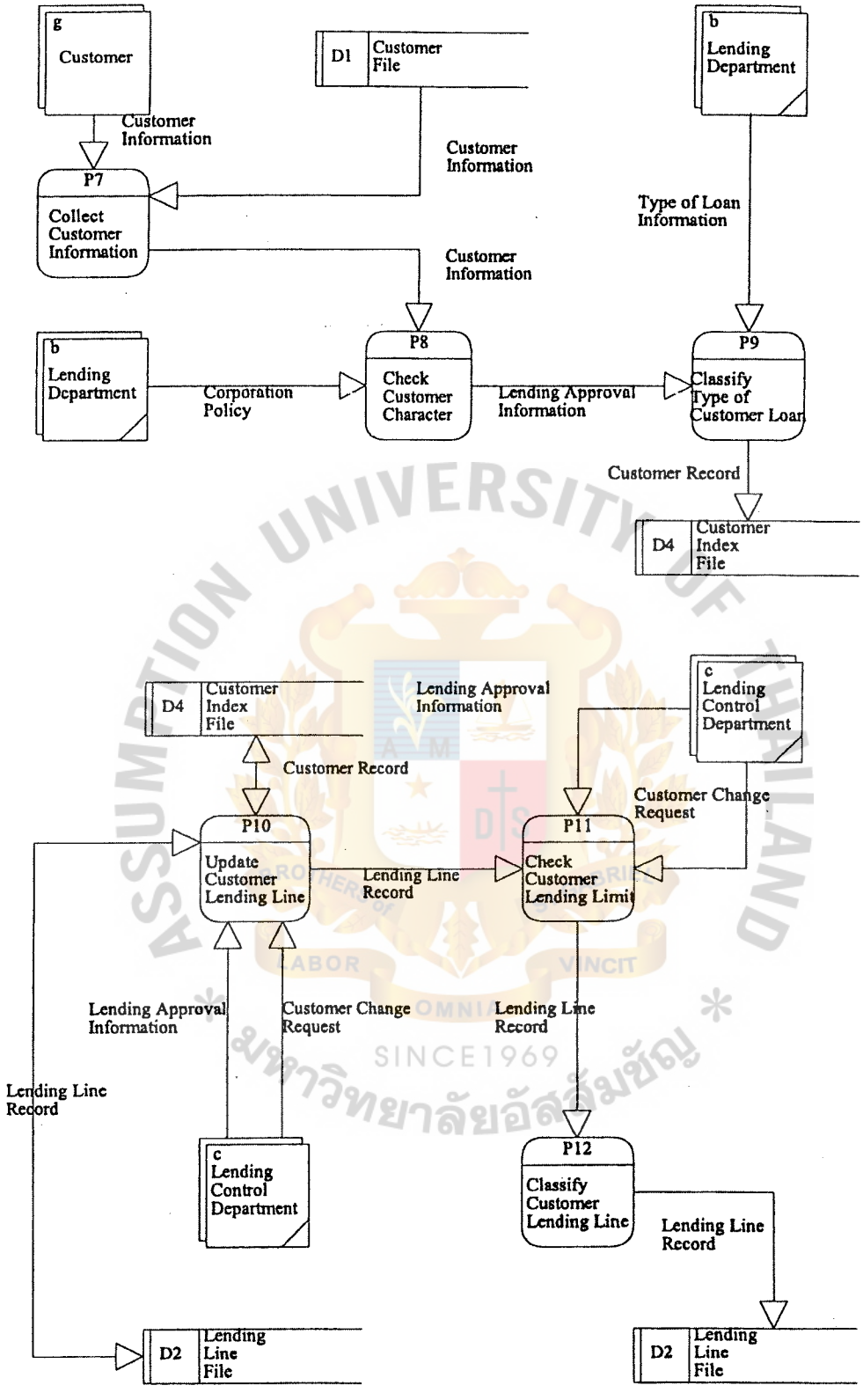

Figure B.2. Data Flow Diagram Level 1 for Process 1 & 3.

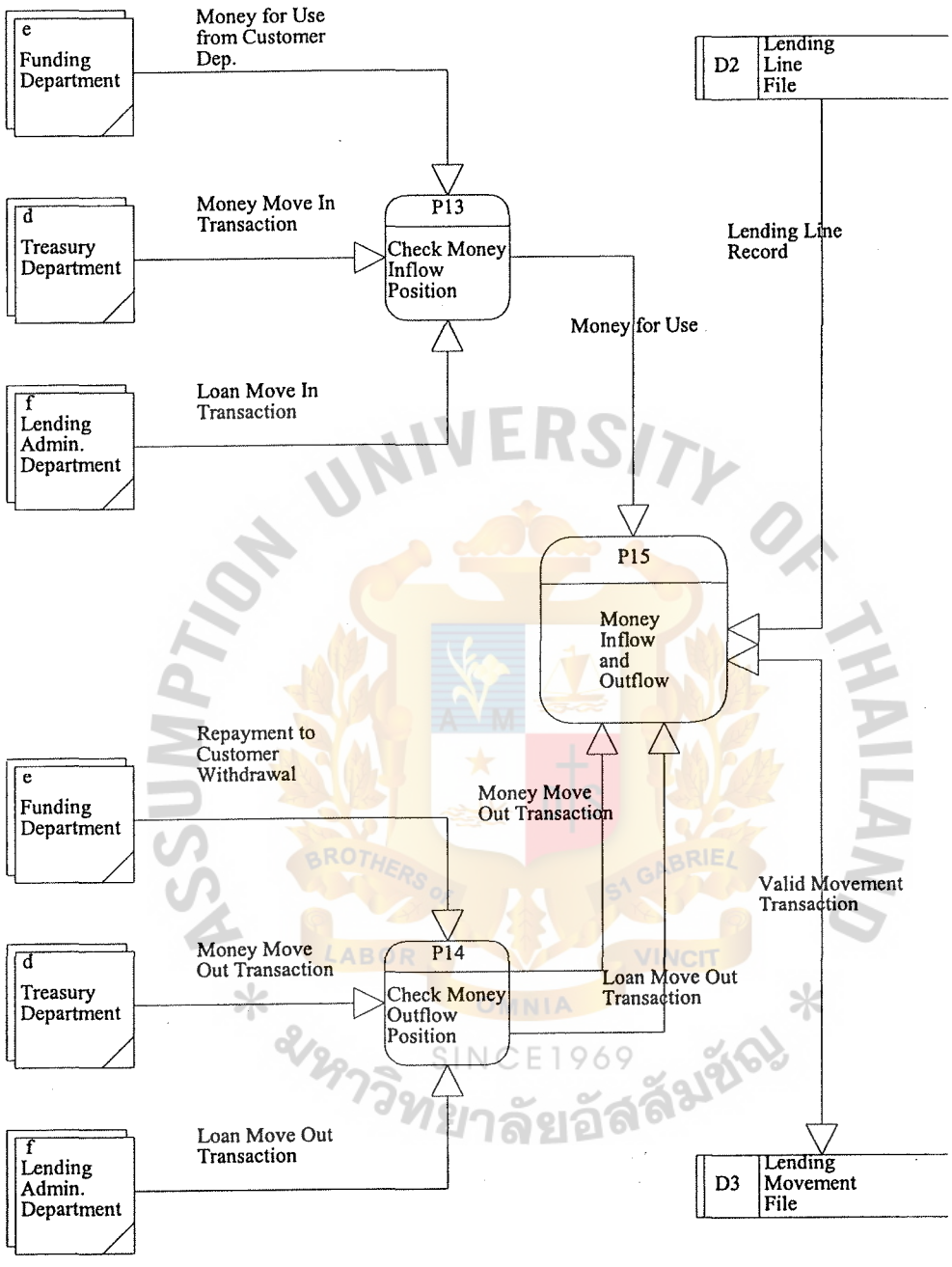

Figure B.3. Data Flow Diagram Level 1 for Process 4.

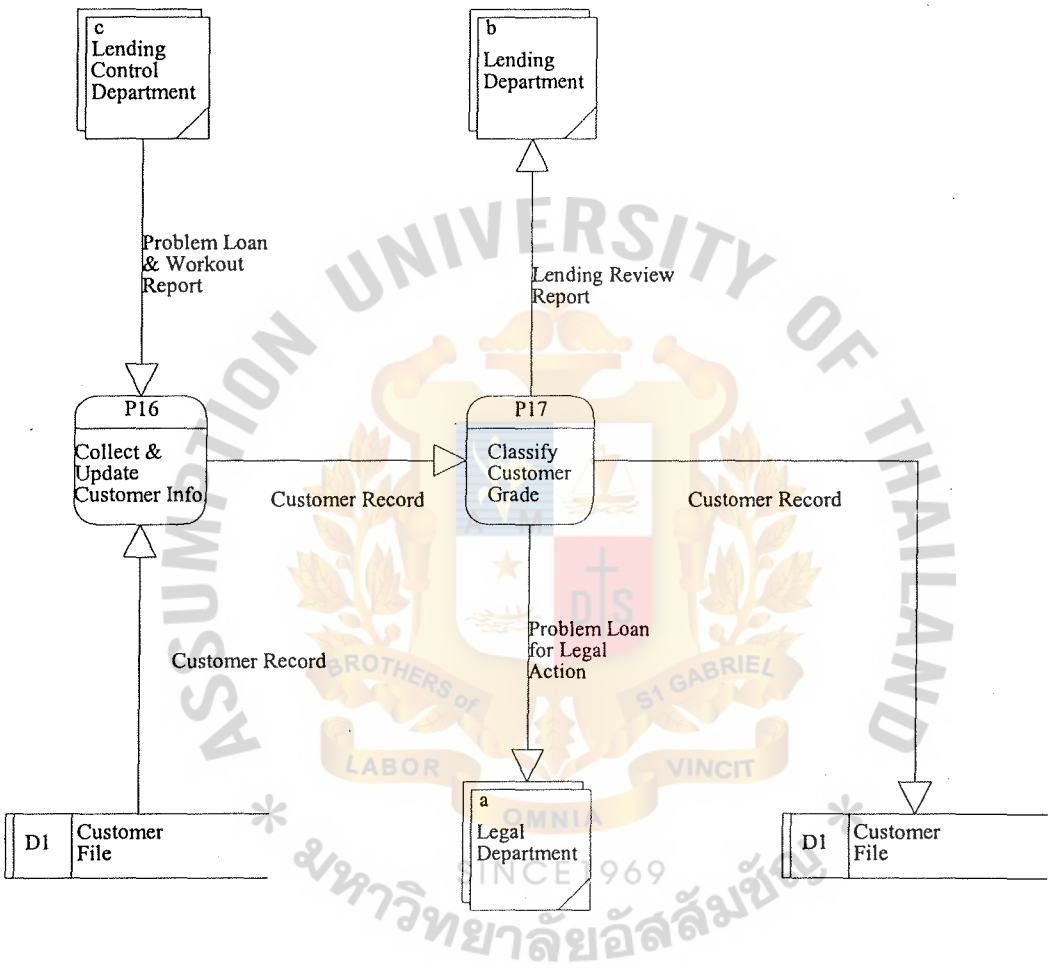

Figure B.4. Data Flow Diagram Level 1 for Process 6.

APPENDIX C

DATABASE AND FILE DESIGN

Table 4.1. Database and File Design.

