Chapter 4

BUSINESS PROCESS RE-ENGINEEERING

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Re-engineering is one of the important concepts being discussed by organisations in recent years. The latest management style currently induces strategic management or senior managers. Re-engineering, the tool for organisation improvement, captured today's management hierarchy due to its significant benefits. Business Process Re-engineering (BPR) is a functional way of thinking and is making processes a main focus for organisations (Peppard, 1995). In other words, new product development, new marketing plan and current customer requirement are accomplished without considering functional boundaries or specialisation.

A process transforms inputs into outputs. Processes may involve tasks performed by humans, computers and other sources. There is no transparent dependence between the number of inputs to a process and the number of outputs. Outputs, the results of the process, are used as input to another process or dismissed as waste. In the process, many steps, procedures and boundaries exist.
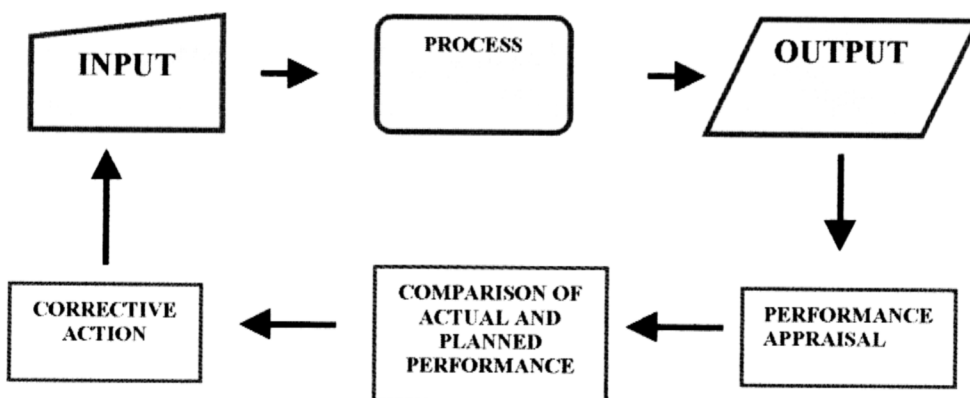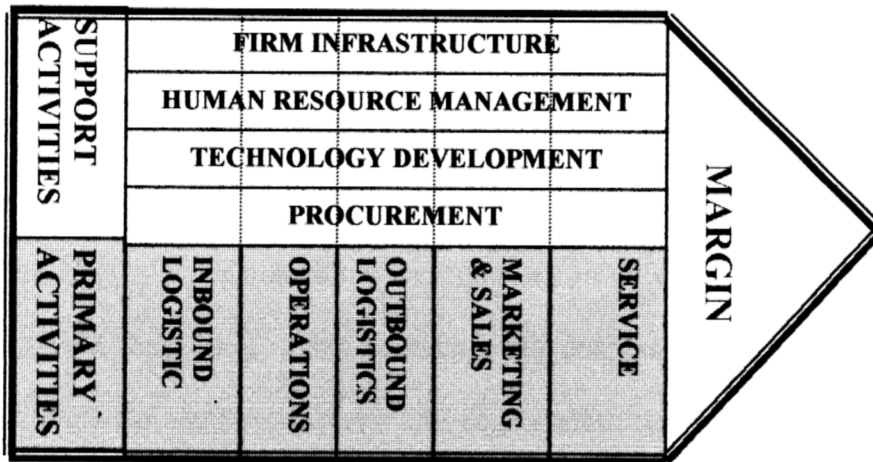
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┌─────────┐      ┌─────────┐      ┌─────────┐
│  INPUT  │ ───► │ PROCESS │ ───► │ OUTPUT  │
└─────────┘      └─────────┘      └─────────┘
     ▲                                  │
     │                                  ▼
┌──────────┐   ┌──────────────┐   ┌──────────────┐
│CORRECTIVE│◄──│ COMPARISON OF│◄──│ PERFORMANCE  │
│  ACTION  │   │  ACTUAL AND  │   │  APPRAISAL   │
│          │   │   PLANNED    │   │              │
│          │   │ PERFORMANCE  │   │              │
└──────────┘   └──────────────┘   └──────────────┘
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Figure 4-1: The universal value chain

