

Chapter 3

3.0 THE ANALYSIS ON CURRENT IS

This chapter will cover the existing IS infrastructure and capabilities including those in the implementation stage. It will highlight the needs and achievements that arises from the current IS and look for future solutions. The analysis on the system is carried out on the existing systems in operation and generally on the new proposed system still in implementation stage.

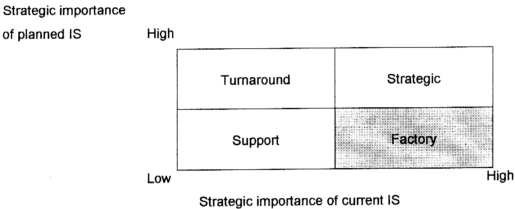
3.1 History of Bank Rakyat IS

Bank Rakyat computer base information system started back in mid 80s with the inception of its Computer Department in 1983. The objective of the department then was to automate all possible information systems with priority given to branch banking transaction. Namely it started with the saving account system, and retail loans system specifically to cater its best selling product i.e. Personal loans. Bank Rakyat engaged Wang Pan Global Sistem Maju (M) Sdn. Bhd. to provide the hardware and solution for the two systems. The system was a stand-alone system located at all branches. The first phase were considered successful when it managed to convert and automate the traditional ledger card savings account system. However, by the time Bank Rakyat completes the conversion stage, the system was unable to support the increasing volume of accounts and transactions. The demand for an on-line system, ATM cards and other computer based facilities forced the Bank to come up with a better system in order to be at par with its competitors. The new system was purchased from PERNEC Technologies Sdn. Bhd. based on Stratus machines and Finware Retail Banking solutions developed by Citil, Bombay. It came with ATM systems that run on solutions provided by CTI, Hong Kong. The project started in 1992 and a year later was implemented at the branches in stages. To date, the total investment made by Bank Rakyat for the whole IS project amounted to RM 53.4 million.

3.2 The impact of IS development to Bank Rakyat.

In this section we will examine the impact of IS development to the Bank using the strategic importance matrix. The strategic importance analysis is a model that separate businesses by virtue of the different degree to which the firm is functionally dependent upon IS today or the degree to which IS development will create competitive edge (Robson, 1997). The model as shown in Figure 3.1 outlined the strategies for each of the four possible positions for an organization to act on.

Figure 3.1 Strategic importance matrix



Source: adapted from Robson, 1997: 121

The model can be described as follows;

- Strategically important systems are those upon which the organization depends on now and will do in the future.
- Turnaround systems are those of low current business importance but predicted to be critical in the future.
- Factory systems are those of high current value but low predicted value.
- Support systems are of low business importance currently and are expected to remain so in the future.

In the case of Bank Rakyat, the retail banking business depend entirely on IS for their daily operations. For instance, the savings or ATM transactions would require the IS to function without interruptions or off line. The off line would cause dissatisfaction among the customers thus result in loss of revenues. Another example is the Bank's accounting systems, they can't afford to do their daily accounting transaction manually at high accuracy and efficiency. Bank Rakyat definitely depends on IS for its daily operations and should be located in the factory quadrant.

For future IS, Bank Rakyat may find it strategic to develop its IS towards the emerging trends like E-commerce and Internet Banking. This would put them in the strategic quadrant where both the current IS and future IS are both strategic to the Bank. Base on the on going project planning, this seems to be in the agenda.

3.3 The contribution of IS development to Bank Rakyat.

The contribution of IS development can be analyze through charts as shown in Figure 3.2 (Ainin, 1998). The charts are use to examine where an organization is, and where it would like to be.

Figure 3.2 The contribution of IS development to an organization

To the basic business

Procedures, operations

and transactions

High

Low

High

To the business image; the next products or services

Critical	Dominant
Supportive	Radical

Source:adapted from Ainin,1998:2

In the case of Bank Rakyat, the basic business procedures, operations and transaction, play high contribution to the Bank. The IS contributions can be considered critical in their daily operation thus need attention and focus. In the case of future IS services such as e-commerce, the IS contribution would be dominant both for basic operations and future products and services.

