

**MANAGING IT INNOVATION:
A STUDY OF
INFORMATION TECHNOLOGY
IMPLEMENTATIONS
IN MALAYSIAN BANKS**

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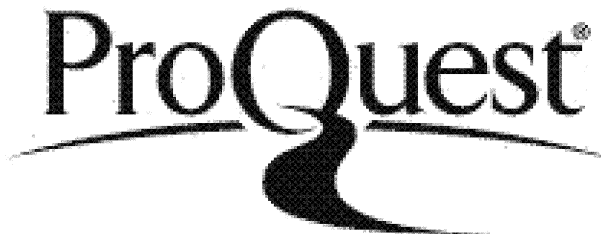
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Abstract

Technology plays an important role in organization's innovation activities and the financial services sector is one of the major adopters of technology innovations. In Malaysia computers began to be introduced in the financial services institutions only in the 1980s. Today, the deployment of computer technology has gone far beyond automating manual banking operations in the back office. Indeed most of the products and services offered by the banking institutions could only be possible through the exploitation of information technology (IT).

There is limited research in the area of technology innovation in Malaysia. Most of the existing innovation researches are related to industrial innovation. Wider perspective innovation research covering different industries is scarce, particularly in Malaysian banking industry - implying the infancy stage of research in this area. There is still very much to be researched and learned in order to understand the nature of technology innovation in the Malaysian banking industry specifically in the area of IT implementations.

The current research attempts to understand this aspect in the context of Malaysian banking organizations. Using qualitative technique, twelve case study banks were analysed. Data Reduction Process and Thematic data analysis generated three distinguished themes - strategy, structure, and technology. Evidence from the findings suggests these themes are factors that have impact on the IT system implementations in the Malaysian banks. The nature and interaction of these factors were found to affect the IT system implementations in the way that would facilitate or impede the implementation process.

This research concludes that the evidence and findings produced positively corresponds to the established theoretical perspectives and frameworks produced by studies in the same area in the West. These findings suggest that those perspectives and frameworks are highly applicable in the Malaysian context.

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Table of Content

ABSTRACT.....	I
DECLARATION.....	II
ACKNOWLEDGEMENT.....	III
LIST OF FIGURES.....	VII
LIST OF TABLES.....	VIII
GLOSSARY OF ABBREVIATIONS.....	IX
CHAPTER 1: INTRODUCTION.....	1
1.0 BACKGROUND.....	1
1.2 RESEARCH RATIONALE.....	2
1.2.1 ORIGINATING QUESTIONS.....	3
1.4 ORGANIZATION OF THIS DISSERTATION.....	4
CHAPTER 2: BACKGROUND LITERATURE.....	6
2.0 INTRODUCTION.....	6
2.1 GENERAL INNOVATION LITERATURE.....	7
2.1.1 <i>The Absence of Generalizable Theories</i>	13
2.2 IMPLEMENTATION AND INNOVATION.....	15
2.2.1 <i>Strategy Implementation</i>	16
2.2.2 <i>Models of Strategic Implementation</i>	21
2.2.3 <i>Tactics of Strategy Implementation</i>	23
2.2.4 <i>Key Factors of Successful Implementation</i>	28
2.3 PROBLEMS IN STRATEGY IMPLEMENTATION.....	33
2.3.1 <i>Problems in Strategy Implementation and Organizational Characteristics</i>	34
2.4 THE ISSUE OF POWER AND ORGANIZATIONAL STRUCTURE.....	38
2.4.1 <i>Expert Power, Organizational Structure and Institutionalism</i>	40
2.5 CONCLUSION.....	45
CHAPTER 3: INNOVATION AND IMPLEMENTATION: INFORMATION TECHNOLOGY (IT) AND FINANCIAL SERVICES.....	47
3.0 INTRODUCTION.....	47
3.1 INFORMATION TECHNOLOGY AND INNOVATION.....	49
3.1.1 <i>IT and Strategic Exploitation</i>	54
3.2 STRATEGIC IS/IT PLANNING AND IMPLEMENTATION.....	56
3.2.1 <i>Information Systems (IS) and Information Technology (IT) Strategies</i>	59
3.2.2 <i>Information Systems Planning and Implementation: Methods and Approaches</i>	62
3.2.2.1 <i>The Nolan's Stages of Growth Model</i>	63
3.2.2.2 <i>The McFarland and McKenny's Strategic Grid Model</i>	65
3.3 PROBLEMS OF IT IMPLEMENTATION.....	72
3.3.1 <i>IT implementation defined</i>	72
3.3.2 <i>Socio-political problems</i>	74
3.3.3 <i>Lack of core IS capabilities</i>	75
3.3.4 <i>Business Process Reengineering and Transformation</i>	79
3.3.5 <i>IT Implementation and Organizational Learning</i>	85
3.4 IT IMPLEMENTATIONS IN FINANCIAL SERVICES.....	87
3.4.1 <i>Early Technology in Banks</i>	88
3.4.2 <i>Selected Case Studies</i>	91
3.5 CONCLUSION.....	99
CHAPTER 4: MALAYSIAN FINANCIAL SERVICES INDUSTRY.....	102
4.0 INTRODUCTION.....	102
4.1 HISTORY OF BANKING IN MALAYSIA.....	104
4.1.1 <i>Development of Foreign Banks</i>	105
4.1.2 <i>Development of Chinese Banks in Malaya</i>	106
4.1.3 <i>Role of Banks in Malaysian Economy</i>	108

4.1.3.1 Saving and Utilisation of Funds.....	109
4.2 STRUCTURE OF THE FINANCIAL SERVICES INDUSTRY	112
4.2.1 Commercial Banking.....	113
4.2.2 Islamic Banking.....	118
4.2.3 Merchant Banks, Finance Companies and Other Financial Institutions.....	121
4.3 SUPERVISION AND REGULATION OF THE FINANCIAL SERVICES INDUSTRY	124
4.3.1 Central Banking System.....	126
4.3.2 Banking and Financial Institution Act (BAFIA).....	130
4.4 RECENT DEVELOPMENTS ON THE MANAGEMENT OF THE FINANCIAL SYSTEM.....	133
4.4.1 Reform of the Financial System.....	135
4.4.2 The Financial Sector in a Globalised Economy.....	139
4.5 MODERN BANKING	141
4.5.1 Factors Affecting the Use of Technology.....	142
4.5.2 Computerization and Electronic Banking in Malaysia.....	143
4.5.3 Shared ATM Network	146
4.5.4 Electronic Banking.....	148
4.5.5 Emerging Technologies in Banking Delivery Channel.....	150
4.6 CONCLUSION.....	156
CHAPTER 5: RESEARCH DESIGN	158
5.0 INTRODUCTION.....	158
5.1 RESEARCH APPROACH PERSPECTIVES.....	158
5.1.1 Historical Perspective.....	159
5.1.2 Qualitative and Quantitative Approaches.....	162
5.1.3 The Positivist and Interpretive Paradigms.....	162
5.1.4 Qualitative Approach and Theory Building.....	164
5.2 MAIN RESEARCH METHODS OF THE QUALITATIVE APPROACH	165
5.2.1 The limitation of Qualitative Approaches.....	170
5.2.2 Interview Methods.....	172
5.3 THE CHOICE OF RESEARCH DESIGN FOR THE CURRENT RESEARCH	175
5.3.1 The Choice of Open-ended Interview Method.....	177
5.3.2 Guiding Theory.....	179
5.3.3 The Case Study Approach.....	180
5.3.4 Perceived Limitations of Case Study Approach.....	181
5.3.5 Types of Informants and sources of information.....	183
5.4 FIELDWORK ACTIVITIES.....	185
5.4.1 The First Phase	185
5.4.2 The Second Phase.....	189
5.4.3 Interview Schedule.....	191
5.5 DATA ANALYSIS	192
5.6 CONCLUSION.....	194
CHAPTER 6: DATA ANALYSIS	196
6.0 INTRODUCTION.....	196
6.1 PRELIMINARY DATA ANALYSIS.....	198
6.2 THEMATIC ANALYSIS AND THEMES DEVELOPMENT	201
6.2.1 Data Reduction Process – CASE 01.....	205
6.2.2 Data Reduction Process – CASE 02.....	208
6.2.3 Data Reduction Process – CASE 03.....	211
6.2.4 Data Reduction Process – CASE 04.....	214
6.2.5 Data Reduction Process – CASE 05.....	217
6.2.6 Data Reduction Process – CASE 06.....	219
6.2.7 Data Reduction Process – CASE 07.....	222
6.2.8 Data Reduction Process – CASE 08.....	225
6.2.9 Data Reduction Process – CASE 09.....	227
6.2.10 Data Reduction Process – CASE 10.....	229
6.2.11 Data Reduction Process – CASE 11.....	232
6.2.12 Data Reduction Process – CASE 12.....	234
6.1 SUMMARY OF THE DATA REDUCTION PROCESS	236
6.3 CONCLUSION.....	238

CHAPTER 7: FINDINGS	240
7.0 INTRODUCTION.....	240
7.1 FACTORS AFFECTING IT SYSTEM IMPLEMENTATIONS.....	241
7.2 EVIDENCE FROM THE CURRENT RESEARCH.....	245
7.2.1 Evidence of Effective Strategy:.....	245
7.2.2 Evidence of Inadequate Strategy:.....	247
7.2.3 Evidence of adequate/effective Organization Structure:.....	248
7.2.4 Evidence of Inadequate Organization Structure:.....	248
7.2.5 Evidence of adequate Technology/Expertise:.....	249
7.2.6 Evidence of Inadequate Technology/Expertise:.....	252
7.3 FURTHER DISCUSSION ON ANALYSIS RESULTS	254
7.3.1 The ‘Strategy’ Factor.....	255
7.3.2 The ‘Structure’ Factor	258
7.3.3 The ‘Technology’ Factor.....	265
7.4 CONCLUSION.....	272
CHAPTER 8: CONCLUSION.....	274
8.0 SUMMARY OF RESEARCH CONCLUSIONS.....	274
8.1 CONTRIBUTION TO KNOWLEDGE	279
8.2 LIMITATION OF THE RESEARCH	284
8.3 RECOMMENDATION FOR FUTURE RESEARCH	285
BIBLIOGRAPHY	289
APPENDICES	320
APPENDIX A – INTERVIEW QUESTIONS	321
APPENDIX B - CASE BRIEFING: CASE 01 BANK.....	326
APPENDIX C - CASE BRIEFING: CASE 02 BANK.....	333
APPENDIX D - CASE BRIEFING: CASE 03 BANK	337
APPENDIX E - CASE BRIEFING: CASE 04 BANK.....	341
APPENDIX F - CASE BRIEFING: CASE 05 BANK	346
APPENDIX G - CASE BRIEFING: CASE 06 BANK	349
APPENDIX H - CASE BRIEFING: CASE 07 BANK	352
APPENDIX I - CASE BRIEFING: CASE 08 BANK	356
APPENDIX J - CASE BRIEFING: CASE 09 BANK.....	360
APPENDIX K - CASE BRIEFING: CASE 10 BANK.....	363
APPENDIX L - CASE BRIEFING: CASE 11 BANK.....	371
APPENDIX M - CASE BRIEFING: CASE 12 BANK.....	374