Appraisal			
Caption	Field Name	Data Type	Mask/Format
Lending Account No	LANo (PK)	Char(14)	###\-##\-#######
Lending Line Amount	LLAmt	Long Integer	#,##0.00
Reference Rate	RefRate	Single	#,##0.00
Loading	Loading	Char(50)	
Security Code	SecurCode	Char(3)	###
Appraisal Value	AppVal	Long Integer	#,##0.00
Appraisal Date	AppDate	Date/Time	dd/mm/yyyy
Running	Running	Integer	#,##0
Land	Land	Long Integer	#,##0.00

CusIndex			
Caption	Field Name	Data Type	Mask/Format
Customer Code	CCode (PK)	Char (12)	#\-##########
Lending Account Number	LANo (PK)	Char (14)	###\-##\-#######
Lending Sequence Number	LSNo	Char (20)	

Customer			
Caption	Field Name	Data Type	Mask/Format
Customer Code	CCode (PK)	Char (12)	#\-##########
Tax Payer ID	TPID	Char (9)	#########
Name Thai	TName	Char (255)	
English Name	EName	Char (255)	
Customer Type	CType	Char (5)	#####
BOT Code	BOT	Char (8)	########
Customer Grade	CGrade	Char (4)	#\-##
Group of Company	Gcom	Char (4)	####
Control and Work Code	WCode	Char (2)	##
Legal Action Code	LACode	Char (2)	##

Lending			
Caption	Field Name	Data Type	Mask/Format
Lending Account No	LANo (PK)	Char (14)	###\-##\-#######
Lending Line Type	LType	Char (1)	#
Business Type	BType	Char (2)	##
Project Code	PCode	Char (10)	##\-#######
Start Contract Date	StartDate	Date/Time	dd/mm/yyyy
End Contract Date	EndDate	Date/Time	dd/mm/yyyy
Interest Status	IStatus	Char (30)	
Interest Status Date	ISDate	Date/Time	dd/mm/yyyy
Account Offices Number	AcONo	Char (11)	#####\-#####
Authorized Officer Number	AuONo	Char (11)	#####\-#####
Create Line Remark	CLRemark	Char (255)	
Cash Balance	CBal	Long Integer	#,##0.00

Table 4.2. Database and File Design (continue).

Lending			
Caption	Field Name	Data Type	Mask/Format
Non Cash Balance	NCBal	Long Integer	#,##0.00
Exception Balance	EBal	Long Integer	#,##0.00
AccumulatedIntRec	AIntRec	Long Integer	#,##0.00
Int Receive	IRcv	Long Integer	#,##0.00
Int Suspense	ISusp	Long Integer	#,##0.00
Last Transaction Date	LTDate	Date/Time	dd/mm/yyyy
Legal Expense	LExpense	Long Integer	#,##0.00

LendingMove			
Caption	Field Name	Data Type	Mask/Format
Lending Account Number	LANo (PK)	Char (14)	###\-##\-#######
Last Transaction Date	LTDate	Date/Time	dd/mm/yyyy
Cash Balance	CBal	Long Integer	#,##0.00
Interest Receivable	IRcv	Long Integer	#,##0.00
Interest Suspense	ISusp	Long Integer	#,##0.00
Total Paid	TPaid	Long Integer	#,##0.00

Officer			
Caption	Field Name	Data Type	Mask/Format
Authorize Code	AID (PK)	Char (11)	#####\-#####
Officer	AName	Char (100)	

APPENDIX D

STRUCTURE CHART

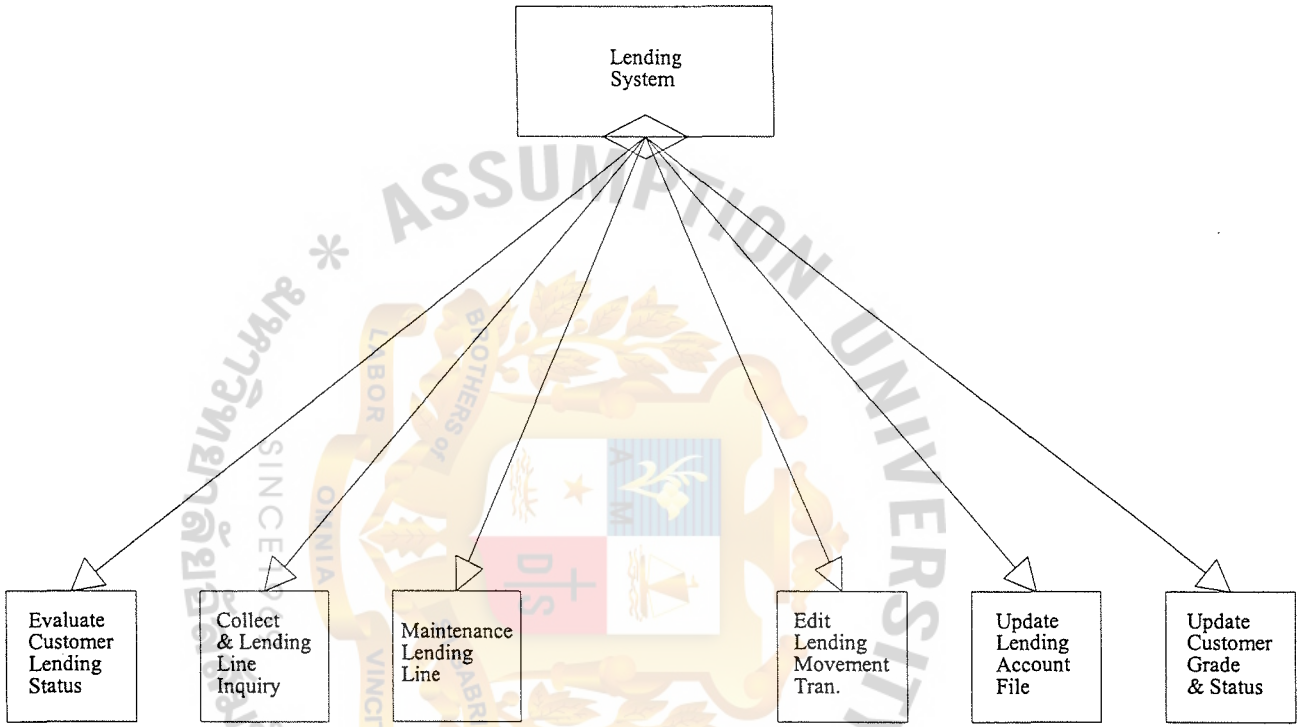

Figure D.1. Structure Chart "The Top of The Project".

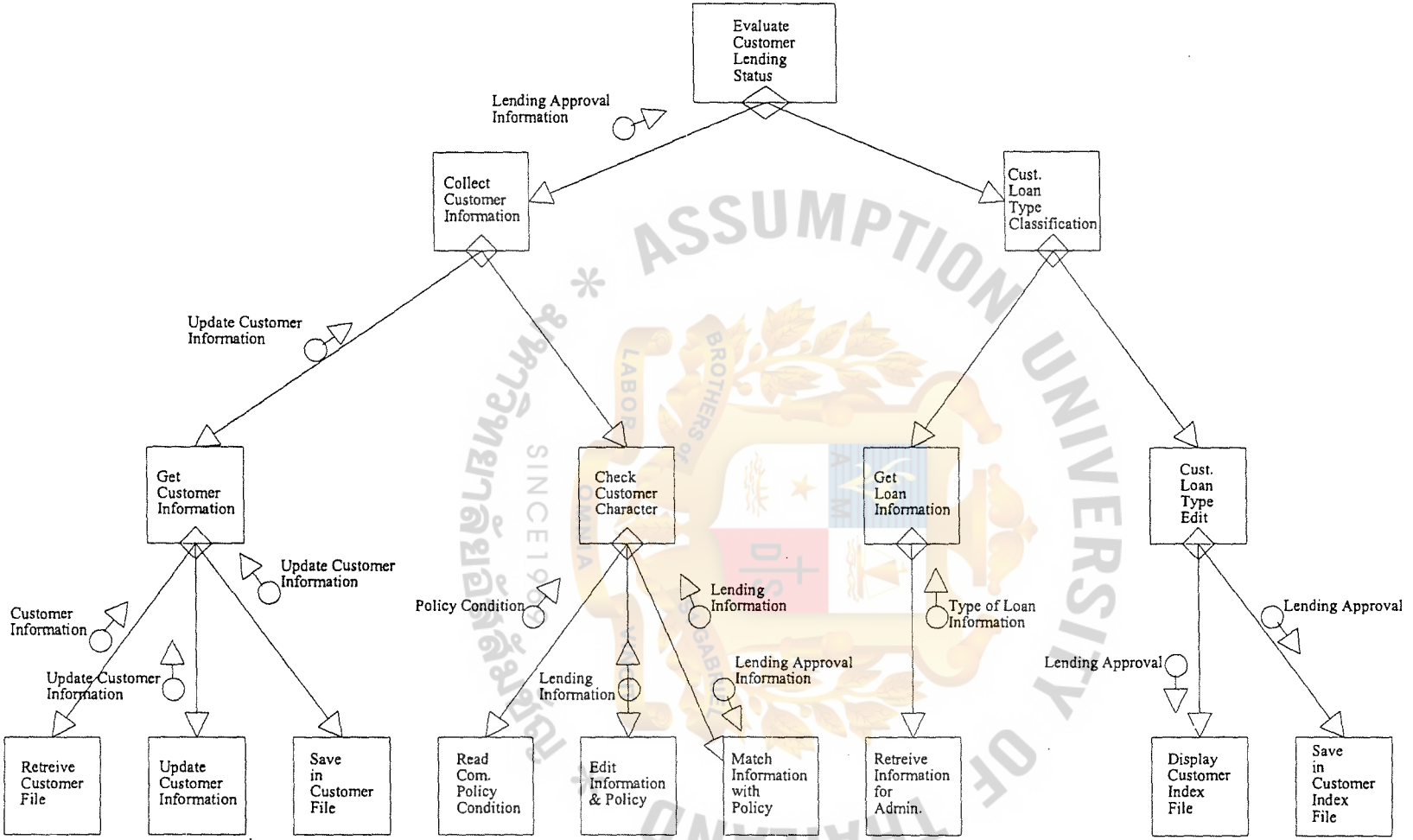

Figure D.2. Structure Chart for Process 1.