3.4 IS Maturity Stage

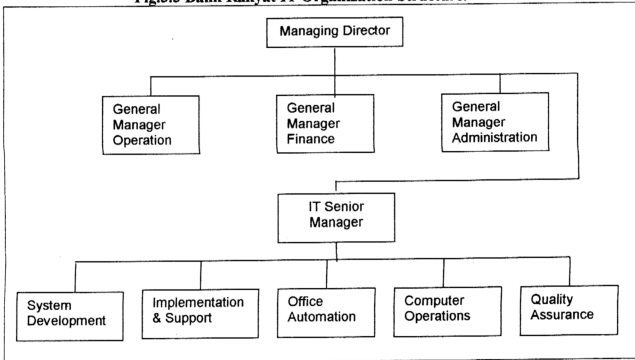
Based on the discussions with the personnel mentioned in chapter one, the Bank is still in the early stage of IS maturity where the major concern is to increase efficiency via automation. The high volume in transaction processing systems (TPS) has been the focus for Bank Rakyat IS investment. Routine transaction processing is still the main concern in the retail bank activities where others has started to focus on the strategic use of IS. What they need is an integrated retail banking systems that facilitate and speed up the daily operation i.e. deposits taking, lending and collection activities. The Bank presently operates on a stand alone loan system (ICBA), on-line deposits and GL systems (FINWARE) and a mix of manual and office application systems. These multiple systems not only caused problems in term of consolidation, but it also creates unnecessary room for errors and security risks. For example, the loan collection activities, the notice had to be typed out for each customer based on the computer-generated reports. The task could be easily done by the computer system to increase effectiveness and efficiency. As found in the strategic contribution and impact analysis, IS play a critical role for its current systems and daily operations. Future IS planning should emphasis on these needs before taking on a new challenge.

3.5 IT Organizational Structure and Human Resource

The IT Department has evolved and expanded into a division, consisting five (5) departments and a total of 64 personnel. Out of those, only 28 are technical personnel and the balance are business-related personnel. The Head of IT

Division (now known as IT Senior Manager) reports directly to the Managing Director as shown in Figure 3.3. Originally, IT Division reports to the Finance General Manager for decision and approval. However, this was changed recently to provide direct control and effective implementations. The direct approach reflects how the MD is very much concern with the Bank's IS directions. This maybe due to the IS problems currently faced by the Bank as commented by one of the IT department manager. By directly overseeing the division, the MD hopes to solve the problems swiftly and effectively.

Fig.3.3 Bank Rakyat IT Organization Structure.

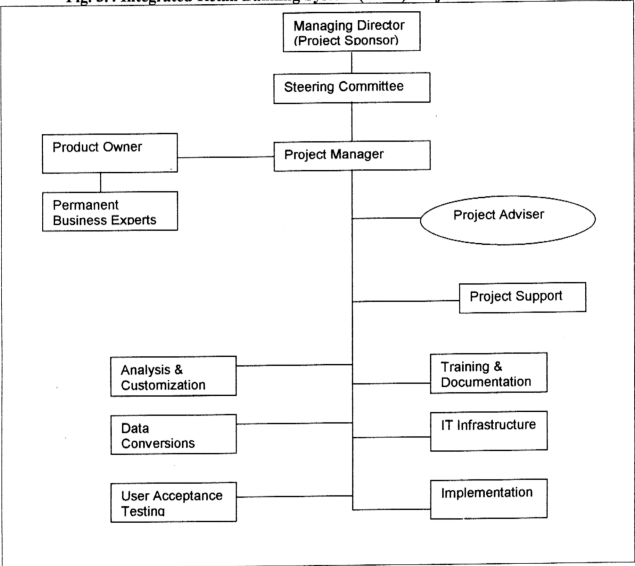


There are five Managers who support the Head of IT with its respective function. The five departments are;

- a) System Development Department
- b) Implementation and Support Department
- c) Office Automation Department
- d) Computer Operations Department
- e) Quality Assurance Department

The Bank in its current IT project had engaged a consulting firm to assist and advice the Bank in the planning and implementation stage. The MD stand as the project sponsor for the new IS project structure as shown in Figure 3.4.

Fig. 3.4 Integrated Retail Banking System (IRBS) Project Structure



Source:adapted from Bank Rakyat IRBS Project Management Paper,1998

Being the project sponsor, he is responsible to make the final decision of any matter arising from the project. This ensure a clear command in IS direction. Down the line, a steering committee was established which comprise of the following personnel;

- Managing Director (Chairman)
- General Manager Finance
- General Manager Operation
- General Manager Administration
- IT Head
- Chief Internal Auditor
- Project Manager

The committee decides and monitor from the planning stage to the implementation stage. It involves all function of the organization to make sure full commitment are given into the project. The structure that consisted of 49 personnel is quite comprehensive to handle the task of executing the project plan successfully.