List of Figures

Figure 1: Framework of Inquiry (Whipp & Clark, 1986).....	11
Figure 2: Levels of technology. Adapted from Scarbrough, (1992)	52
Figure 3: The MIT90s framework. Source: Scott Morton (1991).....	58
Figure 4: The Strategic Grid. Adapted from McFarland & McKenny (1983)	65
Figure 5: Necessary condition for successful SISP. Source: Earl (1996a).....	69
Figure 6: Nine Core IS Capabilities. Source: Feeny & Willcocks (1998)	76
Figure 7: Business Transformation Model. Adapted from Venkataraman (1991).....	81
Figure 8: Strategic management of technology – guidelines. (Adapted from Scarbrough & Lannon, 1988)	82
Figure 9: Structure of the banking institutions (adapted from BNM Annual Report 2004).	112
Figure 10: List of Commercial banks (end of 1997)	115
Figure 11: Consolidation of Malaysian Local Financial Institution.....	117
Figure 12: Summary of inadequate strategies	255
Figure 13: Summary of adequate strategies	257
Figure 14: Summary of structural deficiencies.....	260
Figure 15: Summary of characteristics implying strong or adequate structure	262
Figure 16: Summary of characteristics implying inadequate technology and expertise	266
Figure 17: Summary of implied technology adequacy.....	267
Figure 18: Focus area of Whipp & Clark’s (1986) framework of inquiry used in the current research.	281
Figure 19: The component of dimensions used in the framework of inquiry in the current research.....	282
Figure 20: Interactions among the three identified themes	283

List of Tables

Table 1: Five models of strategy implementation in brief. Source: Bourgeois & Brodwin (1984).	22
Table 2: Linkage of the Lippitt and Mackenzie's tactics and strategic implementation tactics. Source: Nutt (1989) p.147	25
Table 3: Successfulness of implementation. Source: Miller (1997) p. 583.....	26
Table 4: Key features of the implementation approaches. Source: Nutt (1998) p. 224.....	27
Table 5: Factors affecting implementation success. Source: Miller (1997) p. 584	30
Table 6: Definition of each factor. Adapted from Selvin & Pinto (1987).....	31
Table 7: From the traditional to the re-engineered organization. Adapted from Hammer and Champy (1993)	80
Table 8: Risk factors in IT outsourcing. Adapted from Willcocks et. al., (1999).....	84
Table 9: Chinese Banks in Malaya.	106
Table 10: Distribution of loans as a proportion of total loans	110
Table 11: Loan deposit ratio.	111
Table 12: Bank and population ratio in East Asia countries	114
Table 13: New merchant banks 1970-1976.....	122
Table 14: Adopted from: BNM's explanatory notes on information system (IS) risks and examiners' ratings.	130
Table 15: Sections of the Banking and Financial Institutions Act 1989	131
Table 16: The growth of ATM Machines in Malaysia.	145
Table 17: Methods of Qualitative Research	166
Table 18: Illustration – Data Reduction Process	203
Table 19: Summary - overall analysis of the Data Reduction Process.....	237

Glossary of Abbreviations

ABC	– Automated Banking Consortium
ABM	– Association of Bankers Malaysia
AGM	– Assistant General Manager
ALS	– Advanced Loan System
APEC	– Asia-Pacific Economic Cooperation
ASEAN	– Association of South East Asian Nations
ASP	– Application Service Provider
ATM	– Automated Teller Machine
B2B	– Business to Business
BAFIA	– Banking and Financial Institution Act
BBMB	– Bank Bumiputra Malaysia Berhad
BCP	– Banco Commercial Português
BDS	– Branch Delivery System
BIMB	– Bank Islam Malaysia Berhad
BMF	– Bumiputra Malaysia Finance
BMMB	– Bank Muamalat Malaysia Berhad
BNM	– Bank Negara Malaysia (Central Bank)
BOC	– Bank of Commerce
BOD	– Banking Operations Division
BPR	– Business Process Re-engineering
BSC	– Balanced Score Card
BSP	– Business System Planning
CED	– Chief Executive Director
CEO	– Chief Executive Officer
CFS	– Computerized Financing System
CIO	– Chief Information Officer
CIS	– Customer Information System
COO	– Chief Operating Officer
CRC	– Central Recovery Centre
CSF	– Critical Success Factor
DP	– Data Processing
DS	– Decision Support (System)
EB	– Electronic Banking (E-Banking)
EBC	– Electronic Banking Centre
EC	– Electronic Commerce (E-Commerce)
EDP	– Electronic Data Processing
EFTPOS	– Electronic Fund Transfer at Point of Sale

EIS	– Executive Information System
ESA	– Electronic Share Application
EU	– Expert Users
FMS	– Financial Management System
FMSP	– Financial Sector Masterplan
GATS	– General Agreement on Trade in Services
GED	– Group Executive Director
GM	– General Manager
GP	– General Provisions (in BAFIA)
GREAT	– Group Electronic Automated Transfer
GUI	– Graphical User Interface
HRD	– Human Resource Division
IBG	– Interbank Giro (Payment System)
IBM	– International Business Machine
IBS	– Integrated Banking System
IBS	– Interest-free Banking Scheme
ICBA	– Integrated Computerized Banking Application
ICT	– Information and Communication Technology
IM	– Information Management
IMF	– International Monetary Fund
IMS	– Information Management Strategy
IP	– Internet Protocol
IS	– Information System
ISD	– Information Technology Service Division
ISDN	– Integrated Services Digital Network
ISP	– Information System Planning
IT	– Information Technology
ITC	– Information Technology Centre
ITD	– Information Technology Division
ITSC	– IT Steering Committee
KM	– Knowledge Management
MEPS	– Malaysian Electronic Payment System (Consortium)
MICR	– Magnetic Ink Character Recognition
MIS	– Management Information System
MIT	– Massachusetts Institute of Technology
MLS	– Multiple Loan System
MPC	– Multi-Purpose Card (MyKad)
MSC	– Multimedia Super Corridor
MSD	– Management Services Division
MUP	– MIS Upgrade Project
NEAC	– National Economic Action Council

NERP	– National Economic Recovery Plan
NPL	– Non Performing Loan
NSB	– National Saving Bank (Bank Simpanan Nasional)
NUBE	– National Union of Bank Employees
PC	– Personal Computer
PMO	– Project Management Office
POS	– Point of Sale
PWC	– Project Working Committee
RBD	– Retail Banking Division / Retail Branch Delivery
RENTAS	– Real Time Gross Settlement System (RTGS)
RFP	– Request for Proposal
ROI	– Return on Investment
SDLC	– System Development Life Cycle
SEACEN	– South East Asian Central Bankers Group
SET	– Secure Electronic Transaction (Payment Gateway)
SIBS	– Silverlake Integrated Banking System
SISP	– Strategic Information System Planning
SM	– Senior Manager
SMR	– System Modification Requests
SNA	– System Network Architecture
SOG	– Stages of Growth (Model)
SPICK	– National Automated Check Clearing System
STP	– Straight Through Processing
TCO	– Total Cost of Ownership
TIBS	– Total Integrated Banking System
TTRS	– Two-Tier Regulatory System
URD	– User Requirement Definitions
WGC	– Working Group Committee
WTO	– World Trade Organization

Chapter 1

INTRODUCTION

1.0 Background

Technology plays an important role in organization's innovation activities, and the financial services sector has been one of the major adopters of technology innovations. In the developed countries, financial institutions have started to use programmable computing machines as early as the 1940s. In Malaysia computers only began to be introduced in the banking industry in the 1980s. Since then, the Malaysian banking industry has been in the forefront of information technology innovation in the country.

Today, the deployment of computer technology has gone far beyond automating manual banking operations in the back office. Most of the products and services offered by the banking institutions could only be possible through the exploitation of information technology (IT). The emergence of electronic banking (or direct banking) that we have begun to witness in the Malaysian banking industry in recent years has relied heavily on IT. Electronic banking offers convenience for bank customers to perform banking activities. In other words, banks have begun to shift the deployment of technology from the back office to the delivery channels at the front end. Currently, most of the major commercial banks in Malaysia have started to offer electronic banking to their customers in the form of home and office banking through the use of personal computers, telephone lines, and the internet.

1.2 Research Rationale

In terms of literatures, researches that focused on the links between information technology and innovation have been increasing since the last two decades (King et. al., 1994; Lockett 1996). In the West, particularly the UK and the US for example, there have been a number of studies on IT innovations in financial services sector which helped the researchers to understand how the IT innovations were implemented and managed. Some of these researches have emphasized the need to understand human, managerial and strategic organizational issues (Barett, 1995; Brady & Targett, 1995; Jacoby, 1995; Fincham et. al., 1994; Scarbrough, 1992; Steiner & Teixeira, 1990). More recent works which continued to press on similar issues apart from other issues include Taylor & McAdam, 2004; Bartoli & Hermel, 2004; and McAdam & Galloway, 2005.

In Malaysia, however, early research related to innovation (Ali, 1992; Kanapathy, 1995), had largely focused on industrial perspective with little managerial emphasis. Results from literature search performed by the current research hardly found any evidence to suggest that innovation research in Malaysia have been conducted to cover a wide perspective across different industries. This is particularly true at least in the Malaysian banking industry. Literature search also suggests that research in this area is still at its infancy stage. There is still very much to be researched and learned in order to understand the nature of technology innovation in the Malaysian banking industry.

This spark contrast is consistent with the argument by King et. al. (1994) that the body of knowledge concerning innovation in technology is much more established in the developed countries in contrast to the less developed countries. This suggests that

there is a niche for researchers to carry out investigation to understand more about technology innovation in the less developed countries.

1.2 Originating Questions

In the last five years, there seems to be rapid adoption and commercialization of new technologies by the banking institutions in Malaysia. Understanding this development particularly issues surrounding their implementation of the new technologies and the level of implementation success is greatly important particularly in the Malaysian context. The importance of research into this area is further underscored by Lockett's (1996) argument that many information technology projects in general failed to meet their objectives, due to a lack of focus in the part of planning concerning people and organizational issues, and not because of technology. The need to understand what are the key factors, their effects and interactions in the implementation of new technologies in the Malaysian banking industry, calls for research into this area.

In other words, understanding these issues is what the current research aims to achieve. Some broad questions marking the outset of the current research include:-

- *What are the factors that affect IT system implementations in the Malaysian banking industry?*
- *How is the problem of IT system implementations in the Malaysian banks being approached and dealt with?*
- *Can the evidence obtained from the Malaysian context confirm evidence drawn from the West?*

1.4 Organization of this Dissertation

The following table briefly summarized the content and the organization of this dissertation.

No.	Title	Content
Chapter 1	Introduction to this research.	What the thesis is about. Explains the research purpose, context, scope and organisation of the thesis.
Chapter 2	Background Literature.	Discuss the meaning and review studies on innovation. Some insights into organisational innovation. Discuss the link between innovation and implementation. Finishing off with issues affecting implementation.
Chapter 3	Innovation and implementation: Information Technology (IT) and Financial Services.	Discuss IT innovation in general. Some focus on information systems planning and implementation. Review of recent studies on IT implementation in financial services industry.
Chapter 4	Malaysian Financial Services Industry.	Review of historical background, its composition, and economic events affecting the industry. Highlights the importance of IT and development of electronic banking systems in this industry. Focus on some issues surrounding IT innovation and implementation particularly in electronic banking systems in Malaysia.
Chapter 5	Research Design.	Discuss potential approaches to research into IT innovation and implementation. Explain approach and design used for this particular research. Provide description of cases selected for this research.

Chapter 6	Analysis.	Accounts of IT implementation based on in-depth interview data and secondary data. Preliminary research findings and conclusion are discussed. Summary of data reduction process for each case and overall result of the analysis.
Chapter 7	Findings.	How the problems of implementation are dealt with will be central to the analysis. The findings and preliminary conclusions are analysed along the theoretical knowledge discussed in Chapter 2 and 3.
Chapter 8	Review of this research: Conclusions and future directions.	This section reviews the findings, conclusion and contributions to the field; points to future directions of research; and acknowledges the limitations of this research.