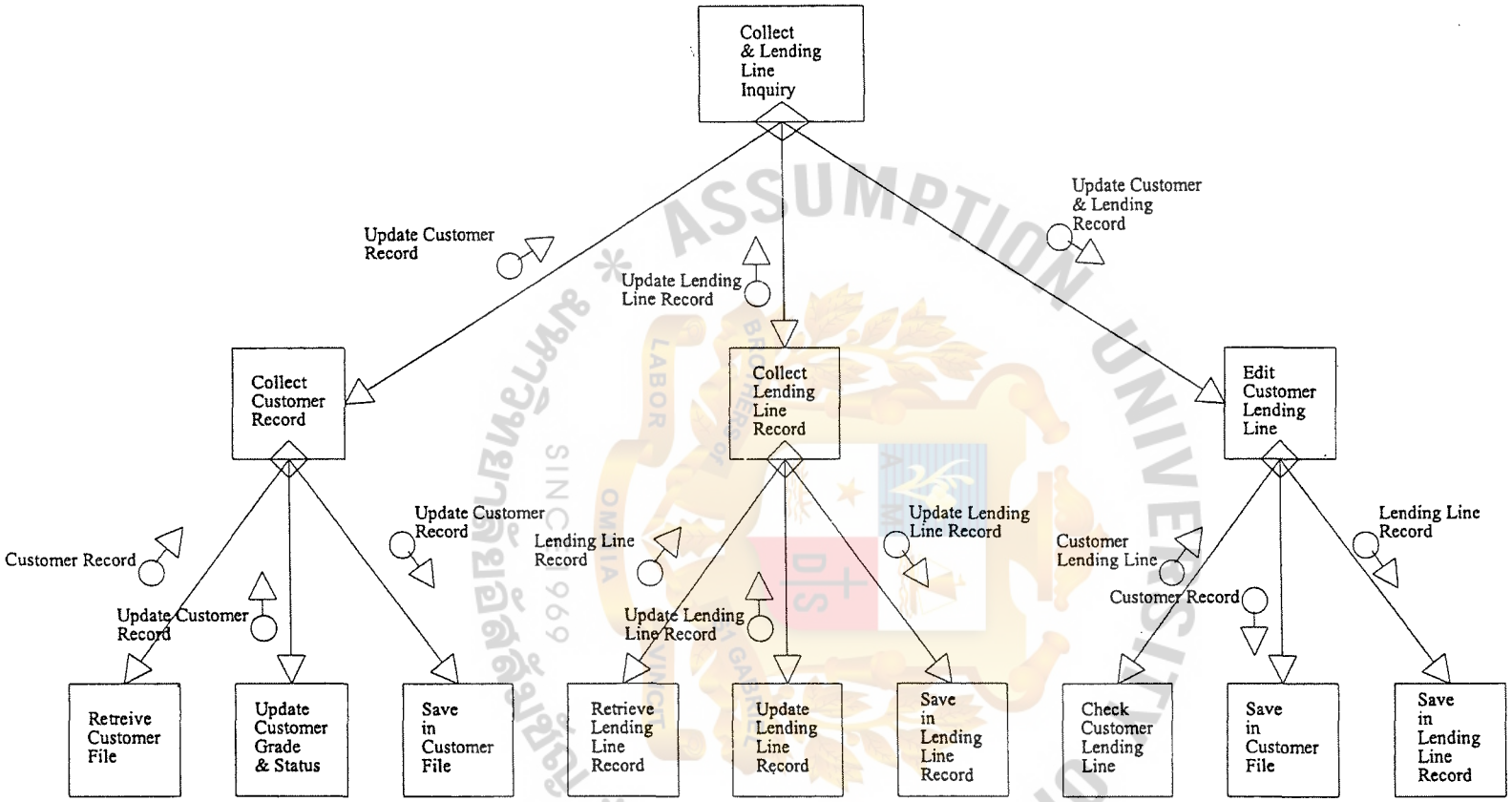

Figure D.3. Structure Chart for Process 2.

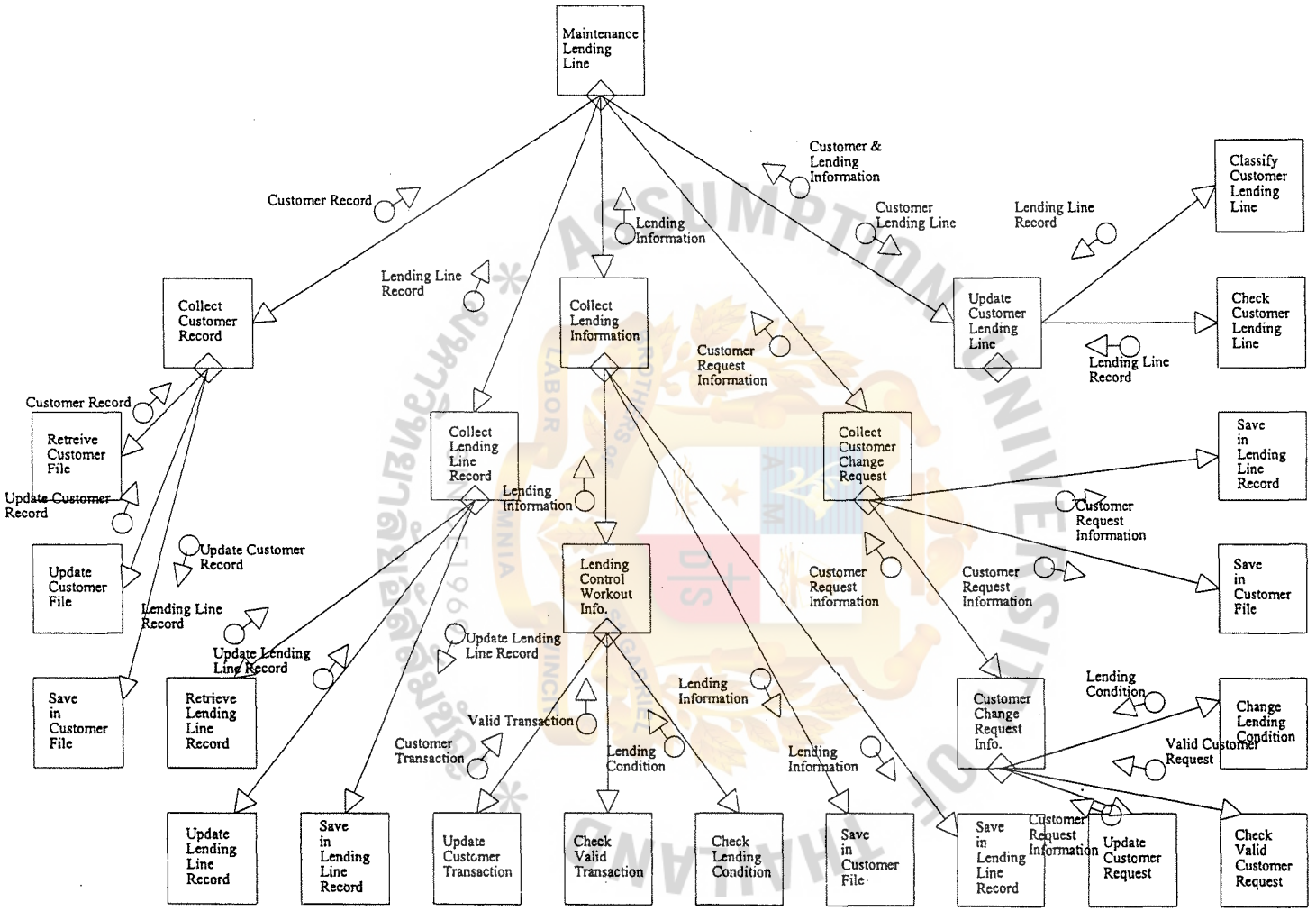

Figure D.4. Structure Chart for Process 3.

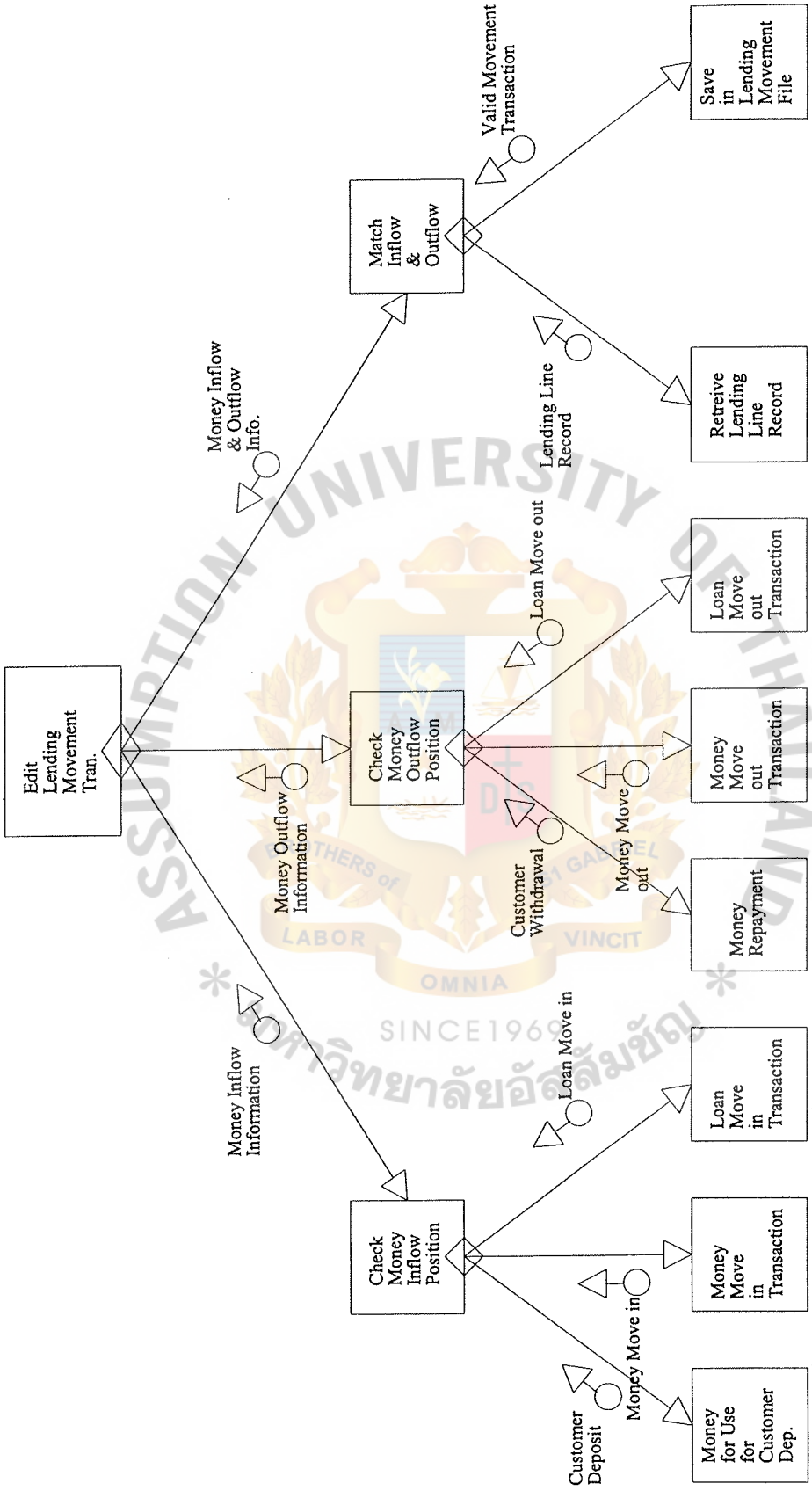

Figure D.5. Structure Chart for Process 4.