3.6 Current Systems

At present, the Bank has two major systems operating at its branches. There are the ICBA loan system (stand-alone) and the FINWARE on-line systems. The paper however will discuss the FINWARE on-line systems since, it is the backbone of its computer-based IS. The Bank adopted the concept of Client-server architecture in the on-line retail banking operation. In this arrangement Stratus machines are used as the server and PCs at the branches as the client. For its communication network most of the branches are connected via x.25 communication protocol with Automated Teller Machines (ATM). The network as shown in Appendix A are currently maintained by the Bank. Bank Rakyat is also using centralize system to cater for its on-line banking transaction located at the head office. The host is maintained by the in-house IT personnel supported by the respective vendors.

a) Centralized Host Machine

The Bank has six (6) host machines centralized at the head office. The machines, supplied by Stratus, runs on FINWARE, the software developed by Citil, a Bombay based company. The six host machines are utilized as follows;

- 4 are used for production
- 1 is used for development purposes
- 1 is used for Disaster Recovery purposes

All the branches are divided into four (4) local offices (LO) namely, LO1, LO2, LO3 and LO4. Originally each LO will be located at different location, as part of the network architecture strategy, however this is not the case. The strategy was to have a network that can run individually even if one of the LO is not running. In the current configuration all the LO are located at head office and connected to each other through OST switch, in a star configuration. This maybe due to shortage of IS personnel and the high cost of to maintain the different locations. Unfortunately, these were not realized when making the network architecture decision earlier. The host machines in the production system are listed in Table 3.1.

Table 3.1 The Host Machine In Used

Local Office	Machine type	CPU	Memory	Hard disk
LO1	Stratus Model 280	M280	224 MB	20.9 GB
LO2	Stratus Model 270	M270	224 MB	21.68 GB
LO3	Stratus Model 260	M260	224 MB	15.93 GB
LO4	Stratus Model 250	M250	168 MB	23.40 GB
Disaster Recovery	Stratus Model 240	M240	128 MB	32.30 GB
Development Machine	Stratus Model 270	M270	256 MB	12.48 GB

Source: adapted from Bank Rakyat RFP, 1998.2

c) Automated Teller Machine (ATM)

The savings account (Al-Wadiah) offer the use of Automatic Teller Machine (ATM) card for access to ATMs located at 74 branches nationwide. The Bank is using NCR machine for its ATM and the machines operate twenty-four (24) hours a day. The models used are listed in Table 3.2 below;

Table 3.2 ATM Models

Model	Functionality
5675-SST (Self Service Terminal)	Full function, lobby type for testing
5684-SST	No depository, through the wall type
5685-SST	Full function, through the wall

Source: adapted from Bank Rakyat RFP,1998:3

The ATM however is not connected to other banks or finance companies. This is due to Bank Negara regulation that only allows banks and institutions governed under the BAFIA Act 1989 can be connected. This is one of the reasons that the increase in savings account has been minimal even with the ATMs. The effort to increased savings and deposits by introducing the ATMs has yet to yield the benefit. The Bank however is in the process of appealing to this ruling to overcome this shortcoming.

Presently, the ATMs are generally used for cash withdrawals even though it can accept deposits of cash and cheques. Other functions have yet to be offered by the bank even though the machine has the capacity to accept loan repayment, transfer of accounts and other banking transactions. In future planning the Bank should utilise the infrastructure to the optimum to reap its value.

d) Other infrastructure and systems

The branch automation system hardware consisted of PCs, system printer and passbook printer. For its host the bank used VOS release 11.7 as the operating system and Sybase r4.8 as the database engine. Its batch processing is done at

Head Office IT centers. The FINWARE features retail banking modules such as the followings;

- Customer Information File (CIF)
- Savings
- Fixed Deposits
- Loans
- General Ledger (GL)
- Al-Wadiah (Islamic Savings)
- Al-Mudharabah (Islamic Fixed Deposit)
- Financing (Islamic Loan)

3.7 Retail Banking System Audit Report

Bank Rakyat commissioned the Professional and Technical Services of Stratus Computer (hardware vendor) to evaluate its retail banking system and operations, in order to identify improvement opportunities with regard to system performance and operational procedures. The study carried out and completed in October 1997 identified a number of issues to be addressed in short and long term planning. The objective of the study was;

- to audit the Bank Rakyat retail banking system solution,
- to estimate the system solution's capacity to support account and transaction volume growth, and
- to identify improvement opportunities with regard to system performance and day-to-day operation.

The study focused primarily on the bank's system performance on the backend host systems and operational procedures with regard to day-to-day running of the Retail banking System. However the study did not focus on branch operations and network related issues.

month seems to put a heavy load on the system and its overall performance. These timeouts has caused complaints and dissatisfaction from the customers especially during salary payment done at the end of month.

e) ATM Processing Architecture

The ATM architecture in use at the bank was found sub-optimal. In the current architecture, all ATMs are connected to the FIT-100 software, which runs on the LO1 machine. Also, each ATM is associated with a particular branch, and its cash is balanced at the end of day along with other branch teller cash balancing. In such a set up, if any of the involved LOs is heavily loaded, it is entirely possible that the ATM would time out.

An improved ATM architecture would be to have a separate machine doing just the ATM processing, sending a message directly to the appropriate FINWARE LO where the account is, getting the transaction processed and reply back to the ATM. Cash balancing could be done at end of day based on reports generated from the machine running the ATM software.

f) Limited Hardware Expandability

The current hardware platform cannot be expanded much further in order to improve processing capacity, by addition of CPU or memory. On LO1, which has the maximum performance requirements, all possible CPU and memory slots are already occupied.