This research is anticipated to provide inductive insights as to whether the theoretical perspective developed by Western researchers would be supported by the findings from developing nations such as Malaysia. Specifically, it will provide evidence that will either confirm or disconfirm theoretical perspectives on managing innovation in the specific case of IT innovation, particularly in IT system implementations.

Chapter 2

BACKGROUND LITERATURE

2.0 Introduction

This section discusses and summarizes the literature that represents practically the important issues, which the current research attempts to address. It not only attempts to discuss the meaning of innovation but also reviews past studies dealing with issues of innovation. This section also discusses the link between innovation and implementation. Some issues affecting implementation were highlighted toward the end of the section.

The review begins by discussing innovation in general. This includes theoretical development in the study of innovation highlighting various perspectives on innovation research. It also stresses that the management of innovation is an organizational problem.

Next, the chapter discussed the link between innovation and implementation. Strategy implementation as an innovation process is then discussed to highlight some issues affecting implementation. This includes the discussion of models of strategy implementation and implementation tactics. The role of organizational structure, the issue of power, expertise and institution represent some of the issues in the management of linkages and interfaces within the organizations.

Each of the issue sets up the foundation of the theoretical framework that the current research attempt to address.

2.1 General Innovation Literature

Numerous studies in the area of innovation have been and are continuously being conducted. This research ranges from idea generation to specific types of innovations such as product (or services), process innovation (Abernathy & Utterback, 1988) and organizational innovation (Damanpour & Evan, 1984; Van de Ven, 1986; Wolfe, 1994). Barrett (1995) citing the work of Wolfe noted that in a period of five years up to 1994, there were approximately 1300 journal articles published in the field of innovation research and more than 350 dissertations have been completed. The more recent studies on innovation have emphasized technology and organization and their role in today's knowledge intensive organizations (Van de Ven, 2001; Scarbrough, 2003; Chanal, 2004; McAdam & Galloway, 2005).

The term 'innovation' has been defined using a variety of perspectives. Utterback (1974) provided a basic definition of innovation i.e. an idea or technology that is new to the firm. Damanpour (1991) provided more elaborate definition as he defined innovation as: "adoption of an internally generated or purchased device, system, policy, program, process, product or service that is new to the adopting organization".

Many authors of innovation research have shown concern over the difference between invention and innovation. Marquis (1969) emphasized that even though the term invention and innovation were related terms and used interchangeably, they are different. He drew the distinction made by Schmookler (1966) in that: "Every invention is a new combination of pre-existing knowledge which satisfies some want" and "when an enterprise produces a good or services or uses method or input that is new to it, it makes a technical change. The first enterprise to make a given change is an innovator. Its action is innovation". Thus it can be understood that invention

spawned from ideas. These ideas are generated based on existing knowledge and they have the potential to produce changes that will give better results. When it is translated into actual activities which may produce better results, it becomes innovation.

In reference to other research, King et. al. (1994) characterised innovation: "...as a process of movement through three overlapping stages: invention, innovation and diffusion". Invention is the generating of new ideas whilst not necessarily having economic value. Transforming a new idea into useable form and commercialising it is innovation. When the innovation is spread on a wider scale, it is diffused. Nevertheless the adoption of an idea or behaviour that is new to the organization as defined by Hage (1999) is perhaps the most widely used definition of innovation as has been argued by Harkema (2003).

Clearly, the understanding of the term innovation should not be limited to reflect only the generation of new ideas commercialised into products or services. It seemed important to understand that innovation is made up of various types and can occur at different levels. For example, technological innovation which includes the use of new processes and techniques is one of the most commonly discussed type of innovation. Other types of innovations include social reform such as organizational innovation (Kimberly & Evanisko, 1981) and institutional innovation (King et. al., 1994); also innovation at personal level (Drazin, 1990) such as in the case of professionalism.

This clearly shows that innovation studies cover a widespread scope. Not only that innovation is made up of different types but it has also been found that different types of innovation influence and often complement each other such as in the case of organizational innovation (Damanpour et. al., 1989); this will be dealt with more

elaborately later in the chapter. Recent work has included the concept of change and transformation (Bartoli & Hermel, 2004) into the fold of innovation debates.

Despite the numerous researches in this area, early works in innovation research have not been successful in suggesting a unitary theory of innovation. Downs & Mohr (1976) postulated that what might prevail was the existence of distinct types of innovations whose adoption can best be explained by a number of correspondingly distinct theories. They doubted the suggestion that a single theory and a set of determinants were applicable to the entire set of newly implemented techniques, programs, rules, and norms. If there were claims that such single theory exists and applicable on all types of innovation, such idea according to them was not substantiated and was merely a suspicion. They further suggested that perhaps the most straightforward way of accounting for this empirical instability and theoretical confusion is to reject the notion that a unitary theory of innovation exists.

The nature of focusing on a particular type of innovation in many of the previous researches could perhaps explain why it was difficult to arrive at a unitary theory of innovation. Kimberly and Evanisko (1981) argued that some researchers have been inclined to centre on a single innovation or single class of innovation in their research. Thus, in their attempt to better understand innovation, Kimberly and Evanisko have examined the combined effects of individual, organizational and contextual variables on technology and administrative innovation by organizations.

It remains difficult to understand the complex interrelationship among the different types of innovation especially when the nature of a particular innovation itself has yet to be fully understood. Particularly with organizational innovation, Wolfe (1994:405) argued that despite the vast literature and interest in innovation, understanding the

innovative behaviour in organizations remains low. He concluded his analysis by saying: “Our understanding of innovative behavior in organizations, however, remains relatively undeveloped as the results of organizational innovation research have been inconclusive, inconsistent, and characterized by low level of explanation”. Consequently he said: “The current state of the literature offers little guidance to those who want to influence organizational innovation”. Wolfe’s argument proved to be true even after a decade later over concerns related to the shortage of critical literature on the adoption and implementation of innovation within organizations (Taylor & McAdam, 2004).

The distinctly varied emphases of earlier research on innovation tend to be based on the fields from which the researchers came from. Economists were more interested in innovation within the industrial context; engineers were more interested in the product and production processes while social scientists have different preferences. For example Marquis (1969), Smith (1982), Abernathy & Utterback (1988), Abernathy & Clark (1985) have looked at innovation from the industrial point of view, emphasizing on technological development and technical change.

During the 70s, early attempts to approach the field of innovation in an integrated manner produced little evidence of success. The work of Whipp and Clark (1986) in the mid 80s was perhaps among the first to have provided a better insight in tracing the history of innovation research. They provide an alternative framework of innovation while showing important problem areas for further investigation in other industries or sectors.

In their attempt to understand the nature of innovation in the automobile industry Whipp and Clark (1986) have used the alternative framework of design and

innovation by linking the important aspects of product and process innovations with work organization based on organizational and management theories. Whipp and Clark made the first attempt to associate them by extending Abernathy's framework (Abernathy, 1978) of innovation to include work organization.

In their review and synthesis of approaches to innovation, they have used a multi dimensional framework encompassing design and innovation; the historical dimension; a comparative dimension; and a sectoral dimension. The framework of inquiry used in their work is worth to be depicted here. (See Figure 1)

This particular study was able to show a clear linkage among diverse components in various dimensions and was successful in describing innovation in the automobile industry. It is possible that a similar framework could be used to understand innovation within the scope of the current research in IT implementations in the specific context of Malaysian banks.

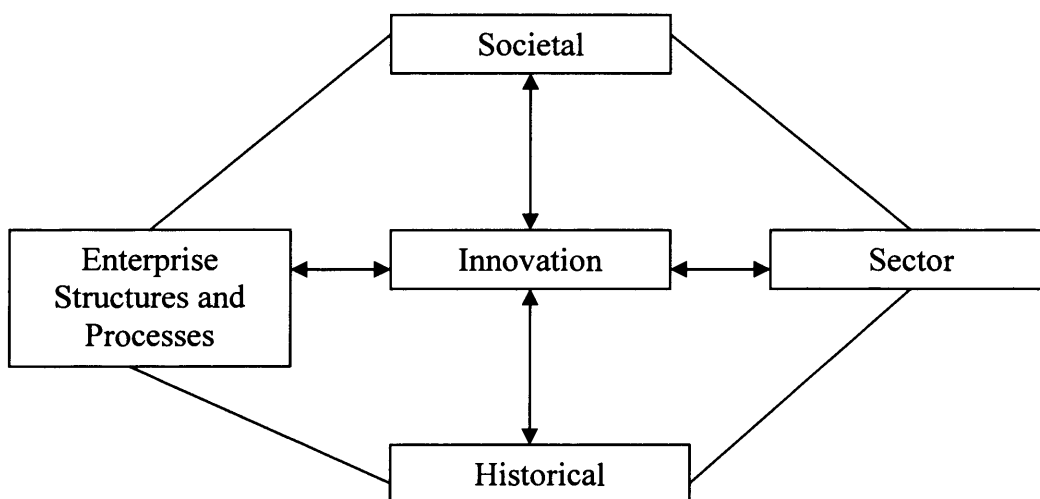


Figure 1: Framework of Inquiry (Whipp & Clark, 1986)

The multiple dimensions approach is also supported by Tushman & Anderson (1997) in their recent work on managing strategic innovation and change. They provide a

useful overview of multidimensional approach. According to this approach, the impact of innovation has been examined at various levels. One of the important levels of analysis is the organizational level – architectures, strategies and functional linkages – which relates to the enterprise structures and processes dimension proposed by Whipp and Clark in their framework.

The above point serves as an evidence to support the importance of understanding innovation at the organizations or firms' level. In fact the significance of this level of analysis is clearly stressed by Tushman & Anderson (1997) when they advocate that:

“Management of innovation is an organizational problem. The architecture of an organization – its structure, its competencies, its job and career structure, its power – determines its capacity to nurture, sustain, and exploit innovation” (p. vi).

They further pointed out:

“Successful innovators must excel at managing linkages and interfaces between organizations. Within the firm, effective cross-linking of strong functional areas must occur within the context of teams and overlapping organizational structures” (p. vi).

On the importance of managing expertise and competencies, they highlighted that:

“Managing the firm's intellectual capital is an exercise in linking the various sources of a firm's knowledge to problems posed by the changing market it serves” (p. vi), and they also stressed that innovation is managed by leaders and teams with multiple competencies.

Based on the above quotations, it can be argued that organizational – structures, strategies and expertise – are among the management issues that need to be reckoned

with in the process to understand innovation in an organizational context. The importance of determining the specific dimension of the level of analysis (Whipp & Clark, 1986) and the relevant organizational problems (Tushman & Anderson, 1997) serve as important guidelines for the current research.

2.1.1 The Absence of Generalizable Theories

One of the concerns raised in the effort to understand conceptual issues in the study of innovation, is the problem of a lack of clarity. As a result of this problem, the findings of earlier empirical studies on innovation have so far not been able to produce generalizable theories.

Among the early attempts to address this problem by making an effort to synthesize conceptual issues in the studies of innovation is the work of Down & Mohr (1976). In their study, Down & Mohr identify sources of ‘instability’ that lead to unresolved conceptual issues. This ‘instability’ is caused by extreme variance in the findings of the earlier research on innovation. This instability was attributed to four reasons namely; variation among primary attributes; interactions; ecological inferences; and varying operationalizations of innovation. These extreme variations explain why it is difficult to resolve conceptual issues in the studies of innovation.