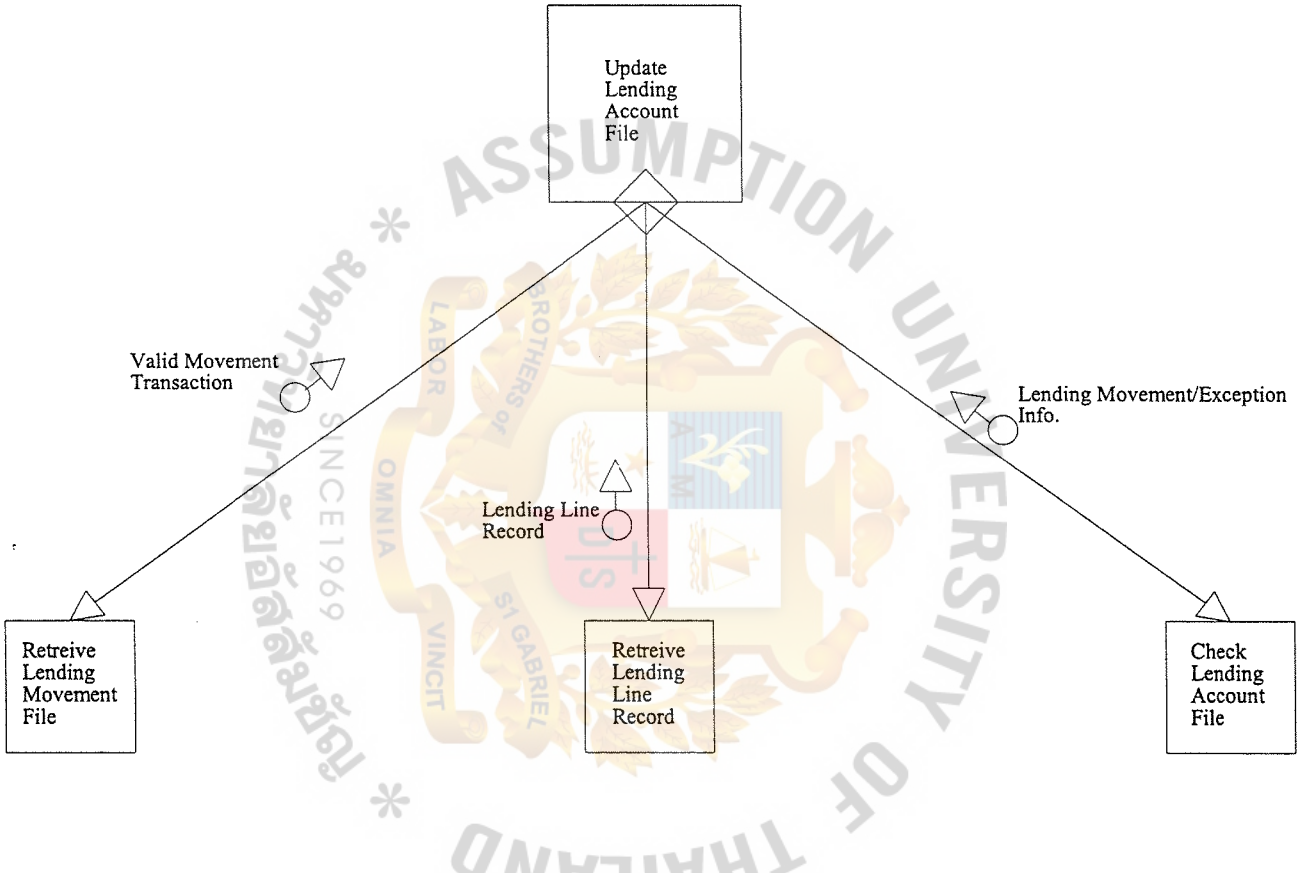

Figure D.6. Structure Chart for Process 5.

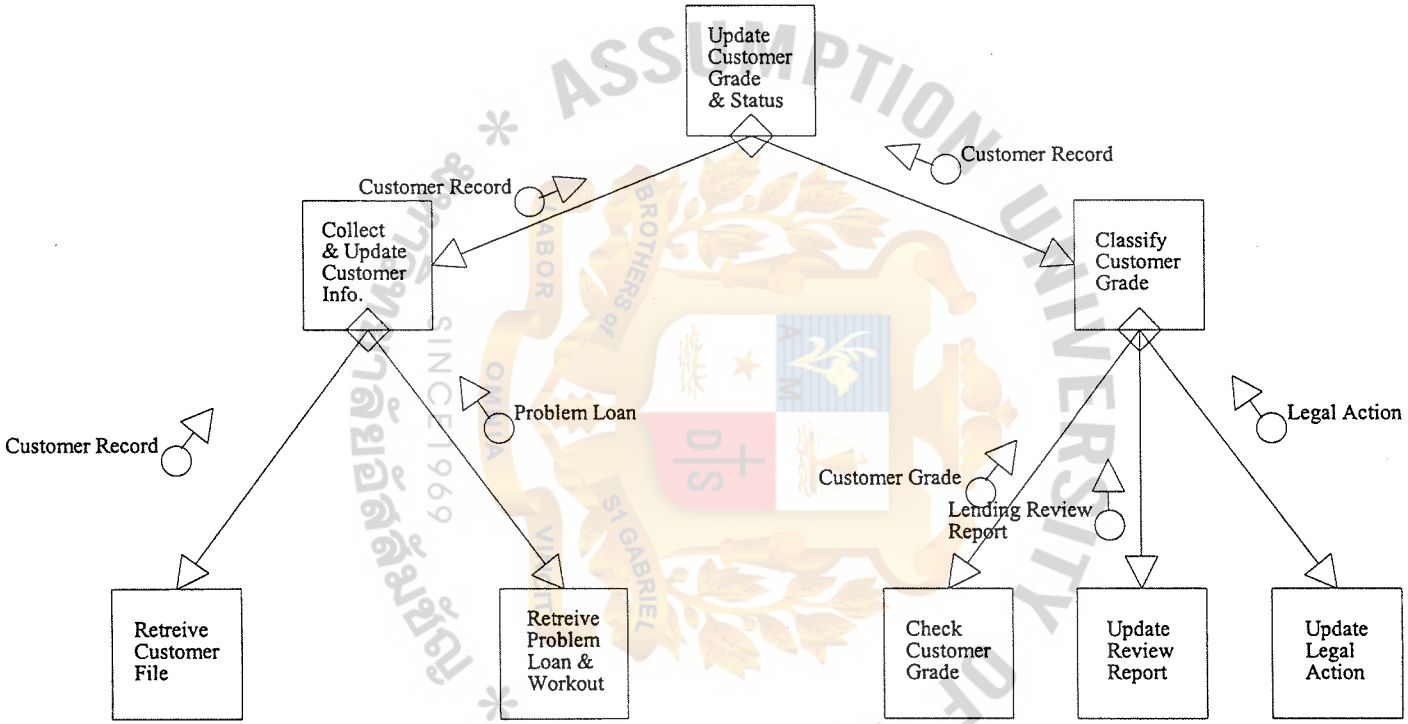

Figure D.7. Structure Chart for Process 6.

APPENDIX E

NETWORK CONFIGURATION

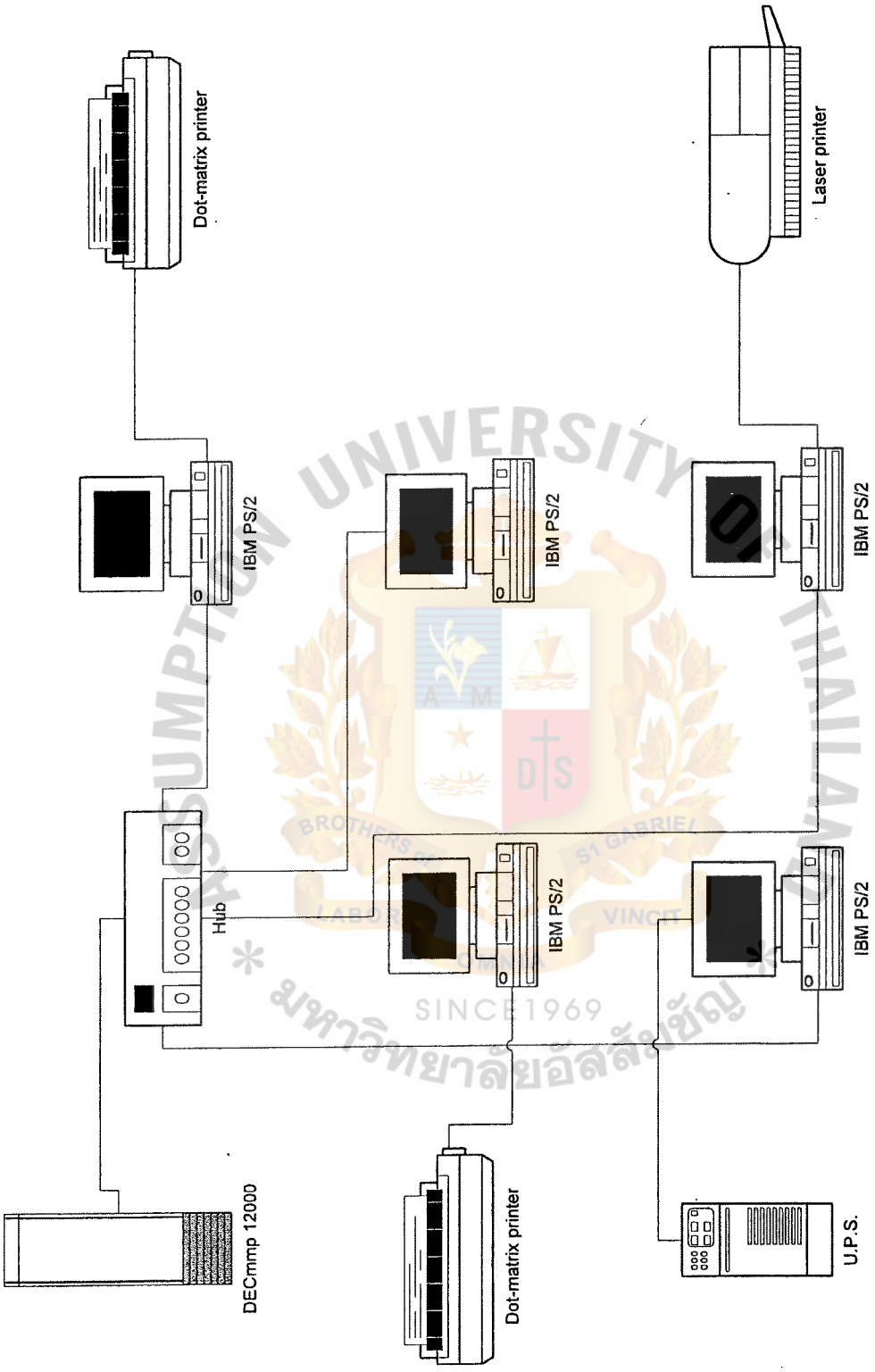

Figure E.1. Network Configuration.