3.8 On Going Project: IRBS

The bank is in the conversion phase of replacing the old system to a new retail banking solutions known as Integrated Retail Banking System (IRBS). The solutions and hardware are provided by Microlink System Sdn. Bhd. , a local

vendor that promote machines supplied by the Sun Microsystems. The project is headed by System Development Manager (Project Manager) under the supervision of the IT Steering Committee and the Managing Director as Project Sponsor. The bank also engaged Ernst & Young Consultants Sdn. Bhd. as the project adviser to assist and oversee the running of the project.

The main reasons for replacing the existing FINWARE systems are ;

- Not Y2K compliance.
- Long processing time and complicated processes
- Over dependent on vendor
- Old technology
- Not integrated

Base on reasons mentioned above the Bank seeks solutions with the following specifications and characteristics from the new system. The IRBS was evaluated and chosen using the same criteria.

- i. Proven technology-being used at the local banks or finance companies
- ii. Online and integrated applications
- iii. Islamic Banking solutions
- iv. Client server architecture
- v. Y2K compliance
- vi. Product definition is parameter driven
- vii. Ownership of source codes
- viii. Windows based application
- ix. Unix as platform for host
- x. 64 bit processor machine
- xi. High fault tolerance
- xii. Relational Database Management Systems (RDBMS)

xiii. Locally support services

The new systems will be using digital line (COINS) provided by Telekom Malaysia to replace the existing communication network. Table 3.3 lists the new system infrastructure and Appendix B shows where they will be located in the IRBS system architecture.

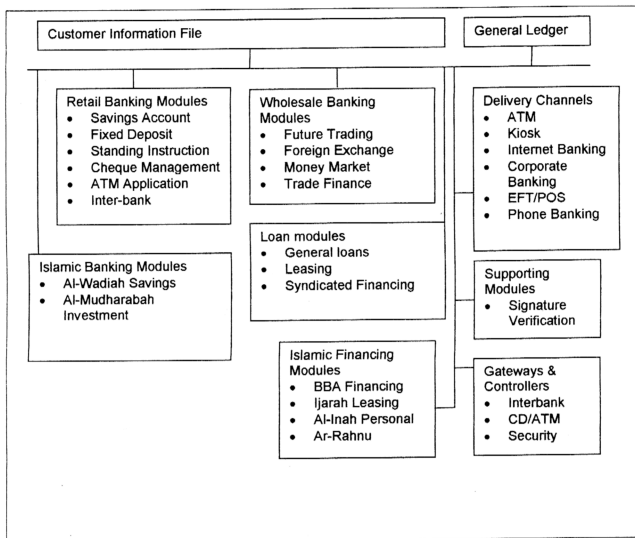
Table 3.3 The IRBS infrastructure.

Type	Existing FINWARE	New IRBS
Communication Network	Lease line, x.25 protocol, 19.6 bps., dial up backup	Digital line (COINS), TCP/IP, Voice/Data/Fax, Video Conferencing, Back up-Satellite & Automatic ISDN line
PC hardware	Intel 386,486,P75,P100, Novell, MS Excell	PII 400,Color Monitor, Windows 98/NT, TCP/IP, Lotus SmartSuite
Branch Server infrastructure	2 server (1 FINWARE, 1 server ICBA(Novell 3.1.2))	1 server Windows NT, Hot Swappable Disk, RAID Technology
Host infrastructure -Hardware	4 Stratus, 1 DRP Stratus for each LO	1 SUN production machine, 1 DRP production machine, 1 SUN machine for System Development
Host infrastructure - Solution	Stratus Unix SYBASE, ATM X.25	SUN SOLARIS Unix, Oracle, ATM – TCP/IP
Applications	FINWARE/ICBA	IRBS,E-Mail,OA, Datawarehousing, Electronic Banking, Lotus Smartsuite

Source: adapted from Bank 1999 Annual Conference Paper,1999: 4-7

The IRBS modules consist of the Customer Information File (CIF), General Ledger (GL), Retail Banking Modules, and Islamic Banking Modules. Overview of the modules is illustrated in Figure 3.5.

Fig. 3.5 The IRBS Module



Source: adapted from Bank Rakyat Annual Conference Paper, 1999:9

The characteristics and features of the new systems are as follows;

- Centralize CIF systems
- Integrated system
- High speed and accurate processing
- Parameter based
- Latest database technology
- Using GUI (Graphic User Interface)
- Internet ready

- High level security
- Multiple delivery channel
- Back office automation
- Empowerment

Phase one of the project is to be completed by the third quarter of 1999 to allow further testing and customization. With the new characteristics and technological advancement the Bank hopes that the IRBS can fulfill their user requirements and enhance the overall efficiency.