A more recent attempt of such study that has given better insight into the reasons for the inconsistent and inconclusive nature of innovation research is the work of Wolfe (1994). In his study Wolfe emphasized that the ability to understand a particular innovation depends on how the researcher grasp the complex, context-sensitive nature of the phenomena itself. To accomplish this, Wolfe suggests that researchers must clearly address:

- which of the various streams of innovation research is relevant to a research question,
- the stage(s) of the innovation process upon which a study focuses,
- the types of organizations included in the study,
- how a study's outcome variable (e.g. adoption, innovation, implementation) is conceptualized, and
- the attributes of the innovation(s) being investigated.

The list of above points suggested by Wolfe (1994), seemed plausible in the sense that they help a researcher to establish his research in a proper context right from the outset. Since the current research seeks to understand the implementation issues in the IT adoption by Malaysian banks, it would be sensible that the above points are given due consideration within the context of the current research.

Up to this point, it seemed conceivable to recognize that there is a close link between implementation and innovation. This argument becomes more evident as Wolfe (1994) also cited implementation as one of the examples of variables that can be conceptualized in the study of innovation. It is possible for such studies to look at the success and failures of an innovation by examining the factors relating to its implementation. These issues clearly need to be examined and can be used as a guideline for further research into the study of innovation.

Having acknowledged the evidence that such possible close link exists between implementation and innovation, the next important thing to do in the interest of the current research is to deal with implementation issues in a reasonably wider and deeper perspective.

The next section attempts to address the above point by examining literatures related to the implementation research.

2.2 Implementation and Innovation

Having acknowledged the plausibility of the close link between implementation and the concept of innovation, this section attempts to discuss further the meaning of implementation and important issues affecting implementation.

In addition to some of the definitions and meanings of the term 'innovation' discussed earlier, Van de Ven (1986) has given an interesting explanation, as he highlighted 'implementation' as a part of an innovation. He defined innovation as:

“...the development and implementation of new ideas by people who over time engage in transactions with others within an institutional order. This definition focuses on four basic factors (new ideas, people, transactions, and institutional context)”.

For example, Goddard (1999) suggests that the link between implementation and innovation can be viewed via the relationship between the rationale of the implementation and the institutional isomorphism thesis.

The institutional isomorphism thesis is a thesis first advanced by DiMaggio and Powell (1983). This thesis argued that innovations or changes in organization are implemented not for efficiency reasons per se, but rather because they are consistent with institutionalized rules and norms.

According to DiMaggio and Powell (1983), there are three mechanisms through which institutional isomorphism occur. The first mechanism is coercive in nature where innovations may be implemented in response to institutionalization pressures under which customers and creditors implicitly or explicitly pressure management to implement them. The second is memetic, where the innovation is implemented even

though management is uncertain as to the most effective course of action. The driving force behind the implementation appears to have come from seeing competitors successfully adopt the innovation. Under the third, new policies and practices may be adopted because of a change in management ideology, or values or belief. They argued that key managers could have been made receptive to the new ideology or they are replaced by managers who already adhere to this ideology.

As a field of research area, implementation has been an area of interest by researchers since the 1980s or perhaps even earlier. According to some authors, the discussion on implementation has been dealt with in both strategic and technological contexts (Leonard-Barton & Krauss, 1985; Guth & Macmillan, 1986; Reed & Buckley, 1988; Piercy, 1989; Fincham et. al., 1994; Miller, 1997; Epstein & Manzoni, 1998; Grundy, 1998; Marble, 2003).

These authors acknowledged that there are a number of issues that have the potential to complicate implementation process, which could lead to implementation failure. One of the issues highlighted in their works is the issue of strategy implementation which was discussed in a considerable extent. The emphasis given by these authors seemed to imply that strategy implementation is an issue that deserves to be further understood in innovation studies. The next section attempts to discuss this issue further.

2.2.1 Strategy Implementation

As can be seen in the studies cited above, important link has been considerably established between implementation and the concept of innovation. Therefore it seems plausible to suggest that within the organizational context, there is a need to

better understand how such link exists within the specific organization setting. As it has been argued earlier that there could be a number of issues which may complicate implementation process of an innovation, the same could also be true in strategy implementation. In other words, within the context of an organization, strategy and innovation may share similar concerns in terms of their implementation, which will be discussed further later in the chapter.

Within the perspective of strategic activities in an organization, implementation is typically grasped as an activity that takes place after some sort of strategic planning activities. This has been the approach used in traditional textbooks, which treat implementation as an activity following strategy formulation (Bourgeois & Brodwin, 1984). Likewise, other authors who seemed to share similar opinion (Ettlie, 1980; Tornatzky, et. al., 1983; Meyer & Goes, 1988), have treated implementation as a distinct stage in their innovation process model.

Such an opinion may be seen as quite similar from the point of view of technological innovation where the popularly held view suggests that successful innovative adoption of new technologies corresponds to a linear sequence (Fleck et. al., 1999). The linear sequence happens in three stages where; a) technology suppliers generate new technology packages; b) these are transferred from suppliers to user firms; and c) they are subsequently implemented on the shop or office floor. Although they acknowledge this popular view, Fleck, et. al. (1999), however, opposes such a linear assumption.

Thus implementation as a distinct stage in the innovation process may not be true in all cases, since implementation activities when observed in a broader perspective may have begun during or even before formal planning activities are completed. Bourgeois

& Brodwin (1984) contended that such approach by traditional textbooks have been challenged by other views, which treat implementation either as an issue of gaining prior group commitment through joint decision-making, or as a question of total organizational involvement.

This particular view is supported by another argument by Alexander (1985), who asserted that it was not surprising after a comprehensive strategy decisions had been formulated, significant difficulties were often encountered during the subsequent implementation process. He contended that even though strategy implementation has been viewed as an integral part of the strategic decision making process, further decisions would still have to be formulated during implementation. In other words, strategy formulation and strategy implementation may not be mutually exclusive stages in the strategic decision process.

The above authors, whose works were written in the mid 1980s, also suggest that little had been written or researched on strategy implementation for the subject to be better understood in a broader perspective. A number of researches on implementation during the 90s have been more focused to include organizational characteristics and the interlinked factors that would affect implementation. These include authors who termed implementation as a process which happens over numerous sub-stages in their innovation model (Wolfe, et. al., 1990; Fincham, et. al., 1994; Rogers, 1995).

It is plausible to suggest that not only implementation is possible to occur in numerous stages, but it is also possible that implementation may affect multiple organizational levels. Some implementation efforts may even affect the organization at all levels, which cause all element of the organization to be involved. This argument continues to gain merit by more recent study which acknowledges the

addition of all organization elements including people, products and process perspectives (Taylor & McAdam, 2004).

Fleck et. al. (1999) who disagrees with the assumptions of the linear model in the adoption of new technology mentioned earlier seemed to support the above argument. They argued that innovation is simply not like that and suggest organizations that consciously or subconsciously follow this linear model are more likely to meet with failures than success. They further argued that factors, which lead to success or failures in technological innovation, are often cloaked by the rational, technology-driven assumptions of the linear model. These key factors relate to the organization's ability to assimilate and manage new technology. They categorize these factors into two namely the cognitive issues and decision-making issues.

Cognitive issues deals with the distribution of knowledge and perceptions. The implementation of technology not only depends on the cross-functional distribution of knowledge and expertise but is also shaped by the players involved. They include professional expertise inside and outside the organization as well as its suppliers and markets that are well verse with the existing system which will be required to fit together with the new technology.

On the other hand decision-making issues deals with organizational politics and perceptions in different parts of the business. The decision-making processes which shape innovation are themselves shaped by the distribution of power and influence within the organization. The more groups and interests affected by a particular innovation, the wider the range of perceptions and views on the technology and the greater the possibility of conflict. According to Fleck et. al., organizations pursuing the linear model may seek to suppress such conflict because it is seen as a barrier to

implementation. However, some forms of conflict can be constructive especially if it helps to surface a wider range of views.

As for another example, Fincham et. al. (1994) advocates that the process of getting complex technology to work goes beyond technical development and installation per se. Implementation in this sense involves organization, its goal, and strategies, and is the process through which technology is concretely deployed. It has been suggested earlier that as far as total organization involvement is concerned, strategy and innovation may share similar concerns in terms of their implementation.

As part of an innovation process, implementation typically goes through a variety of specific sorts of uncertainty as well as faced with problems in overcoming inertia (Tushman & O'Reilly III, 1996; Van de Ven, 1986, Wolfe, 1994). One of these uncertainties, for example, is development uncertainty Fincham et. al., (1994). Development uncertainty raises the question of whether a particular system can be developed under specific time and budgetary constraints. Their case studies in the financial services sector found that firms almost universally experienced slippages, constant renegotiations, and time and budget overruns. Recent study seems to suggest that this phenomenon remains a major concern (Iacovou & Dexter, 2004) which further suggests that the use of development methodologies and project-management techniques for IT implementation is far from established.

Changes that take place during the innovation process can be incremental or radical, evolutionary or revolutionary, enabling or disruptive (Pearson, 1991). In his review of several case studies, Pearson highlighted many key implementation issues of innovation that are closely related to its success or failure. Among the key issues are: the importance of observant people, the value of experiences, the linking of different

technologies to turn failure into success, the need for perseverance, the contribution of group problem solving techniques, and the potential for opening up a wide range of opportunities.

Based on the above arguments, it becomes more evident that implementation not only is an integral part of strategic decision process but also is essential part of innovation process. This is explicitly expressed by Van de Ven as quoted earlier in his definition of innovation when he mentioned not only development but also emphasized implementation as part of the innovation process, suggesting that such a close link exist right from the outset. While other author such as Leonard-Barton (1988) consider the process of re-configuring technological systems goes on right through the process of implementation and conclude that, implementation is in effect innovation. The following section discusses strategic implementation in a greater detail by making specific references on strategic implementation models.

2.2.2 Models of Strategic Implementation

Researchers have made a number of attempts to produce models to help explain the techniques used in carrying out strategic implementation process. It is perhaps appropriate at this point to discuss a number of models produced by the researchers found in the strategic implementation literature. This is important to the current study in order to develop an understanding of the different perspectives and approaches in the study of implementation.

In their attempt to review and explain the evolution of various process approaches of strategy implementation, Bourgeois & Brodwin (1984), developed five models that were used to advance the art of strategy implementation.

The first is the Commander Model, which emphasise the use of economic and competitive analyses by the CEOs to plan resource allocations in the achievements of explicit objectives. This model contains a strong normative bias toward centralised direction. The second model the Change Model, which deals explicitly with strategy implementation, and emphasise how organizational structure, incentive compensation, control systems can be used to facilitate the execution of strategy. The third model is the Collaborative Model, which concentrates on group decision making at senior level involving multiple input that generates negotiated strategy. The fourth model is the Cultural Model, which seeks to implement strategy through the infusion of a corporate culture throughout the organization by perpetuating strategic direction through lower level participation. And finally the fifth is the Crescive Model, which emerges from managers' natural inclination to want to develop new opportunities as they see them in the course of their day-to-day management. This model involves 'growing' strategy from within the firm. The following table summarises the models.

Model	The CEO's strategic question	CEO's role
I. Commander	'How do I formulate the optimum strategy?'	Architect
II. Change	'I have a strategy in mind; now how do I implement it?'	Rational actor
III. Collaborative	'How do I involve to management to get commitment to strategies from the start?'	Co-ordinator
IV. Cultural	'How do I involve whole organization in implementation?'	Coach
V. Crescive	'How do I encourage managers to come forward as champions of sound strategies?'	Premise-setter and judge

Table 1: Five models of strategy implementation in brief. Source: Bourgeois & Brodwin (1984).