SUPPORT ACTIVITIES	FIRM INFRASTRUCTURE					MARGIN
	HUMAN RESOURCE MANAGEMENT					
	TECHNOLOGY DEVELOPMENT					
	PROCUREMENT					
PRIMARY ACTIVITIES	INBOUND LOGISTIC	OPERATIONS	OUTBOUND LOGISTICS	MARKETING & SALES	SERVICE	

Source: Porter (1985)

Porter (1985) in his famous value chain model defines processes as chains. The value chain framework of an organisation is shown in figure 4-1. Porter divides organisation activities into two: primary activities and support activities. Primary activities are those core activities that add value. On the other hand, supporting activities assist value-adding process. Primary activities can be divided into five:

- *Inbound logistics*. Obtaining, storing and distributing inputs to the product.

- *Operations*. Production process that turns inputs into outputs.

- *Outbound logistics*. Basically distribution of products and services to customers.

- *Marketing and Sales*. Providing channel for advertising, promotion and pricing.

- Service. Maintenance including repair and training.

Support activities in any organisation can be divided into four:

- *Procurement*. Purchasing capital goods, inputs and consumable items.

- *Technology development*. R&D, facilities, computers and telecommunication.

- *Human Resource management*. Recruiting, hiring and training personnel.

- *Firm infrastructure*. General management, planning, finance and law.

Every organisation has a boundary. Boundary is the constraint that separates it from the surroundings. In typical management hierarchy, departments can be considered as boundaries in terms of functional areas or specialisation. For example, finance department's boundary in a bank can be expressed in terms of who works in it and what responsibility it undertakes. This boundary will distinguish it from other departments, such as the internal audit department. An organisation contains several subsystems with its own boundary, each system interacting with one another. A typical management hierarchy and business function is shown in figure 4-2.

Figure 4-2: Organisation hierarchy and its business functions

Operational
Tactical
Strategic

MANAGEMENT HIERARCHY

ADMIN
FINANCE
OPERATION
SALES

BUSINESS FUNCTION SUBSYSTEM
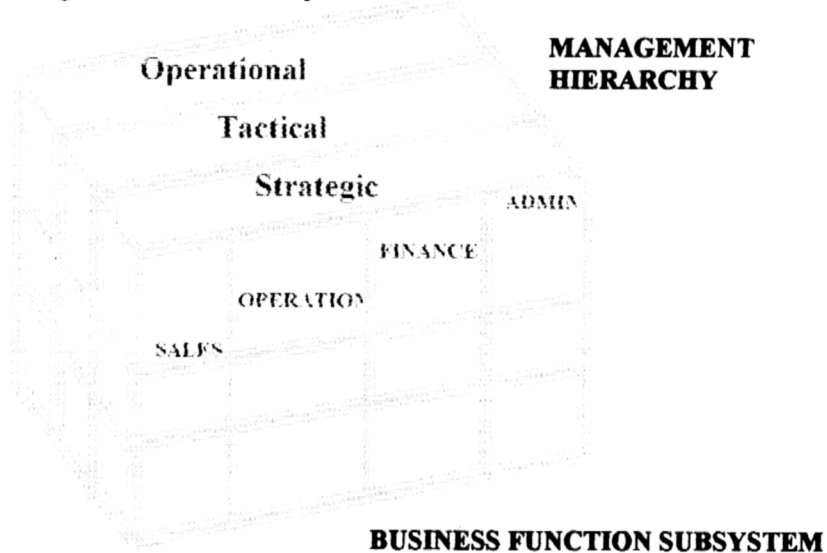
BPR stresses that an organisation should be a self-organising system that should adapt and react to a spur. There should not be any restriction or boundaries in order to be effective and competitive. An organisation should be flexible to keep it steady and enable it to accept changes. Thus, unpredictable challenges such as a powerful new competitor could arise and output would deviate from the expected results or goals. Here BPR plays a crucial role to ensure that the business adapts to the changes quickly

and is able to survive in an appropriate manner. A point to stress here is that organisation must not have too many restrictions and boundaries. This will make it outdated and less competitive.