APPENDIX F

DATA DICTIONARY

Easycase Definition and Short Description Attributes
User : Wuthi

Project : SIFC
Project Directory : \ecwin\

Object Name : Corporation Policy
Object Type : Data Flow
Definition : Lending Limit + Interest Rate Charge + Fee Charge + Lending Line and Collateral + Lending Guarantee + Lending Type
Short Definition :

Object Name : Customer Change Request
Object Type : Data Flow
Definition : Customer Record + Customer Additional Information + Customer Request
Short Definition :

Object Name : Customer Information
Object Type : Data Flow
Definition : Customer Name + Customer Address + Type of Business + Business Detail + Customer Statement + Customer Cashflow + Collateral + Customer Other Data
Short Definition :

Object Name : Customer Record
Object Type : Data Flow
Definition : Customer Name + Legal Form + Customer Address + Type of Business + Short Legal History + Major Shareholder + Main Executive + Industrial Characteristic + Production Capacity + Financial Status + Collateral Appraisal + BOT Customer Code + Purpose of Loan + Customer Type + Customer Grade
Short Definition :

Object Name : Lending Approval Information
Object Type : Data Flow
Definition : Customer Code + Customer Name + Lending Account No. + Approval Date + Lending Type + Amount + Interest Rate + Collateral
Short Definition :

Object Name : Lending Information
Object Type : Data Flow
Definition : Customer Code + Customer Name + Lending Account No. + Lending Type + Amount + Lending Outstanding + Contract Starting Date + Contract Ending Date + Interest Rate + Lending Interest Status + Lending Condition + Collateral + Lending Guarantee + Fee + Repayment + Officer Name + Officer Code
Short Definition :

Object Name : Lending Line Record
Object Type : Data Flow
Definition : Lending Account No. + Lending Line Running + Lending Line Amount + Reference Rate + Rate Loading
Short Definition :

Object Name : Lending Loan Move Transaction
Object Type : Data Flow
Definition : Customer Code + Customer Name + Lending Account No. + New Transaction Date + New Transaction Amount
Short Definition :

Object Name : Lending Movement Report
Object Type : Data Flow
Definition : Lending Account No. + Last Transaction Date + Cash Balance + Interest Received + Overdue Date + Penalty Fee Rate + Penalty Fee Received + Last Transaction Amount + New Transaction Amount + New Transaction Date
Short Definition :

Object Name : Lending Review Report
Object Type : Data Flow
Definition : Customer Code + Customer Name + Lending Account No. + Lending Expired Date + Lending Review Date
Short Definition :

Object Name : Loan Move in Transaction
Object Type : Data Flow
Definition : Customer Code + Lending Account No. + Loan Repayment Amount + Loan Repayment Date
Short Definition :

Object Name : Loan Move out Transaction
Object Type : Data Flow
Definition : Customer Code + Lending Account No. + Loan Drawdown Amount + Loan Drawdown Date
Short Definition :

Object Name : Money for Use
Object Type : Data Flow
Definition : Cash Inflow Amount
Short Definition :

Object Name : Money for Use from Customer Dep.
Object Type : Data Flow
Definition : Cash Inflow Amount + Check Money Movement
Short Definition :

Object Name : Money Move in Transaction
Object Type : Data Flow
Definition : Cash Inflow Amount + Transaction Date + Repayment Date
Short Definition :

Object Name : Money Move out Transaction
Object Type : Data Flow
Definition : Cash Outflow Amount + Transaction Date
Short Definition :

Object Name : Money Movement Transaction
Object Type : Data Flow
Definition : Cash Inflow Amount + Cash Outflow Amount
Short Definition :

Object Name : Problem Loan
Object Type : Data Flow
Definition : Customer Number + Customer Name + Lending Account Number + Lending Type + Lending Outstanding Amount + Interest Rate + Interest Receivable + Outstanding Receivable
Short Definition :

Object Name : Problem Loan & Workout Report
Object Type : Data Flow
Definition : Customer Number + Customer Name + Lending Account Number + Lending Type + Lending Outstanding Amount + Interest Rate + Interest Receivable + Outstanding Receivable
Short Definition :

Object Name : Problem Loan for Legal Action
Object Type : Data Flow
Definition : Customer Number + Customer Name + Lending Account Number + Lending Outstanding Amount + Interest Receivable + Outstanding Receivable
Short Definition :

Object Name : Problem Loan Report
Object Type : Data Flow
Definition : Customer Number + Customer Name + Lending Account Number + Lending Type + Lending Outstanding Amount + Interest Rate + Interest Receivable + Outstanding Receivable
Short Definition :

Object Name : Repayment to Customer Withdrawal
Object Type : Data Flow
Definition : Customer Name + Customer Code + Cash Withdrawal Amount + Withdrawal Date
Short Definition :

Object Name : Type of Loan Information
Object Type : Data Flow
Definition : Commercial Loan + Industrial Loan + Real Estate Loan + Service Loan
Short Definition :

Object Name : Valid Movement Transaction
Object Type : Data Flow
Definition : Cash Inflow Amount + Cash Outflow Amount + New Transaction Amount + Cash Remaining Amount
Short Definition :

APPENDIX G

INTERFACE DESIGN

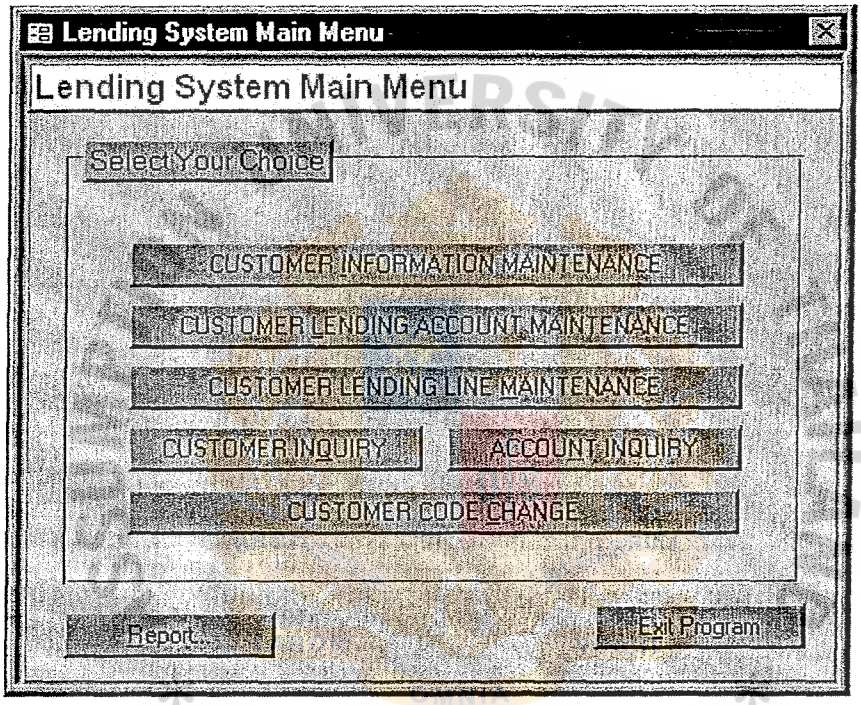

Figure G.1. Lending System Main Menu.

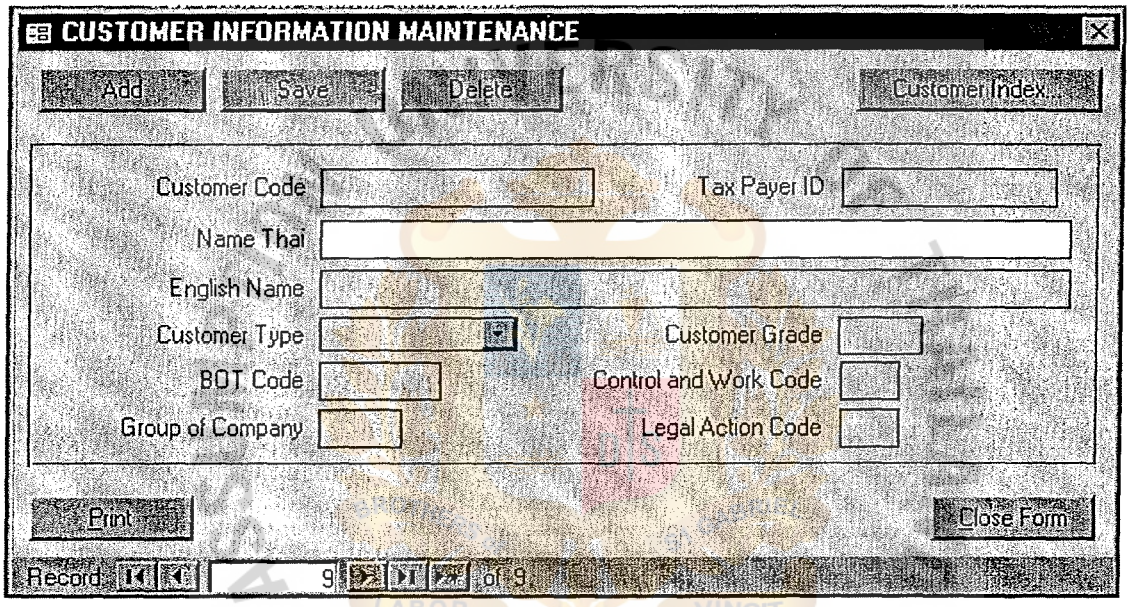

Figure G.2. Customer Information Maintenance Menu.

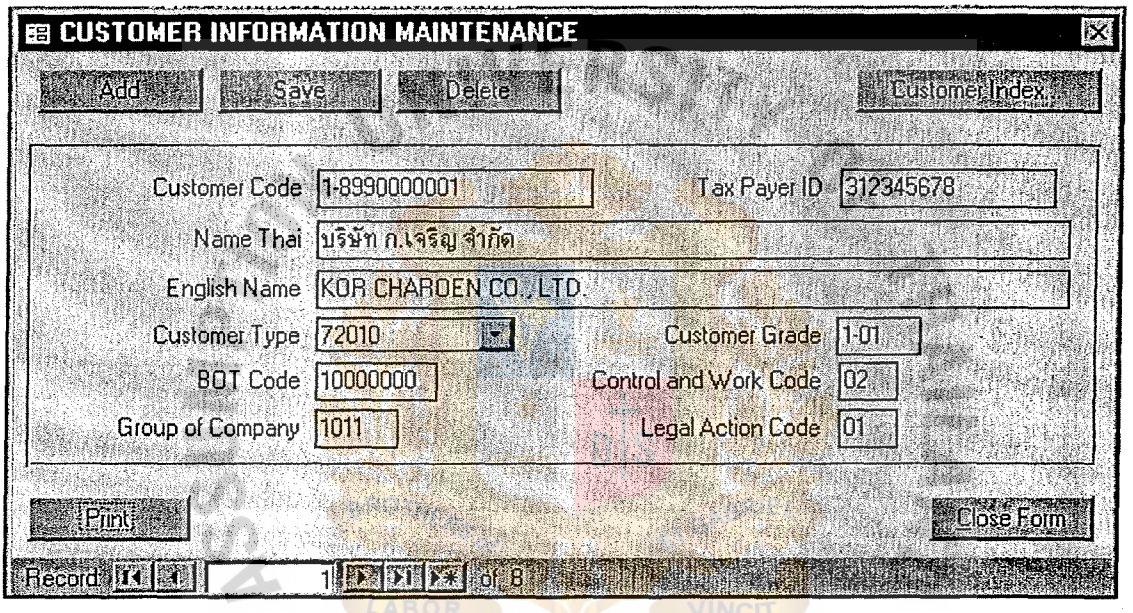

Figure G.3. Example of Customer Information Maintenance Menu.