The first three models assume implementation as after-the-fact, formulators are few and much of the organization's efforts are spent during implementation. On the other hand, the last two models assume much time and effort are spent during formulation

to achieve consensual decision making and to bring forth strategy champions. The large amount of effort and time pay off with instant and practical strategy implementation.

In other words, the emphases of the above models have been on the role and function of the organizational leaders in developing various perspectives prior to getting the whole organization to be part of the implementation process. The 'how to' questions would still have to be answered in order to address how the implementation may be executed.

Obviously the above assertion implies that higher-level organization strategies tend to be general and cover a wide organizational scope. These strategies would have to be transformed into smaller sub-strategies or detail tasks. This brings down the high level strategies to a tactical level (Nutt, 1987) which allow specific tasks to be implemented. A number of researchers have specifically dealt with this issue which is further discussed in the following section.

2.2.3 Tactics of Strategy Implementation

Implementation tactics describe the approaches that can be undertaken to address specific implementation environments. At this point it is perhaps necessary to acknowledge that there is a difference between strategic implementation and tactical implementation. In order to understand the difference between strategic and tactical implementation, it is necessary to look at the level of implementation activities and when they occur.

Selvin & Pinto (1987) gave examples of strategic activities, which include mission, top management support and project schedule or plan; and tactical activities such as client consultation, personnel, technical tasks, monitoring and feedback, communication, and trouble shooting. Strategic issues are most important at the beginning while tactical issues gain importance toward the end of a mission or an undertaking (e.g. program or project). However, this kind of view may lose sight of the importance of getting immediate attention from top management when problems occur at later stage of implementation. This issue remains an interesting question decades later and has recently been look at more objectively in the case of large scale technology implementation such as in enterprise system (Dong, 2001)

Nutt (1987) has identified some perspectives of implementation tactics which could be used to further elaborate the above understanding of tactical implementation. He identified four distinct implementation tactics to describe how managers install strategy. The types of tactic namely – intervention, persuasion, participation, and edict – were modeled based on his study on strategic planning cases.

Intervention implementation involves the manager making changes required by a priority strategic option. He then created the need for change in the minds of key people by re-instilling the norm of the system to be changed. In participation implementation, the manager initiated planning by stipulating strategic needs and an area of action, specified by a priority strategic option, and delegated project development to a group. Persuasion implementation involves the manager to implicitly or explicitly delegate the development of ideas consistent with priority strategic directions to technical staff or consultants. In implementation by edict the

manager used an edict when directives for plan adoption were issued. The use of power was the dominant theme in these cases.

In 1989, Nutt tested this models by linking it to Lipid and Mackenzies (1976) L&M model to produce a set of recommended tactics and their level of success based on a series of questions to managers used in the L&M model. Linkage between L&M model with Nutt’s strategic implementation model is summarised in the table 2.

The findings suggest that a higher degree of implementation success is achieved when managers use recommended implementation tactics. This model however, as contended by Miller (1997) lacked the detail meaning of success.

L&M tactics	Strategic implementation tactics
Consultation	Persuasion
Form an implementation committee to shape plan	Intervention or participation
Form a planning group to develop the plan	Intervention or participation
Ask a standing committee to monitor plan	Participation
Power	Edict
Solve	Intervention

Table 2: Linkage of the Lippitt and Mackenzie’s tactics and strategic implementation tactics.
 Source: Nutt (1989) p.147

There are also other authors who take a straight forward approach by arguing that if a decision is adopted it may be said to be successful (Bourgeois and Broadwin, 1984; Piercy 1989). Nevertheless adoption does not necessarily lead to successful outcomes. In order to explain better the meaning of ‘success’, Miller (1997) cited three distinctive features from other earlier studies on measurement of success. The three features are completion, achievement and acceptability, which emerged from that analysis are summarised in the following table.

Completion	The degree to which everything intended to be done is done, within the expected time period.
Achievement	The degree to which what was done performs as intended.
Acceptability	The degree to which the method of implementation and outcomes are satisfactory to those involved in, or affected by, implementation.

Table 3: Successfulness of implementation. Source: Miller (1997) p. 583

The model developed by Miller (1997) measures ‘success’ according to the degree of completion, achievement and acceptability. However, it cannot be ensured that an adoption of a decision will satisfy to three criteria to be considered fully successful. Decision can sometimes be implemented in part or took longer time than expected.

Alexander (1985) in his study found that the problem of adhering to time scale is one of the most frequently occurring strategy implementation problems. Achievement measures how far objectives of those who made the decision were met. Achievement measures can be linked to the notion of decisions’ effectiveness described by Dean and Sharfman (1996) which is largely influenced by the strategic decision making process. They define decision effectiveness as ‘the extent to which they result in desired outcome’. Acceptability measures the success of the implementation in terms of strategy-culture compatibility. With regard to acceptability, Piercy (1989) in his study on diagnosing and solving implementation problems in strategic planning, emphasized the importance of evaluating key implementation players and how they perceived the implementation of the strategic plan.

The argument on these three measurements of implementation success – completion, achievement, acceptability – seemed to be valid. Thus it might be useful in providing insights in understanding the issues within the context of the current research.

As a response to the issue of the lack of the meaning of success contended by Miller (1997), Nutt (1998) tested his models of tactics developed in 1987 to further find out factors influencing implementation success in facing resistance from key stakeholders. The following table adapted from his study (1998) summarizes key features of the implementation tactics.

Approach	Steps	Illustration
Intervention	<ol style="list-style-type: none"> 1) Present the need for action as a performance gap. <ol style="list-style-type: none"> a) Document current performance b) Justify a norm drawn from comparable organizations or situation c) Suggest how others have been able to improve 2) Network, presenting performance gap findings 3) Wait for agreement about need to act to build before setting direction, searching for options, etc. 4) Show success 	<p>A material management system was re-normed by showing how up-to-date practices can eliminate stockouts at reasonable costs. The experiences of other companies were cited to show performance levels of competitors and feasible system changes. Results obtained were shared during the installation of the new system.</p>
Participation	<ol style="list-style-type: none"> 1) Identify task force members 2) Delegate actions to the task force and indicate expected results 3) Wait for recommendations 	<p>The director of a state mental health department initiated a \$70 million downsizing by having key stakeholders make recommendations. Targets were given and task force were asked for recommendations with the understanding that all reasonable changes would be adopted</p>
Persuasion	<ol style="list-style-type: none"> 1) Cite benefits of the decision to argue for adoption 2) Hold up installation until sufficient support can be marshaled 	<p>Responding to a need to improve EDP capacity and efficiency, the head of an MIS department presented system upgrades and demonstrated how each would benefit key users</p>
Edict	<ol style="list-style-type: none"> 1) Indicate the nature of the decision and what people must do to comply 2) Install the decision via training policy, change, or mandate 	<p>A new software package was announced by sending all employees a schedule that indicated how to use the package and when it would be available</p>

Table 4: Key features of the implementation approaches. Source: Nutt (1998) p. 224

In the above study, success was measured by adoption, value and efficiency. Variables measured in that study include the extent of stakeholder support, scale and disruptiveness of the decision, as well as the implementing manager's leverage. It was

found that 'intervention' was the most successful approach no matter what situation faced a manager seeking to implement a decision. It also proved to be a viable substitute for 'participation' that has a favourable adoption rate and a dramatic increase in timeliness. Whereas 'persuasion' and 'edict' approaches were found to be often used and generally unsuccessful.

The factors that influence the success of the implementation discussed above seemed to suggest that it is also important for the current study to understand further about other key factors of successful implementation. The following section attempts to provide a more focus discussion on this matter.

2.2.4 Key Factors of Successful Implementation

The importance of implementation success is not only limited to the above argument. In fact, implementation success has been one of the areas of concern in the implementation literature. There are abundant studies conducted in the past two decades on implementation success with varying focus reflecting its importance in the literature (Leidecker & Bruno 1984; Alexander 1985; Selvin & Pinto 1987; Walsh & Kanter 1988; Bryson & Bromiley 1993; Gratton 1996; Miller 1997; Clarke 1999).

One of the themes emerging from these studies is the key factors that contribute toward achieving successful implementation. One of the concepts that are developed based on this is the concept of Critical Success Factors (CSF).

In an attempt to explain the concept of critical success factor Leidecker & Bruno (1984) made a comparison between the definition given by Rockart (1979) and the definition given by Hofer & Schendel (1978).

Rockart observes: “Critical success factors thus are, for any business, the limited number of areas in which results, if they are satisfactory will insure successful competitive performance for the organization. They are the few areas where ‘things must go right’ for the business to flourish. If the results in these areas are not adequate, the organization’s efforts for the period will be less than defined (p. 85)”.

While according to Hofer & Schendel: “Key success factors are those variables which management can influence through its decision that can affect significantly the overall competitive positions of the various firms in an industry. These factors usually vary from industry to industry. Within any particular industry, however, they are derived from the interaction of two sets of variables, namely the economic and technological characteristics of the industry involved... and the competitive weapons on which the various firms in the industry have built their strategies... (p. 77)”.

Leidecker & Bruno contended that such ‘factors’ mentioned by Hofer and Schendel are not as obvious and determinations of their relative importance are not easily assessed. However, they recognised the fact that the factors interact differently at different levels. In their study, Leidecker & Bruno defined Critical Success Factor (CSF) as ‘those characteristics, conditions, or variables that when properly sustained, maintained, or managed can have significant impact on the success of a firm competing in a particular industry (p. 24)’. This concept needs to be applied at three levels of analysis (firm specific, industry and economic socio-political environment) so that it provides a source of critical success factors at each level.

The source of CFS is one of the areas that were given emphasis by a number of authors who study implementation of strategic decisions and project management. For instance, Miller (1997) found ten factors, which were deduced from case data in

her study. She suggests that these factors are important for the success in implementing strategic decisions. These factors were categorized into two groups which she termed as 'realizers' and 'enablers'.

Realizers	
Backing	The degree to which influence patterns favour implementation.
Assessability	The degree to which the success of implementation can be evaluated with precision.
Specificity	The degree to which precise details of implementation tasks and activities were decided beforehand.
Cultural receptivity	The degree to which organizational culture is conducive to the process of implementation.
Propitiousness	The degree to which any unforeseen external circumstances favour implementation.
Enablers	
Familiarity	The degree to which those involved have experience relevant to implementation.
Priority	The degree to which implementation is given precedence in the organization.
Resource availability	The degree to which resources for implementation (such as manpower, finance, and time) are available.
Structural facilitation	The degree to which organizational structure is conducive to the process of implementation.
Flexibility	The degree to which the implementation process can be adapted to accommodate changing circumstances.

Table 5: Factors affecting implementation success. Source: Miller (1997) p. 584

Realizers are factors that help to realize the highest degree of success during implementation while enablers are factors that appear to support success without being fully capable of realizing it. She also found that backing, assessability, specificity, and cultural receptivity play primary role in implementation success.

In addition to that, it has been emphasized (Grover & Teng, 1994), that the success of implementations as part of the innovation process can be significantly facilitated by support factors specifically customer training and top management support, which occurs after the adoption decision has been made.

As mentioned earlier, apart from implementation of strategic decision, another area in which implementation issues is given concern is project management. A number of researches concerning implementation have focused on project management. A project implementation can involve an organization in part or as a whole. An organization wide project will address both strategic and tactical implementation issues while a smaller project may concern tactical issues. Some of the researches look into the factors that determine the success or failures of project implementation.