INPUT CHANGE / PREDICTABLE INPUT / UNPREDICTABLE INPUT	SYSTEMS ADAPT AND REACT TO THE CHANGES	OUTPUT DEPENDS ON HOW THE ORGANISATION ADAPT TO THE CHANGES

To have a flexible system in an organisation, there has to be a plan, standard and guideline towards the changing nature of businesses. The terminology or jargon of business re-engineering theory may seem unusual to traditional management, but thorough understanding and application would benefit the entire organisation. Sellapan (1997) stresses that BPR is a way out from traditional method of management to new ways of doing business (See table below).

TRADITIONAL	BPR
Functional areas/departments	Process teams
Simple tasks	Empowered employees
Training of employees	Education of employees
Mass production	Mass customisation
Linear and sequential processes	Concurrent or parallel processes
Separation of duties and functions	Cross-functional teams
Hierarchical structure	Horizontal structure
Pay raises based on promotion and seniority	Low pay plus high performance-related bonuses
Protective organisation culture	Productive organisation culture
Advancement based on ability	Advancement based on performance
Executives as score keepers	Executives as leaders
Compensation for skill and time spent	Compensation for results
Managers supervise and control	Managers coach and advise

Traditional organisations have different departments. People are recruited to these different departments to perform specialised tasks. In other words, personnel are adopted into one functional specialisation. In order to be competitive, organisations should imitate new technologies, products or services. During the development, the structure of each department in most cases has to change. Many organisations find that

some workflow or certain steps in the new process of input to output is unnecessary product cycle. The existence of some steps are difficult to be identified or interpreted. BPR highlighted that eliminating these unnecessary steps will lead to quicker input-output process with lower cost.

4.1 BPR AND BANKING

Today banks have to gear themselves to survive in the competitive world. Suppliers of fund, customers, competitors, society as a whole and the government influence management decisions. As an open system, banks have to consider cross-influences with its environment across its boundary. Re-engineering is needed so that the artificially created constraints i.e. boundaries being eliminated to minimise the non-value added content in them.

Usually reaction and adoption is uncertain and will not always produce the same outcome. For example, bank pays interest rate to depositors depending on the amount of money available in the account. In this case, the output i.e. the calculated interest varies as the amount of money in the account increases or decreases. In some cases the judgement would be based on some external reason such as economic condition or competitors pressure. An example of a complete value chain of a bank is shown in figure 4-3.

Until 1990s most organisational structures are function-based. Having said that, banks are not exceptional. They do have departments with different business functions. In a function-based bank, people's jobs are narrowed to some specialisation. Banks assign people to specific departments as shown in figure 4-4.