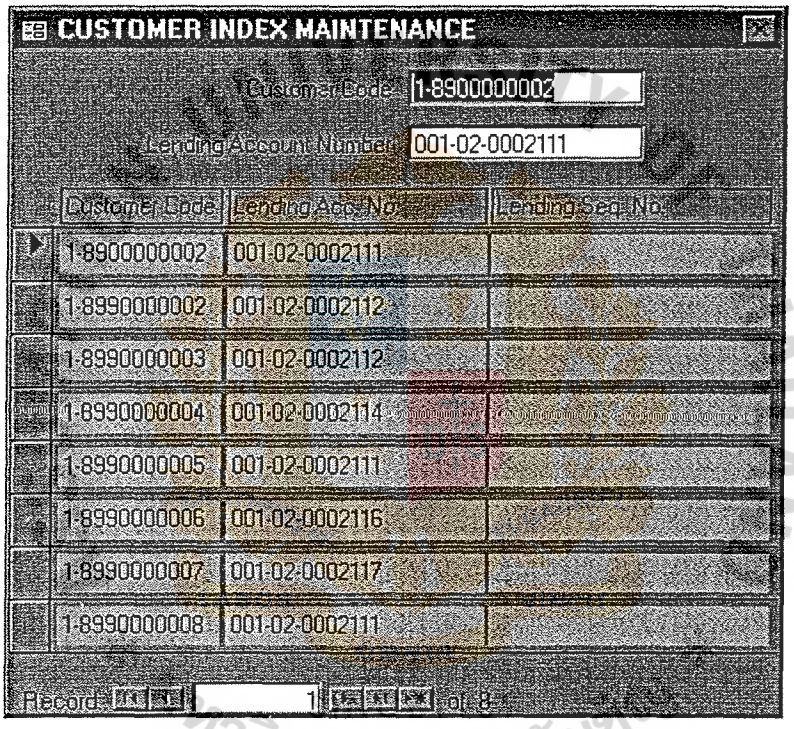

Figure G.4. Customer Index Maintenance Menu.

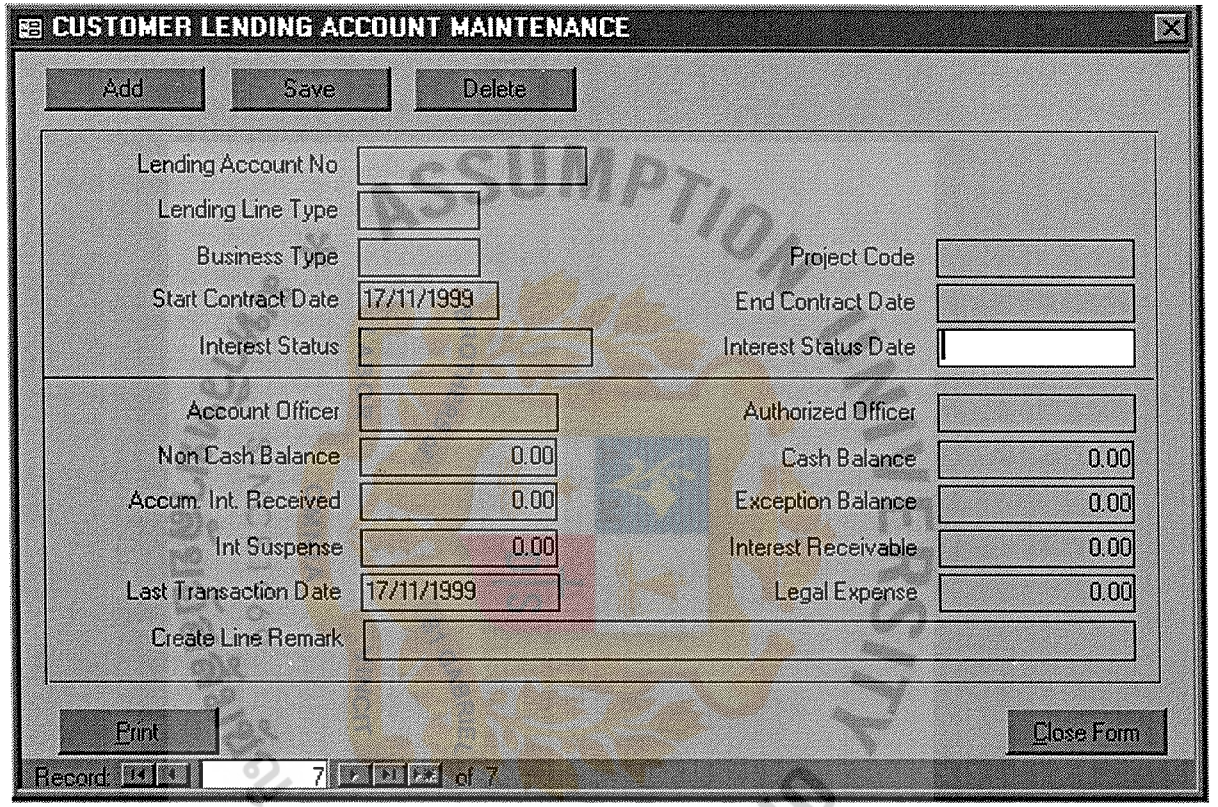

Figure G.5. Customer Lending Account Maintenance Menu.

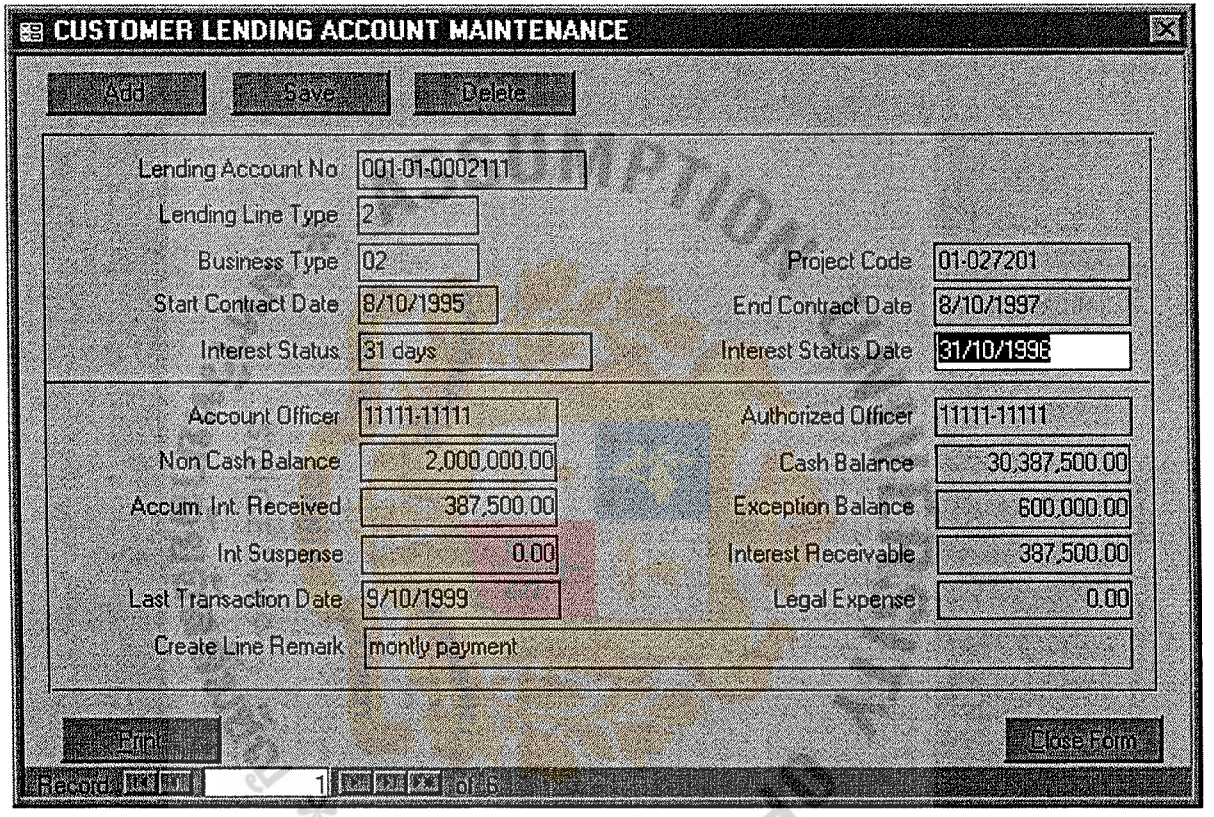

Figure G.6. Example of Customer Lending Account Maintenance Menu.

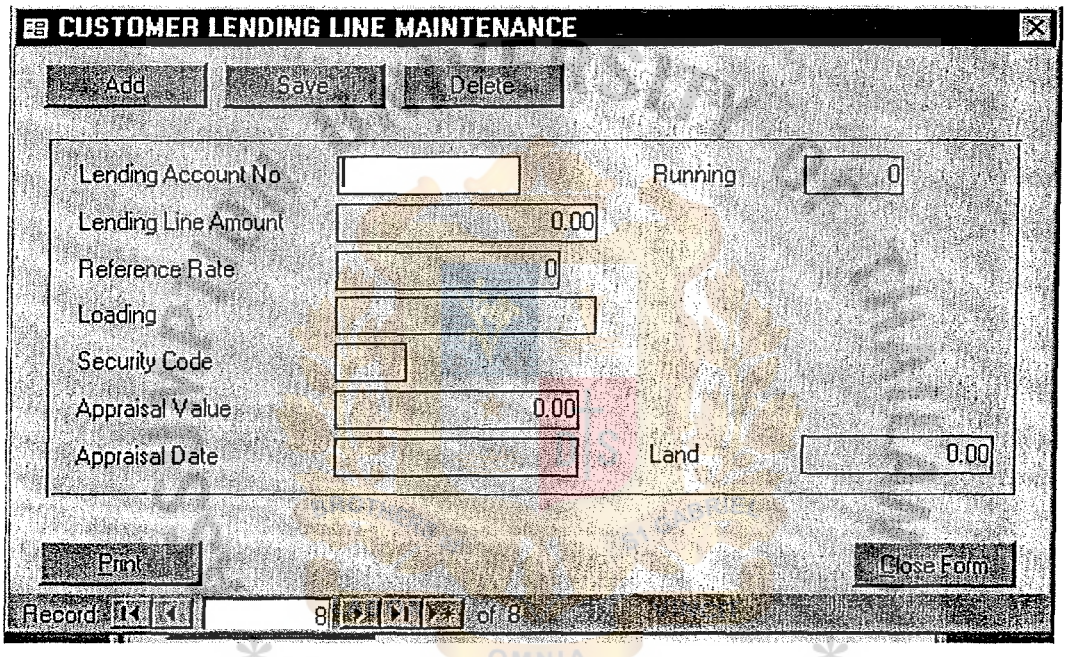

Figure G.7. Customer Lending Line Maintenance Menu.