Among the project management researchers who have identified the critical success factors for project implementation include Selvin & Pinto (1987), Bryson & Bromiley (1993), Clarke (1999). For example Selvin and Pinto (1987) developed a set of ten critical success factors.

Project Mission	<i>Initial clarity of goals and general project direction.</i>
Top Management Support	<i>Willingness of top management to provide the necessary resources and authority or power for project success.</i>
Project Schedule/Plans	<i>Detailed specification of individual action steps required for project implementation.</i>
Client Consultation	<i>Communication and consultation with, and active listening to, all affected parties.</i>
Personnel	<i>Recruitment, selection, and training of the necessary personnel for the project team.</i>
Technical Tasks	<i>Availability of the required technology and expertise to accomplish the specific technical action steps.</i>
Client Acceptance	<i>The act of "selling" the final project to its intended users.</i>
Monitoring and Feedback	<i>Timely provision of comprehensive control information at each stage in the implementation process.</i>
Communication	<i>Provision of an appropriate network and necessary data to all key actors in the project implementation.</i>
Trouble Shooting	<i>Availability to handle unexpected crises and deviations from plan.</i>

Table 6: Definition of each factor. Adapted from Selvin & Pinto (1987)

According to Selvin & Pinto (1987), not only are these factors critical to project success but there exist also relationship among the factors. This agrees with the argument by Clarke (1999) that none of the key success factors described are

responsible on their own in determining a project's success, they are interdependent and require a holistic approach to be taken. In her study of change projects undertaken by a variety of organizations, Clarke identified four factors as critical to the success of these projects:

- *Communication throughout the project*
- *Clear objectives and scope*
- *Breaking the project into 'bit sized chunks'*
- *Using project plans as working documents*

In addition to that, it has been emphasized (Grover & Teng, 1994), that the success of implementations as part of the innovation process can be significantly facilitated by support factors specifically customer training and top management support, which occurs after the adoption decision has been made.

Based on some of the above point of views, a few factors appear to be repeatedly mentioned as the most critical in determining the success of project implementation as well as implementation of strategic decisions. Among those are clear mission, objective and target; backing or top management support (role of power); communication; specificity; and time.

An interesting point to note based on the studies reviewed is that they seemed to display some similarities in the findings in that strategic issues were given more weight. Such issues include clear mission and management commitment.

This clearly suggests that there is a need for an understanding of how the whole system and how all the parts of the system fit together. Clarke also argued that having identified the critical success factors, they need to be applied to problems in project management since previous authors offer little advice on how critical success factors

could be used to alleviate the many problems that occur with project management in practice.

What is implied in the above statement is that even though CFSs center on explaining the 'success factors', these factors did not offer direct explanation to implementation problems. In the context of the current research, these factors such as the ones mentioned above could be used as basis for further investigations. There must be reasons why some organizations might not be able to meet the criteria of these success factors. There is a need to find the explanation to the implementation problems. Thus suggests the need for the current study to develop some perspective on strategic issues affecting implementation. The following section aims to develop some perspectives on this issue.

2.3 Problems in Strategy Implementation

Most literature on strategy implementation has viewed this subject from a problem-solving perspective; however (Reed & Buckley 1988) took an alternative view by suggesting a problem avoidance approach. This view argues that existing approaches to implementation found in practice have adopted a reactive problem-solving prospective. Reaction to a problem in implementation means that the problem has already occurred. Reed & Buckley (1988) contend that problem avoidance in implementation involves a proactive approach. In practice this approach requires the strategic intent to be made clear and meaningful. It also requires translation of the strategy's potential benefits into specific managerial requirements and actions. They claimed that this could effectively bypass problems which thwart the progression from potential benefit to actual achievement.

2.3.1 Problems in Strategy Implementation and Organizational Characteristics

Organizational characteristics have important implications in the implementation process of an innovation. The reason why this issue needs to be given attention is because some organizational characteristics may well be reasons why full benefits of an innovation process (such as IT implementation) could not be realized.

This scenario is clearly explained in the work of the MIT'90s research team (Scott Morton, 1991). The main theme of this study was about transformation. Due to the changing business needs, organizations are expected to be proactive in its approach to the market place, and therefore innovations in structure and roles as well as in products and services come to the fore. As argued by Brooke & Ramage (2001), it was tempting to apply IT in order to achieve efficiency through automation but the long term benefits could only come from applying it in a way that literally transformed the business.

The above scenario implies that organizations need to transform themselves in order to adapt themselves to the changing environment leading to a favourable environment for innovation process to take place. It could also be further implied that some sources of the problems in strategy implementation may be inherent in the organizations characteristics.

Realizing the importance of organizational characteristics and their impact on implementation of innovation process, it seems pertinent at this point of the current research to understand what constitutes an organization and how organizational characteristics impact implementation. The following paragraphs discuss some of the ideas written by well known authors about organization and its characteristics.

The traditional definition of organization in the past centres heavily on the concept advocated by Max Weber who distinguishes the corporate group from other forms of social organization (Hall, 1996). This concept suggests that organizations have characteristics, which include a boundary, a structure, as well as hierarchy of authority and division of labour.

Modern definitions (Etzioni, 1964; Scott, 1964) suggest no major difference except the emphasis of goal attainment and the focus of environment as a better conceptualisation of organization boundary (Hall, 1996). While treating organization as a “cumbersome” subject matter, Hall presented a definition of organization as:

“An organization is a collectivity with a relatively identifiable boundary, a normative order, ranks of authority, communications systems, and membership coordinating systems; this collectivity exists on a relatively continuous basis in an environment and engages in activities that are usually related to a set of goals. The activities have outcomes for the organizational members, the organization itself, and the society”.

A more contemporary perspective of the study of organization looks at organization from the distinction between closed system and open system (Daft, 1998). The most important distinction is the interaction between the organization and its environment. According to Daft, although a true closed system cannot exist, early organization studies focused on internal systems.

Early management concepts, including scientific management, leadership style, and industrial engineering, were closed-system approaches because they took the environment for granted and assumed that the organization could be made more effective through internal design.

Organizations vary in their degree of complexity. This complexity can be seen in the structure of the organization. In simple terms, the structure of the organization can be considered as the arrangement of the organizational parts.

In explaining the meaning of organizational structure, Hall (1996) cited two definitions. One given by Blau (1974, p.12), which states “the distributions, along various lines, of people among social positions that influence the role relations among these people”. The other given by Ranson, Hinings, and Greenwood (1980, p.4) where structure is seen as “a complex medium of control which is continually produced and recreated in interaction and yet shapes that interaction: structures are constituted and constitutive”. Hall also suggests that organization structure serves three basic functions:

1. Structures are intended to produce organisational outputs and to achieve organisational goals.
2. Structures are designed to minimize or at least regulate the influence of individual variations on the organization.
3. Structures are the setting in which power is exercised, in which decisions are made, and in which organization’s activities are carried out. Structures also set or determine which positions have power in the first place. The flow of information, which goes into a decision making, is largely determined by structure.

Organization structure can also be explained by looking at its dimensions. Structural dimensions provide labels to describe the internal characteristics of an organization. Daft (1998), comes up with eight structural dimensions that are useful in understanding specific organizational design traits.

1. *Formalization* – pertains to the amount of written documentation in the organization (e.g. procedures, job description, regulations, and policy manuals). These written documents describe behaviour and activities.
2. *Specialization* – is the degree to which organizational tasks are subdivided into separate jobs. It is also sometimes referred to as the division of labour.
3. *Standardization* – is the extent to which similar work is performed in a uniform manner.
4. *Hierarchy of authority* – describes who reports to whom and the span of control for each manager. The vertical lines on an organization chart depict the hierarchy.
5. *Complexity* – refers to the number of activities or subsystems within the organization. Complexity is measured along three dimensions – vertical, horizontal, and spatial.
6. *Centralization* – refers to the hierarchical level that has authority to make a decision. When decision are delegated to lower organizational levels, it is decentralized.
7. *Professionalism* – is the level of formal education and training of employees. Professionalism is considered high when employees require long periods of training to hold jobs in the organization.
8. *Personnel ratios* – refer to the deployment of people to various functions and departments. It is measured by dividing the number of employees in a classification by the total number of organisational employees.

While the above list sounds more contemporary, they were actually the results of classical study of organizational forms. Hage (1965) identified complexity, formalization and centralization as being the three basic organizational characteristics that have outcome for individuals in the organization as well as outcome for the organization itself. He argued that these structural dimensions have power and political implications that influence the way the organization operates. Both the horizontal and vertical complexity of the structural dimension for example, presents

organizations with problem of control, communication, and coordination. Similarly, formalization describes organizational control over individuals and as such has an ethical and political meaning in addition to being a structural component. It also has important consequences for the organization and its subunits in terms of such processes as communication and innovation.

Finding the right structure has important bearing to the organization. According to Daft (1998), many organizations reorganize their structure in an effort to find the right fit between internal and external needs such as switching from a functional structure to divisional structure. He argued that ‘symptoms of structural deficiency’ can be seen when the organization structure is out of alignment with the organization needs. These symptoms are:

- Decision making is delayed or lack of quality.
- The organization does not respond innovatively to a changing environment.
- Too much conflict is evident.

In short, based on the above arguments it can be implied that organizations would have to identify and understand the demands of the situations and find the right structure that could support innovation and effectively implement it.

2.4 The Issue of Power and Organizational Structure

Organization structure has a relationship with power and could be used to describe the nature of power play in the organization. According to Pfeffer (1981), power can be defined as the potential ability to influence behaviour, to change the course of actions, to overcome resistance, and to get people to do things that they would not otherwise

do. In light of this, power is perceived to have direct or indirect influence on the process of implementation.

In a traditional organizational structure, Pfeffer (1992) observed that a large amount of power is allocated to senior management positions. He suggests that the power of top management come from four major sources: formal positions, resources, control of decision premises and information, and network centrality. Thus, this implies that power has some degree of relationship with organization structure.

Apart from Pfeffer, there are also other authors who seem to advocate similar idea in their studies. For instance Bryson & Bromiley (1993), who argued that power per se had no impact on outcome but because of its impact on organization structure, the element of power could not be detached from the discussion of structural dimension. On the other hand, according to Hage (1980), distribution of power is in effect a description of centralization on an organizational structure. Hage defined centralization as “the level of and variety of participation in strategic decisions by groups relative to the number of groups in the organization”. The degree of centralization built into an organization structure seems to be determined by the centralization of power at the top of the structure. However, centralization is not the only way of determining the power level in organizations. Hall (1996) argued that power exist and is exercised in a variety of ways and in a variety of locations in an organization.

One of the factors that determine the distribution of power within the organization structure could be seen from how well the units within the organization structure cope with uncertainty (Hall, 1996; Hickson, Pugh, Pheysey, 1969). Coping with uncertainty means that an organizational unit is able to deal with some issues of

concern to the organization. For example, if the concern is financial, the unit that is able to attract resources will gain in power (Salancik and Pfeffer, 1974).

From a contrary perspective, the concept of power is viewed as political activities involving administrative power without the need to fix the political relationship with the structure (Leflaive, 1996). This view stems from the critique that organizational studies tend to be based on presumption of fixity or a structure of political relationship which is essential for their pragmatic and their theoretical relevance. This critique claims that such presumption failed to take into account the continuous foundation of organizations and unable to critically reveal the hidden dynamics that organizations have to operate. According to Leflaive, power is arguably a phenomenon particular to organizations and organizations are best portrayed as structures of domination where power and domination refers to a collective capacity to act. Since power is an organizational phenomenon, it is articulated to frameworks of action worked out by people who wants their actions to be meaningful.