Figure 4-4: Function-based bank
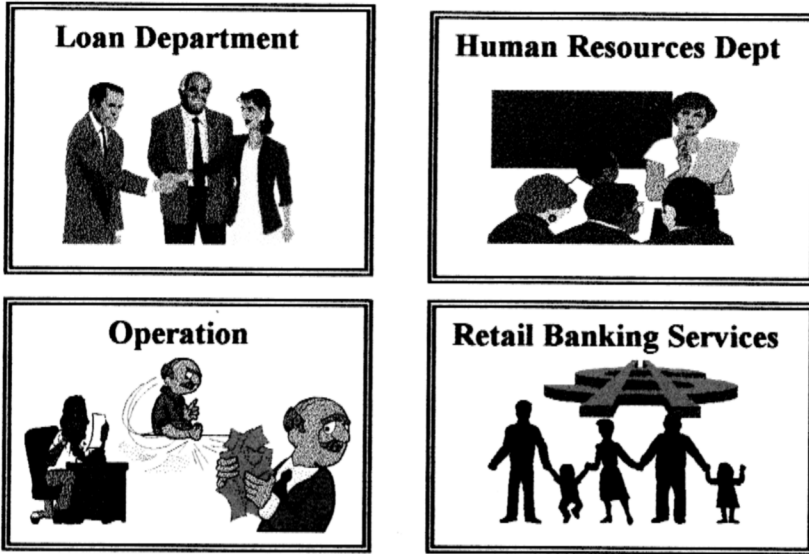
BPR proponents believe that instead of having different departments that distinguish the functional hierarchies, it is effective to have process-based organisation. In a process-based organisation, work doesn't pass sequentially. Work is arranged in such a way that there is no need to pass the work to a few people. In most cases input-output process requires only one person. Figure 4-5 depicts how loan processing in a bank differs between function-based banks and process-based banks. In this example, one would be able to understand how reengineered process might simplify the work efficiently and effectively.

In this case, if the bank is still practising a function-based organisational structure, loan application would be attended by a clerk and will be forwarded to a number of people. The whole process might take a couple of weeks. On the other hand, in a reengineered process, only one person would be able to process the application within

days with the help of an online computer. Customers' financial record, risk assessment, repayment capability and validation can be done through a simple computer process in a few hours time. Thus, both time and workload in a reengineered process can be saved compared to 'desk to desk' way of processing.

It is worth adding to this section the re-engineering rules by Hammer (1993), which are the reflections on the way technology was employed in early re-engineering projects in a typical bank (Refer figure 4-9).

The study shows that re-engineering in banking is still in the early process. It involves fundamental review of core processes and radical changes to structures, working practices and organisational culture. Though bank management realises the potential rewards of re-engineering, the associated costs and risks are a threat to its implementation.

4.2 IT AND VALUE CHAIN

In input-output activities one cannot separate the role of technology. A combination of various sub-technologies enhance the primary as well as support activities. Information system is very important in the value chain as almost all value-adding activities use information as a base. IS is used in planning, controlling, designing and decision making. IS is also considered substantial in creating linkages among the activities. Radical changes in computer technology and software development give a wise impact on the value chain. Likewise, office automation changes the nature of clerical and other office tasks. Almost all office tasks are part of many value activities. Figure 4-6 shows the role of technology in a typical bank and figure 4-7 shows the

existing IT applications in a networked banking system. In the banking activity co-ordination and flow of information regardless of boundary have a significant effect on competitive advantages (Refer figure 4-8).

In a typical bank, for the initial implementation process there are some basic infrastructure or technologies that are fundamental in gearing towards BPR. Stewart (1994) identified three fundamental technologies for re-engineering:

➢ Networking. Connected environment or networking strategy that connects the whole bank is crucial. It must also hook-up with the information superhighway. A stable networking architecture for LAN and a reliable network operating system is important to cater to the customers needs. The point to stress here is that the system must be a reliable one with less breakdowns.

➢ Databases. Database technology is important for a bank to store and retrieve information in an organised way. The information must be accessible to all the people in the bank. Shared database enable bank staff to work smoothly. In other words, workflow is faster and effective with online shared-database.

➢ Desktop tools. Each bank should purchase some modern tools set. The tools must be able to multitask, be compatible and be able to share data with other applications. Some of the basic tools a bank needs include:

  ✓ word processor

  ✓ spreadsheet

  ✓ graphics/presentation software

  ✓ electronic filing system/ automated filing system

  ✓ electronic messaging/ e-mail/cc-mail

  ✓ access to World Wide Web or Internet.