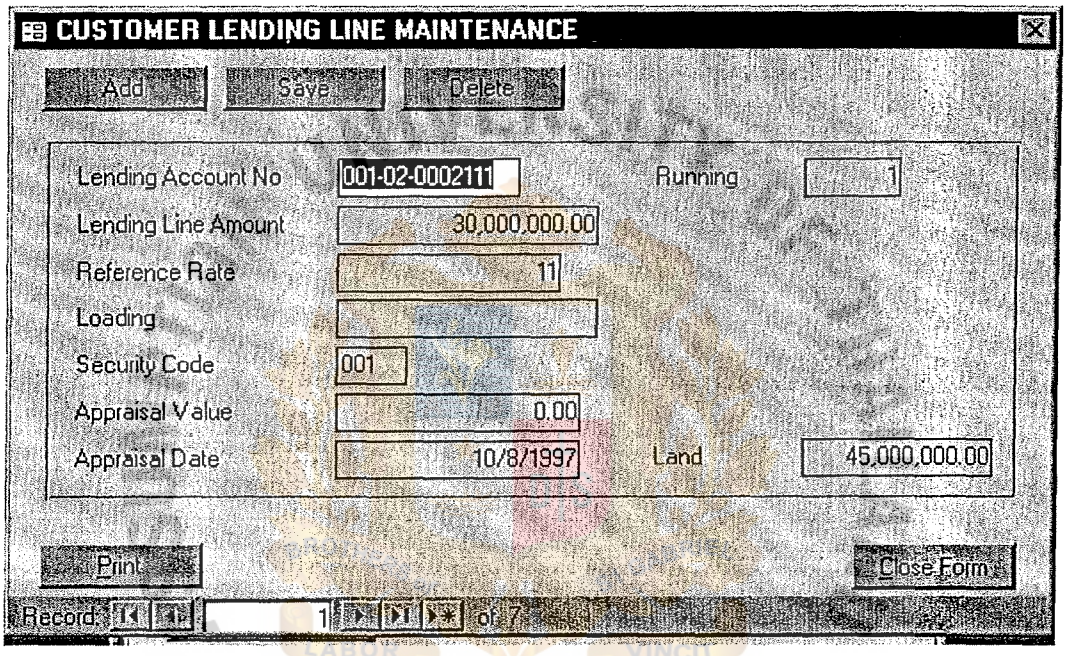

Figure G.8. Example of Customer Lending Line Maintenance Menu.

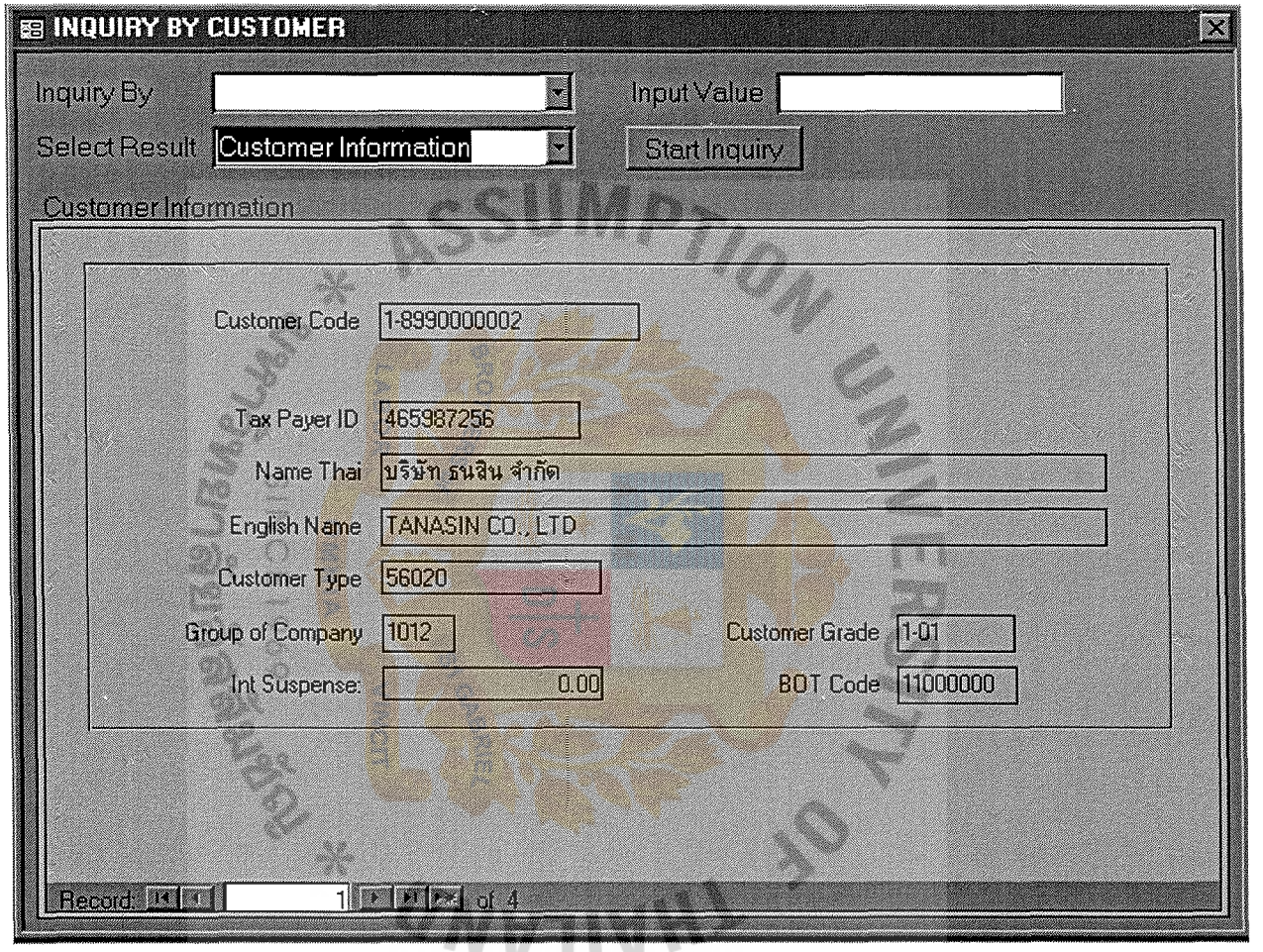

Figure G.9. Inquiry by Customer Menu.

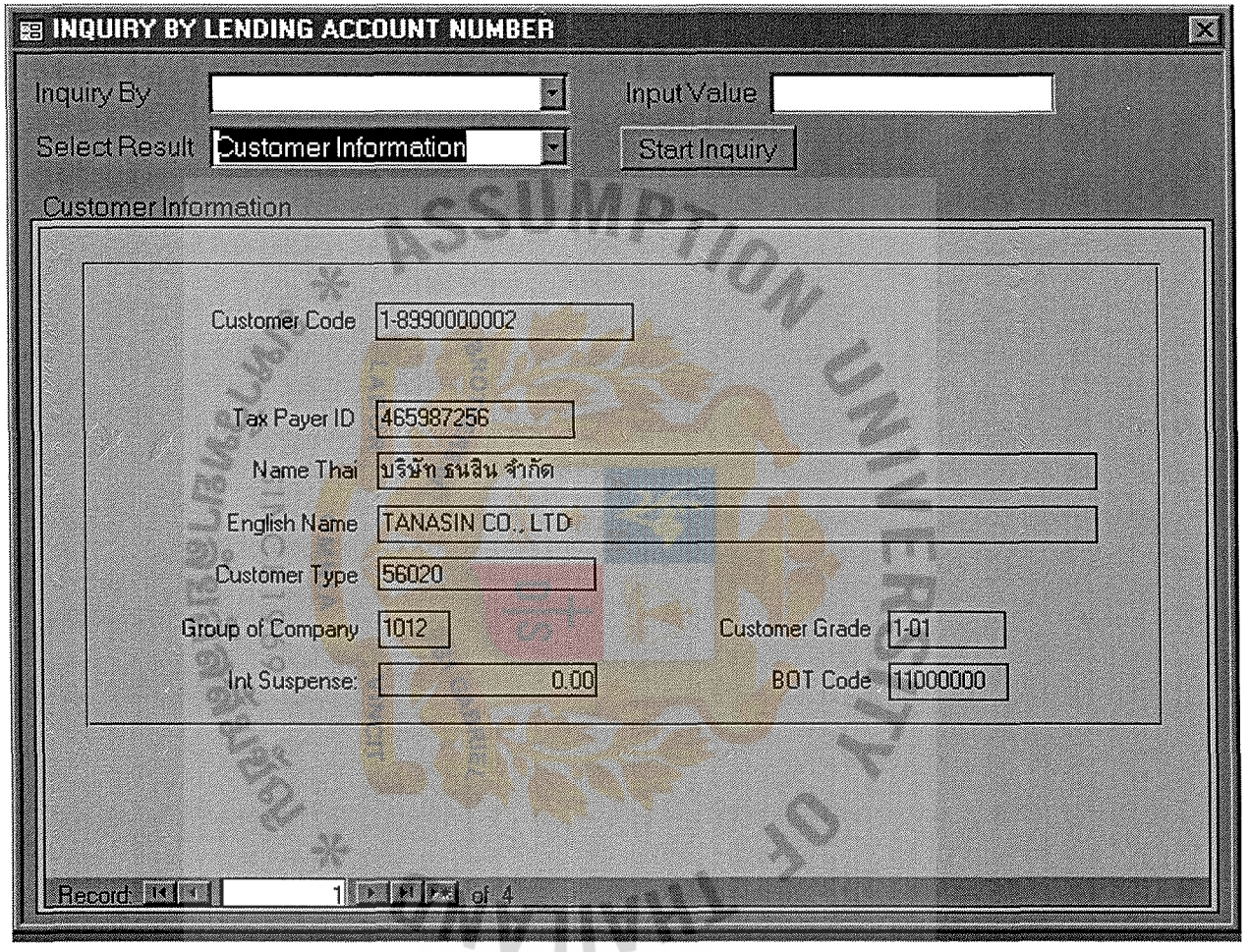

Figure G.10. Inquiry by Lending Account Number Menu.

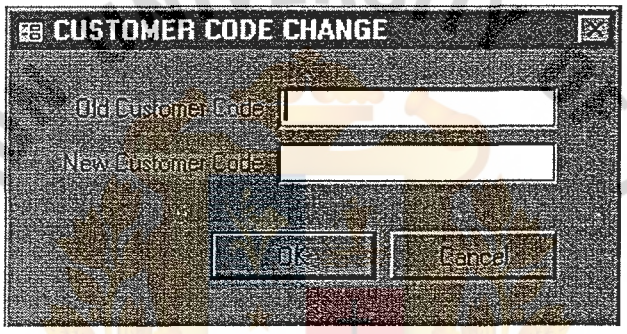

Figure G.11. Customer Code Change Menu.

Figure G.12. Report Lending System Menu.

APPENDIX H

REPORT OF LENDING SYSTEM

CUSTOMER MAINTENANCE REPORT

PAGE 1 of 1

AS AT 27/9/1999

DATE 27/9/1999

USER 001-02010102

TIME 12:18:24

Customer Code	Tax No.	Name Thai	English Name	Lending Acct No.	Type	Grade	Group	Control Workout	Legal	Lending Line
1-8990000002	465987256	บริษัท ธนสิน จำกัด	TANASIN CO., LTD	001-02-0002112	56020	1-01	1012	02	01	581,250.00
1-8990000003	953125795	บริษัท อีสเทิร์น พร็อพเพอร์ตี้ จำกัด	EASTERN PROPERTY CO., LTD.	001-02-0002112	72010	1-02	1013	01	01	581,250.00
1-8990000004	124567563	บริษัท เอฟ.ซี. อินเตอร์เนชั่นแนล จำกัด	F.C. INTERNATIONAL CO., LTD.	001-02-0002114	72010	1-01	1011	02	01	1,937,500.00
1-8990000006	549344452	บริษัท อีสต์ เวส จำกัด	EAST WEST CO., LTD.	001-02-0002116	36050	1-03	1013	01	01	1,937,500.00

Figure H.1. Customer Maintenance Report.