The next section attempt to direct the discussion further into the role of expertise in organization politics, and how organization structure and institutionalism as socio-political process influence innovation.

2.4.1 Expert Power, Organizational Structure and Institutionalism

Organizations are social construction and their structures are reproduction of social systems (Leflaive, 1996; Coopey et. al., 1998). Organizations capacity to transform circumstances in the desired direction depends on the extent to which they can deploy personal and organizational resources to negotiate appropriate meaning through social and political relationships with others (Coopey et. al., 1998). One of the elements of

resources that exist in organizations either at personal or group level is the element of expertise. The way this element could influence the direction of organization transformation is through expert influence or expert power. Expert power and control has re-emerged as a central theme within social and organizational analysis (Reed, 1996). The analysis focused on the changing relationship between expert power, organizational control and class formation of power taking. Thus, according to Reed (1996), expert groups are seen to play a strategic role in the radical restructuring of professional work organization and control occurring within the more fragmented middle-class formations emerging in advanced capitalist societies.

In fact this is found to be true in recent studies which have shown evidence on the development of network among experts in their attempt to access knowledge (Scarborough, 2003; Hislop et. al., 2000) as can also be seen in the study on 'communities of practice' (Swan et. al., 2002). These types of expert groups may utilise network influence not only to gain access to relevant knowledge and artefacts but also be used as a political tools in support of particular interest.

It could be argued that the formation of expert group may be influenced by the organization structure. As has been identified by Fincham et. al. (1994) the role of organisation structure have a great influence on the management of both expertise and innovation. Certain implementation decisions require organization restructuring and may also involve the creation of a new division of labour and the requirement of new skills. As Fincham et. al. (1994: 190) said: "In financial services in particular, the complexity and importance of the implementation success is definitively demonstrated at the sharp end of activity by the emergence of departments dedicated to carrying out implementation activities".

Certain adopted decisions may require certain problems to be solved prior to implementation, for instance, the decision to adopt IT innovation may actually create new problems within an organization such as shortage of skilled employees (Currie, 1989). On a larger scale, a very recent study has shown how organizational commitment and social relationships can impact readiness prior for change which needs to be understood by managers, leaders, and organization development professionals (Madsen et. al., 2005).

Expert group issues related to organisational structure includes the issue of collaboration among various functional areas and the issue of organisational power. Fincham et. al. (1994:112) said, "...structural relations between expert groups are not only about the balance of power.... Thus, while structure fosters particular forms of expertise, by defining task specialisation and group formation, structural boundaries, can also divide groups". Some of the organizational policies and practices, according to them, may emerge through competition between rival claims and rival visions of how the organization should proceed.

Brown (1998) found in his study that social construction of technology is accomplished through processes of networking and negotiation which facilitate the development of shared narrative understandings. Based on such processes, individuals attached themselves to certain social constructions of technology, markets and organization (Swan and Clark, 1992). In the case of IT implementations, Brown (1998) argued that such innovations are often motivated more by the material and career prospects of individuals and groups than a concern with the best interest of the organization as a whole. This is evident from the study by Reed (1996) that the 'politics of expertise' has become more intensely contested in contemporary

conditions of the capitalistic societies resulting in a more fragmented division of labour within and between professional and managerial middle class.

One of the interesting arguments by Reed (1996) is that the expert power and its changing relationship with organizational control have significant long-term impact for the major forms of expertise and organizational design. Their cognitive and social foundations of everyday life have increased the institutional reflexivity exhibited by modern institutions and organizations.

In much the same way Coopey et. al. (1998), underline that the socio-political process and the substance of the innovation have reciprocal effects, yielding the possibility of agreement on a 'working innovation' which, once institutionalized, modifies the existing system and structures in ways that constrain, in new modes, the behaviours of all of those involved.

What can be inferred from these arguments is that it is possible for expert groups through their engagement in expert practices to influence the organizational control using expert power. Over the long term such behaviour may be institutionalized and could determine the capacity of the organization to transform or innovate according to the desired direction.

The above inference calls for a better understanding on the issue of institutional factors and how they could affect organizational innovations. The conceptualization of institutions was studied quite early by social scientists. However, organizations as distinctive types of social forms of institution were not distinguished conceptually until relatively recently (Scott, 1995).

In his review of institutional theory and organizations, Scott (1995) selected the explanation given by Selznick (1949, pp 256-257) who said: “Institutionalization is a process. It is something that happens to an organization over time, reflecting the organization’s own distinctive history, the people who have been in it, the groups it embodies and the vested interests they have created, and the way it has adapted to its environment. In what is perhaps its most significant meaning, “to institutionalize” is to infuse with value beyond the technical requirements of the task at hand.” Scott (1995) has given a more recent definition of institution, where he states: “Institutions consist of cognitive, normative, and regulative structures and activities that provide stability and meaning to social behavior. Institutions are transported by various carriers – cultures, structures and routines – and they operate at multiple levels of jurisdiction”. This institutional composition could be used to better explain the intrinsic make up of each structural dimension outlined by Daft (1998) as discussed earlier. Also earlier in the chapter the issue of institutional isomorphism was briefly discussed with the aim to provide examples of institutionalized rules and norms that explain why organizational innovations are implemented.

The above discussion on expert power and its influence on the organizational structure have demonstrated how they could affect implementation process. When the cognitive behaviour of the players is further embedded into the organization structure they become institutionalized and will have greater influence in the organization’s innovation process. As an extension to network and negotiation as argued by Brown (1998), recent studies have raised growing concern over their role in innovation process (Hislop et. al., 2000; Scarbrough 2003). These studies have also attempted to link the role of network and negotiation with the bigger picture of knowledge and

power within the innovation process. It is interesting to see how such phenomena would take shapes in the context of the subjects in the current research.

2.5 Conclusion

This chapter has been written in an attempt to establish a theoretical framework on the subject of innovation and implementation and factors that have influence on these processes. The chapter has been organized in such a way that important theories are introduced and the development of the theories is discussed along the line of specific debates.

The argument and discussion are aimed at establishing some linkages among the issues that are reviewed in the chapter. Innovation from various perspectives seems to have strong link with implementation or perhaps could be argued to a certain degree as having inherent relationship with each other.

In the context of organizational analysis, factors that influence implementation share similar traits between innovation and strategic decision. They both represent activities taking place within a social construction – organization – whose characteristics may affect implementation process in some ways.

Major organizational issues including strategy, structure and expertise are among the issues discussed in the chapter and they become the focal point of investigations for the current research. The issue of power, politics of expertise and institutional factors were also discussed to highlight important issues affecting implementation process.

On the next chapter (Chapter 3) innovation and implementation is discussed in a more specific scope i.e. IT implementation in the financial services sector which is the relevant scope of the current research.

Chapter 3

INNOVATION AND IMPLEMENTATION: INFORMATION TECHNOLOGY (IT) AND FINANCIAL SERVICES

3.0 Introduction

The preceding chapter explains the general meaning of innovation and reviews past studies dealing with innovation. As implementation seems to be one of the problematic areas in the study of innovation, this chapter aims to further examine the link between innovation and implementation. It attempts to discuss the above theme in a more specific scope by looking at the issues surrounding IT innovation and implementation in general and within a specific context of a sector i.e. financial service.

In doing so, this chapter makes a general review on information technology innovation. It discusses some issues concerning information systems planning and implementation as well as some case studies on IT implementation in the financial services to demonstrate how financial services particularly banks respond to the issues raised.

This chapter is divided into five main sections. The first section is the information technology (IT) and technological innovation section which describes the impact and potential of IT and how it induces innovation. It also discusses how IT is strategically exploited in the light of changing business environment.

The second section discusses the strategic IT/IS planning and implementation which highlights objectives or motives behind IT innovation. It also discusses how

technology can impact on the structure and performance of the organization. This section also describes the difficulty in predicting information needs, which could affect the formulation of IT strategic planning. It raised the concern that strategic IT/IS could not be isolated from organizational context. Some frameworks on IT strategy formulation are also discussed.

It also makes a distinction between the different meanings and focuses of information system (IS), information technology (IT) and information management (IM) and how these terms are used in this research. A number of IS planning models are also discussed with the aim of building a theoretical perspective for the current research.

The discussion in the third section is focused on problems in IT implementations. It highlights the argument that IT implementations are not just a technical problem. IT implementations are faced with great challenges primarily from within the organization. The section on problems of IT implementation discusses the importance in understanding the interrelationship of socio-political and technical elements within an organization especially involving large-scale IT implementation.

The fourth section is focused on IT implementation in the financial services industry. This section begins with an overview on the impact of IT on the industry and its strategic exploitation. Subsequently it focuses on the IT implementation in the financial services industry. This section also highlights a number of case studies on IT implementation in various countries and the issues they brought up.

Finally the various themes of the chapter is summarised in the last section.

3.1 Information Technology and Innovation

In terms of literatures, researches focusing on the links between information technology and innovation have been in the increase since the last decade (King et. al., 1994; Lockett 1996). The body of knowledge concerning innovation in information technology is better established in developed countries in contrast to the less developed countries (King et. al., 1994). This suggests that there is a niche for researchers to carry out investigation to understand more about information technology innovation in the less developed countries.

According to the Macmillan Dictionary of Information Technology, information technology (IT) is “the acquisition, processing, storage and dissemination of vocal, pictorial, textual, and numerical information by a microelectronics-based combination of computing and telecommunications”. IT emergence has been catalysed by the technological convergence signified by the fusion of computers and communications technology (Williams et. al., 1997). Such a fusion or merger between the two distinct technologies has provided new avenues for businesses in terms of their product and service offerings made possible by the application of the new technology.

For example the banking industry which depends on computers and communications for development, production and delivery of its products and services can now offer such products and services with an increasing range of possibilities (Novo-Peteiro, 2000). Such possibilities include virtual banking (Essinger, 1999), which is essentially banking delivered to the customer by means of computer-controlled system that does not directly involve the inside of the bank’s brick-and-mortar branch.

According to Child & Loveridge (1990) the advancement of IT has been accelerated by the developments in microelectronics which have brought considerable

improvement in cost, reliability, compactness, operating speed, accuracy and energy consumption. Child & Loveridge also assert that the introduction of microelectronic-based IT have changed the nature of work in a number of sectors and affected the quality of services they provide to the public.

Although this assertion may be true, some of the predictions about the potential capability of IT, however, may only manifest themselves partially or never come into reality (Earl, 1996a). The apprehension of the potential capability of information technology in terms of what it can potentially do regularly exceed the current application of the technologies (Scarborough, 1992). This discontinuity between the potential and actual application of information technology serves as an inducement to innovations. Such inducements might be generated both by the industrial user of the technology and the firms investing in the technology development.

Inducement to apply the new technology may also be created by customers. Essinger (1999) argued that most new applications of technology are driven by customer demand. However, he contends that when it comes to certain high-tech applications it starts to become doubtful whether it is the inventors' drive to complete the invention successfully which is the motive force in bringing the application to the world, or customer demand for it.

There is also evidence to suggest that the adoption of technological innovation including information technology is often driven by motives stemming from market and control objectives (Noon, 1994), which agrees with researches in the earlier decade. For example, Buchanan and Boddy (1983) suggest that management motives to pursue new technology could be linked to three objectives. They identify the objectives as: strategic objectives in response to the changing market; operating

objectives to improve quality and reduce costs; and control objectives to exert greater influence over the production process and reduce worker intervention.