Figure 4-3: Value chain for a bank

MARGIN

BANK INFRASTRUCTURE

	INBOUND LOGISTIC	OPERATIONS	OUTBOUND LOGISTICS	MARKETING & SALES	SERVICE
HUMAN RESOURCE MANAGEMENT		• Recruitment • Training		• Recruitment	• Recruitment
TECHNOLOGY DEVELOPMENT	• Design of new services and future need	• Software for customer account management	• MIS / IS Development • DSS • ES	• R & D on new services • Internet technology	• Manuals and procedure of systems
PROCUREMENT	• Information collection services	• Stationery Materials • Backup storage • Other information	• Computer services • Online Internet services	• Media services • Various Communication utilities • Internet	• Backup storage • Customer Information Service
PRIMARY ACTIVITIES	• Information collection • Market condition • Economy • Competitors • Environment	• Current/savings/ Fixed deposit Accounts • Loan/hire purchase • Remittances • Trade Financing	• Accounts approval • Loan processing • Credit card processing	• Advertising • Promotion • Marketing via Internet	• Home banking • ATM • Multimedia kiosks

Figure 4-5: Loan processing in a function-based and re-engineered process

1. Loan Application

2. Information collection

3. Financial report preparation

4. Validation

6. Signing and loan releasing

Function-based bank

CIS

With an online computer one person can process the loan

Re-engineered Process
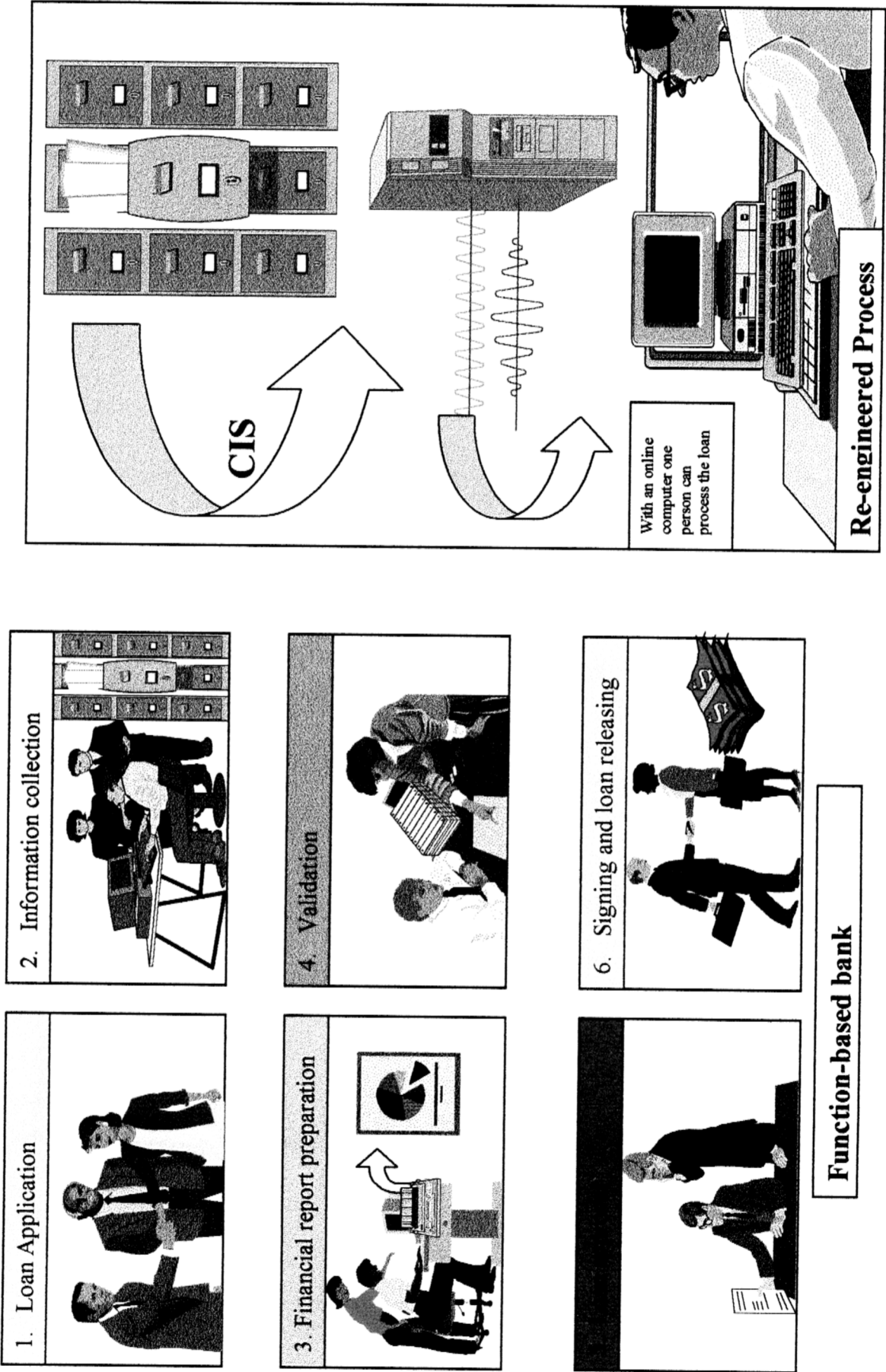
Figure 4-6:Technology needed in banking industry