CUSTOMER ACCOUNT MAINTENANCE REPORT

PAGE 1 of 2

AS AT 27/9/1999

DATE 27/9/1999

USER 001-02010102

TIME 12:29:45

Lending Line / Int. Receive	Business Project / Accum.Int.Rec	Start-End Contract Date / Last Transaction Date	Int.-Date / Int.-Suspense	Remark / Legal Exp.	Cash Balance
LENDING A/C NO. 001-01-0002111					
2 02		8/10/1995 - 8/10/1997	31 days / 31/10/1996	montly payment	
387,500.00	387,500.00	9/10/1999	0.00	0.00	30,387,500.00
LENDING A/C NO. 001-02-0002112					
2 02		15/7/1999 - 15/7/1997	31 days / 31/10/1996	montly payment	
581,250.00	581,250.00	10/9/1999	0.00	0.00	45,581,250.00
LENDING A/C NO. 001-02-0002113					
3 02		25/1/1996 - 25/4/1998	31 days / 31/10/1996	montly payment	
1,033,333.00	1,033,333.00	30/9/1996	0.00	0.00	81,033,333.00
LENDING A/C NO. 001-02-0002114					
2 01		20/5/1996 - 20/5/1998	31 days / 30/09/1996	montly payment	
968,750.00	1,937,500.00	30/9/1996	687,500.00	0.00	77,625,000.00

Figure H.2. Customer Account Maintenance Report.

Lending Line	Business Project	Start-End Contract Date	Int.-Date	Remark	
Int. Receive	Accum.Int.Rec	Last Transaction Date	Int.-Suspense	Legal Exp.	Cash Balance
LENDING A/C NO. 001-02-0002115					
1 01		20/5/1996 - 20/5/1998	31 days / 30/09/1996	montly payment	
968,750.00	1,937,500.00	30/9/1996	687,500.00	0.00	77,625,000.00
LENDING A/C NO. 001-02-0002116					
2 01		11/9/1999 - 11/9/1999	31 days / 30/09/1996	montly payment	
968,750.00	1,937,500.00	30/9/1996	687,500.00	0.00	77,625,000.00

Figure H.3. Customer Account Maintenance Report (continue).

LENDING LINE MAINTENANCE REPORT

PAGE 1 of 1

AS AT 27/9/1999

DATE 27/9/1999

USER 001-02010102

TIME 12:29:57

Lending A/C No	Running	Lending Line Amt	Rate %	Security	Land Value	Appraisal Value	Appraisal Date
001-02-0002111	1	30,000,000.00	11	001	45,000,000.00	0.00	10/8/1997
001-02-0002112	1	50,000,000.00	10	001	80,000,000.00	0.00	15/7/1997
001-02-0002113	1	100,000,000.00	15.5	002	0.00	0.00	25/4/1998
001-02-0002114	1	75,000,000.00	9	001	110,000,000.00	0.00	20/5/1998
001-02-0002115	1	5,000,000.00	16	002	0.00	0.00	14/7/1997
001-02-0002116	0	65,000,000.00	16	002	0.00	0.00	25/12/1996
001-02-0002117	0	35,000,000.00	15.5	002	0.00	0.00	30/11/1996

Figure H.4. Lending Line Maintenance Report.

PROBLEM LOAN PAYMENT REPORT

DATE 27/9/1999

TIME 12:30:11

AS AT 27/9/1999

USER 001-02010102

Code	English Name	Acc. No	Type	Grade	Principle	Int Rec	Penalty Fee	Legal Expense
1-8990000	TANASIN CO., LTD	01-02-000211	2	1-01	581,250.00	581,250.00	0.00	0.00
1-8990000	EASTERN PROPERTY CO., LTD.	01-02-000211	2	1-02	581,250.00	581,250.00	0.00	0.00
1-8990000	F.C. INTERNATIONAL CO., LTD.	01-02-000211	2	1-01	1,937,500.00	968,750.00	687,500.00	0.00
1-8990000	EAST WEST CO., LTD.	01-02-000211	2	1-03	1,937,500.00	968,750.00	687,500.00	0.00

Figure H.5. Problem Loan Payment Report.

COMPANY MONEY MOVEMENT REPORT

PAGE 1 of
DATE 27/9/199
TIME 12:30:1

AS AT 27/9/1999

USER 001-02010102

Lending Acc. NO.	Money Move In	Rate%	Money Move Out	Rate%	Total Paid	Date
001020002111	35,000,000.00	11.00	0.00	0.00	35,000,000.00	18/10/1996
001020002113	20,000,000.00	15.50	0.00	0.00	20,000,000.00	20/10/1996
001020002114	0.00	0.00	13,000,000.00	9.00	-13,000,000.00	22/10/1996
001020002115	0.00	0.00	5,000,000.00	16.00	-5,000,000.00	27/10/1996
001020002116	20,000,000.00	16.00	0.00	0.00	20,000,000.00	22/10/1996
001020002117	0.00	0.00	10,000,000.00	15.50	-10,000,000.00	25/10/1996

Figure H.6. Company Money Movement Report.

MONTHLY LENDING MOVEMENT REPORT

AS AT 27/9/1999

DATE 27/9/1999

USER 001-02010102

TIME 12:30:19

Last Trans. Date	Outstanding	Cash Inflow	Cash Outflow	Cash Balance	Int. Rec	Penalty Fee	Total Rec
Lending A/C No. 001-02-0002111	**Customer Name** BENZ INTER CO., LTD.						
18/10/1996	30,000,000.00	0.00	0.00	45,000,000.00	35,000,000.00	0.00	80,000,000.00
18/10/1996	30,000,000.00	0.00	0.00	45,000,000.00	35,000,000.00	0.00	80,000,000.00
Lending A/C No. 001-02-0002114	**Customer Name** F.C. INTERNATIONAL CO., LTD.						
22/10/1996	75,000,000.00	0.00	0.00	30,000,000.00	0.00	0.00	30,000,000.00
Lending A/C No. 001-02-0002116	**Customer Name** EAST WEST CO., LTD.						
22/10/1996	65,000,000.00	0.00	0.00	90,000,000.00	20,000,000.00	0.00	110,000,000.00
Lending A/C No. 001-02-0002117	**Customer Name** ORCHID LAND CO., LTD.						
25/10/1996	35,000,000.00	0.00	0.00	75,000,000.00	0.00	0.00	75,000,000.00

Figure H.7. Monthly Lending Movement Report.

LENDING OUTSTANDING REPORT

AS AT 27/9/1999

USER 001-02010102

DATE 27/9/1999

TIME 12:30:23

Customer Code	Name	Lending A/C No	Type	Int Rate %	Lending Line Amount	Outstanding Balance	Int Receive	Total Unpaid
1-8990000002	TANASIN CO., LTD	001-02-0002112	2	10.00	50,000,000.00	50,000,000.00	581,250.00	50,581,250.00
1-8990000003	EASTERN PROPERTY CO., LTD.	001-02-0002112	2	10.00	50,000,000.00	50,000,000.00	581,250.00	50,581,250.00
1-8990000004	F.C. INTERNATIONAL CO., LTD.	001-02-0002114	2	9.00	75,000,000.00	75,000,000.00	968,750.00	75,968,750.00
1-8990000006	EAST WEST CO., LTD.	001-02-0002116	2	16.00	65,000,000.00	65,000,000.00	968,750.00	65,968,750.00

Figure H.8. Lending Outstanding Report.

MONTHLY CUSTOMER GRADE MOVEMENT REPORT

PAGE 1 of 1
DATE 27/9/1999
TIME 12:30:26

AS AT 27/9/1999

USER 001-02010102

Customer Code	English Name	Last Transaction Date	Review Date	Outstanding Bal.	Int-Status	Int Rec Amt	ustomer Grade
1-8990000002	TANASIN CO., LTD	10/9/1999	15/7/1997	50,000,000.00	31 days - 31/10/1996	581,250.00	1-01
1-8990000003	EASTERN PROPERTY CO., LTD.	10/9/1999	15/7/1997	50,000,000.00	31 days - 31/10/1996	581,250.00	1-02
1-8990000004	F.C. INTERNATIONAL CO., LTD.	30/9/1996	20/5/1998	75,000,000.00	31 days - 30/09/1996	968,750.00	1-01
1-8990000006	EAST WEST CO., LTD.	30/9/1996	25/12/1996	65,000,000.00	31 days - 30/09/1996	968,750.00	1-03

Figure H.9. Monthly Customer Grade Movement Report.

MONTHLY APPROVED LENDING LINE REPORT CLASSIFIED BY AUTHORIZED OFFICER

PAGE 1 of 1

AS AT 27/9/1999

DATE 27/9/1999

USER 001-02010102

TIME 12:30:31

Authorize Code	Accounts	Lending A/C No	Lending Line Amt	Land Value	Collateral Construction Value	Officer
Business Line 01						
12001-63130	2	001-02-0002116	65,000,000.00	0.00	0	Mr. Khaosii Galaxi
12001-63130	1	001-02-0002115	5,000,000.00	0.00	0	Mr. Khaosii Galaxi
12001-63130	2	001-02-0002114	75,000,000.00	110,000,000.00	0	Mr. Khaosii Galaxi
TOTAL BY BUSINESS LINE			145,000,000.00	110,000,000.00	0.00	
Business Line 02						
11133-03333	3	001-02-0002113	100,000,000.00	0.00	0	Mr. Kiatisak Sanamoung
TOTAL BY BUSINESS LINE			100,000,000.00	0.00	0.00	
GRAND TOTAL			245,000,000.00	110,000,000.00	0.00	

Figure H.10. Monthly Approved Lending Report Classified by Authorized Officer.

CUSTOMER AND LENDING INFORMATION REPOR

PAGE 1 of 1

AS AT 27/9/1999

DATE 27/9/1999

USER 001-02010102

TIME 12:30:34

Customer Code	English Name	Type	Grade	BOT Code	Lending A/C No	Lending Line Amt	Rate	Renor
1-8990000002	TANASIN CO., LTD	56020	1-01	11000000	001-02-0002112	50,000,000.00	10.00	24
1-8990000003	EASTERN PROPERTY CO., LTD.	72010	1-02	12000000	001-02-0002112	50,000,000.00	10.00	24
1-8990000004	F.C. INTERNATIONAL CO., LTD.	72010	1-01	13001010	001-02-0002114	75,000,000.00	9.00	24
1-8990000006	EAST WEST CO., LTD.	36050	1-03	30200000	001-02-0002116	65,000,000.00	16.00	0

Figure H.11. Customer and Lending Information Report.

AUTHORIZED CUSTOMER GRADE REPORT

PAGE 1 of 1

AS AT 27/9/1999

DATE 27/9/1999

USER 001-02010102

TIME 12:30:38

Authorized Officer	Grade	Type	Customer Code	English Name	Lending Line Amt	Outstanding Bal
11111-12222	1-01	56020	1-8990000002	TANASIN CO., LTD	50,000,000.00	50,000,000.00
11111-12222	1-02	72010	1-8990000003	EASTERN PROPERTY CO., LTD.	50,000,000.00	50,000,000.00
12001-63130	1-01	72010	1-8990000004	F.C. INTERNATIONAL CO., LTD.	75,000,000.00	75,000,000.00
12001-63130	1-03	36050	1-8990000006	EAST WEST CO., LTD.	65,000,000.00	65,000,000.00

Figure H.12. Authorized Customer Grade Report.

BIBLIOGRAPHY

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