MARGIN

		INBOUND LOGISTIC	OPERATIONS	OUTBOUND LOGISTICS	MARKETING & SALES	SERVICE

BANK INFRASTRUCTURE
Management Information System Technology   Planning and Budgeting Technology
Office Automation Technology

HUMAN RESOURCE MANAGEMENT
Training Technology   R&D on personnel   HRM Software Technology

TECHNOLOGY DEVELOPMENT
Software Development   Marketing Advancement   Multimedia & Imaging Development

PROCUREMENT
Communication System Technology

EDI	DSS	EPTPOS	INTERNET	LAN/WAN/VAN
E-MAIL	EIS	EDI	MULTIMEDIA	LAPTOP
SWIFT	ES	SWIFT	KIOSKS	CENTRALISED
SPEEDS	FAX	SPEEDS	HOMEBANKING	INFO SYSTEM

Figure 4-7: Networked IT systems in banking

Enabling IT

Telecommunication Network

Electronic Conferencing

SWIFT and SPEEDS

ATM and Multimedia Kiosks

Centralized Information System

Internet and Electronic Mail

EFTPOS

Decision Support System

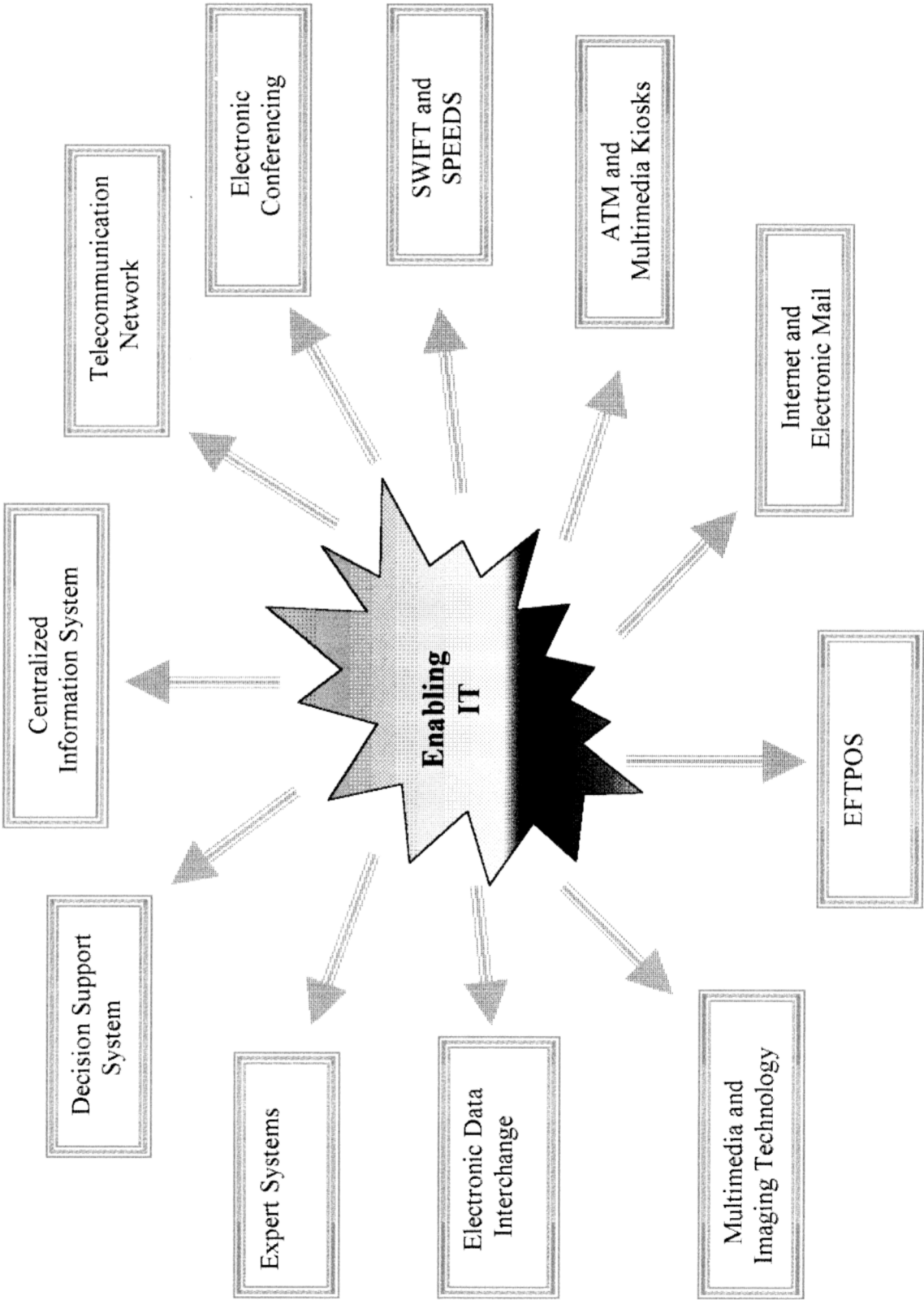Expert Systems

Electronic Data Interchange

Multimedia and Imaging Technology

Figure 4-8: Input output process in a bank

USES OF FUND

INVESTMENT

BACK OFFICE

FRONT OFFICE

Households
Enterprises
Government
Rest of the World

SERVICES
One Account
Current account
Savings account
Fixed deposit account
Overdraft
Housing Loan
Personal loan
End Financing
Cashier's Order
Demand Draft
Bank Guarantee
Travelers Cheque
Credit Card
Income Tax Management
Investment Management
Save Deposit Box
Night Save Facility
Hire Purchase
Leasing
Factoring
ATM
Shipping Guarantee
Trust Receipt
Bills Discounting
Export Credit Refinancing
Export Insurance
Status Inquiry
Foreign Exchange

CUSTOMER

Figure 4-9 : Re-engineering rules in banking

Process	Rules	Example
Inputs → Process → Outputs	**Rule 1** Organize around outcomes not tasks	Each bank staff able to carry out all process steps
	Rule 2 Educate customers to perform the process	Allowing customer to give view on their need and participate in the reorganising customer service
Information process	**Rule 3** Subsume information-processing work into the real work that produces the information	Logging information from Centralize Information System (CIS)
X	**Rule 4** Link parallel activities instead of integrating results	Using integrated service i.e. one account for all the services
	Rule 5 Treat geographically dispersed resources as if they were centralized	Linking all regional branches electronically - online and e-mail/cc-mail
	Rule 6 Put decision point where work is performed and build control into the process	Experts system usage in loan processing