It may also be argued that technological innovation could be initiated as a response to a niche. For example, Essinger (1999) argued that application of computers began with the intention to serve a niche and was not purely due to customer demand since the first basic idea was to build a machine for handling calculations and processing information. In effect, after the invention has been put onto the market, the customer demand is created for it. To put it another way, new technology may be launched to be applied by the organization because it seems technologically interesting to the organization rather than because there is some proven need for it. In other words, there is a wide range of reasons why organizations choose to respond to technological innovation.

Organizational response in adopting new technology may also be influenced by supplier. It is quite common to see IT suppliers having the tendency to provide solutions by turning IT into packages and products. Scarbrough (1992) argued that treating the management of IT as simply a matter of 'which package to buy' would be losing sight of two critical features of its organizational application. The first is the importance of organizational knowledge and architectures within which specific implementations of IT are developed and the second has to do with the organization's competitive impact.

In reviewing the management of IT, Scarbrough (1992) indicates the need to consider technology in its broadest sense. According to him, technology can be analyzed as a hierarchy of different levels, extending from the detailed hardware and software of

specific implementations, through the overall systems design and architecture, up to the level of technological expertise, general models and assumptions.

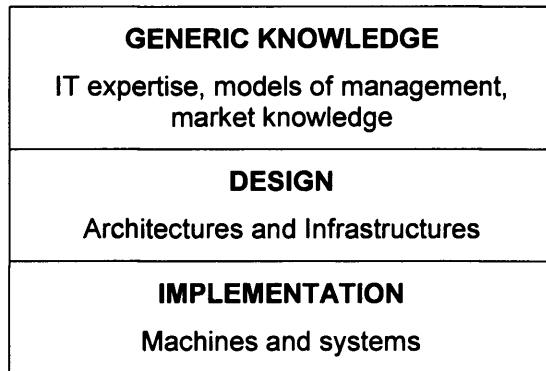


Figure 2: Levels of technology. Adapted from Scarborough, (1992)

This highlights the multi-faceted view of the management of IT. He also stressed that the availability of IT packages in the financial services industry have little intrinsic competitive values. It is the management of IT – which include among others the deployment of expertise, and innovative applications to service delivery, that contributes to its pervasiveness in the financial service industry. According to Scarborough, this is how IT should be used to create unique product offerings on which competitive advantage is based.

On this account, Brady and Targett (1995) argued that literatures in the 1980s, have generated an overwhelming suggestion of the virtues of using IT, which have resulted organizations to adopt IT as a means to gain competitive advantage. In other words, organizations might find themselves outpaced and outclassed by their more innovative competitors if they fail to adopt the changing technology (Davies, 1987). For instance, in the banking industry, there is evidence to suggest the tremendous pressure on the banking institutions to restructure themselves at the current level of technology and competition (Whaling, 1996). While this may be true, Brady & Targett (1995) contends that organizations may be faced with a danger in the long run as they might become caught in an ever-increasing spiral of IT investment. They also suggest that

there are grounds to believe that the high level of IT investments in the banking sector is becoming a competitive burden. In fact most recent studies have emphasized the need for more realistic valuation of IT capital investments given their complexity and uncertainty and have suggested new perspectives including option thinking (Fichman, 2004; Fichman et. al., 2005), which is based on option theories used in financial management of capital markets.

Brady & Targett (1995) further pointed out that it is important for the organization to ask whether the adoption of an IT innovation is just a means to gain competitive edge or should it be recognized as a strategic necessity (Earl, 1987). In other words, organizations would have to question whether their utilization of IT is influenced simply by the fact that other organizations use it, or is it because the utilization of IT is strategically a must so that the organizations is able to venture into certain business. By way of illustration, two questions can be asked by the organizations (Benjamin et. al., 1984). First, whether IT should be used to make significant structural changes in the way organizations do business and second, whether organizations should exploit IT to improve their approach to the market place or to improve their operations.

The most recent study has emphasized the need for this question to be given more attention than ever before. For example, McAdam and Galloway (2005) in their study assert the need to incorporate IT within a wider change programme, with changes to people management and cultural practices, in addition to process change. They also call for the need to give much more consideration to organizational change issues prior to design and implementation of IT. In conclusion, it can be implied that organizations should formulate appropriate strategy to address and answer the above

questions to the organizations before new technology particularly involving large scale implementation is adopted.

3.1.1 IT and Strategic Exploitation

The trend of emphasising the virtues of IT found in the literatures of the 1980s (Brady & Targett, 1995) had later changed its direction after extensive research in the 'Management in the 1990s' research program at MIT (Scott Morton, 1991). The academics involved in the research program suggested that the emphasis now is not whether IT has a strategic role but how IT should be exploited strategically. In this instance, the strategic exploitation of information technology, like other technological innovations will have to deal not only with technical questions but also socio-political questions especially within the organizations (Scarbrough, 1995; Davies, 1987; McCosh et. al 1981).

What is suggested here is for organizations to understand the compatible relationship between the technical and social-subsystems within their organizations (Davies, 1987); this may be achieved by the need to confront and consult the organization as a whole. As recent study also still consider IT strategy implementation as a grey area (Kuruppuarachchi et. al., 2002) and suggest the need to integrate and use concepts drawn from disciplines including project management, organizational innovation, and change management theories.

Accordingly Scarbrough & Lannon (1988), assert that technological change within organizations involves a complex set of interactions between the management process, technology and organization structure. This explains why it is argued that

such change should not be interpreted as simply a matter of adapting to the impact of technology since it would underestimate the strategic scope in the process of innovation.

To illustrate that technology question should not primarily be the only concern in IT innovation, Lockett (1996) has identified a number of important factors that contribute to the success of such innovation. The factors include:

- Good understanding of *customer* and *end-user needs* by those involved in development;
- The use of external information, skills, and contacts by *systems developers* and *customers*;
- Senior management sponsorship, commitment, and involvement (by both *developers* and *customers*);
- The existence, and relatively *senior position*, of an *internal champion*;
- Effective, but not necessarily fast, technical development of the system.

While these factors highlight some of the important elements that need to be addressed, they also suggest that there are other components within the environment that would have to be given attention particularly in an IT innovation. Likewise it also seems logical to imply that these elements indirectly demonstrate some of the complex set of interactions between the management process, technology and organization structure emphasized by Scarbrough & Lannon (1988) that was mentioned earlier. In addition to that, the organizational players of the innovation process – customers, end-users, systems developers, senior management sponsors, and internal champion – can be used to exemplify the potential players of the socio-political process. The important role of an internal champion is exemplified in a very recent study on chief information officer (CIO) (Remenyi et. al., 2005), a position posed with different strategic and tactical issues due to the specific role and use of ICT in organizations.

In conclusion, while strategic exploitation of IT has been recognized as innovation, its success is closely related to not only organizational strategic planning but also implementation. The next section attempts to provide a discussion on the strategic implementation issues of IT innovation process.

3.2 Strategic IS/IT Planning and Implementation

It is worth to recapitulate the arguments in the preceding chapter that stages in the innovation process including implementation should not be viewed purely as distinct stages (Bourgeois & Brodwin, 1984; Alexander, 1985; Fleck et. al., 1999). When observed within a broader spectrum, implementation has not only been viewed as an integral part of strategic decision process but implementation is also treated as a question of total organizational involvement. More recent study suggest that projects that involve high degree of technological uncertainty such as major IT implementations were found to be structured and managed differently from those that involved more routine activities (Kenny, 2003).

For example, the question raised by Benjamin et. al., (1984) cited earlier with regards to the extent of the structural changes that are required by the organization demonstrates the impact on the implementation process of high profile IT projects. This further accentuate the significant link between IT strategy formulation with implementation process. On the same note, Kenny (2003) has found that high profile projects are often interrelated through a strategy and there are implementation and cultural issues that have to be considered.

Even though the specific problem area of the current research is about IT implementation, the scope of the framework of inquiry is not restricted to IT implementation strictly as a distinct stage. Since the issues of implementation as argued in the preceding chapter are not only linked to the issues in the larger framework of innovation process but also issues within the dimension of organizational process.

The findings of the 'Management in the 1990s Research Program' are instrumental in providing a perspective on this issue (Scott Morton, 1991; Venkataraman, 1994). The research program was charged with the task of investigating the impact of new IT on organizations with the goal of determining how the organizations of the 1990 and beyond will differ from those of today.

Even though focus of the research program is on the impact of new IT, it has an implication on IT implementation from the perspective of the current research. An important essence of the research finding is that; "the traditional organization structures and practices do not have to stay the same as they move into the 1990s and that all dimensions of the organization will have to be re-examined in the light of the power of the new IT" (Scott Morton, 1991:11). The research identified six major findings summarised as follows:

1. IT is enabling fundamental changes in the way work is done.
2. IT is enabling the integration of business functions at all levels within and between organizations.
3. IT is causing shifts in the competitive climate in many industries.
4. IT presents new strategic opportunities for organizations that reassess their missions and operations.

5. Successful application of IT will require changes in management and organizational structure.
6. A major challenging form of management in the 1990s will be to lead their organizations through the transformation necessary to prosper in the globally competitive environment.

The research also identified five major forces that influence the organizational transformation process (see figure 3).

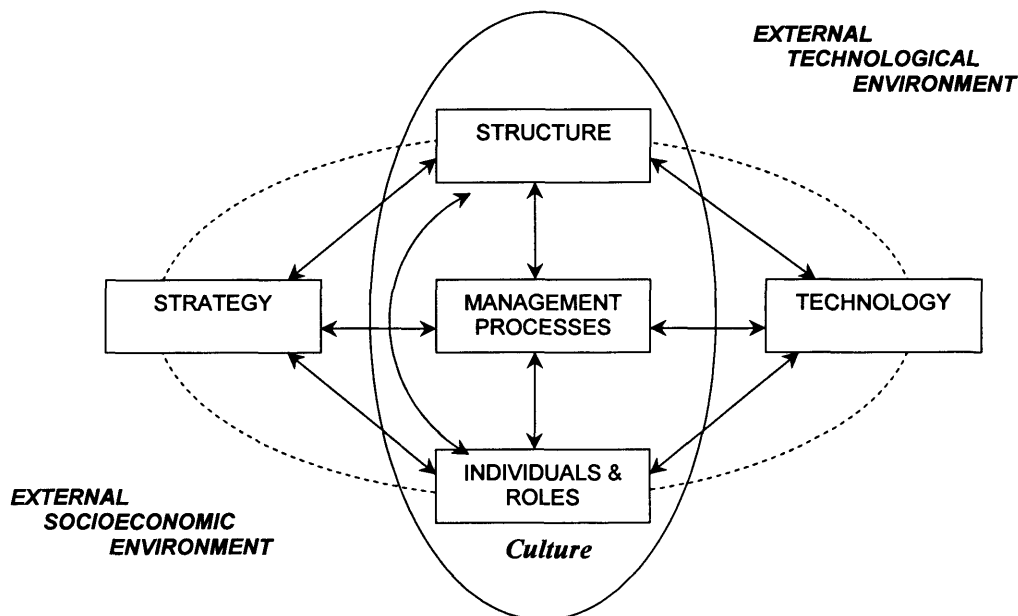


Figure 3: The MIT90s framework. Source: Scott Morton (1991)

The five forces that will influence the organizational transformation include – *technology* which will lead to greater shrinkage of time and distance effects, greater interconnectedness, and better organizational memory; *individual & roles* where people will have new tools to work and increasing connectivity for information; *structure* where coordination costs drop enormously, new organizational structures become possible, teams will become more attractive, and IT will become a critical enabler of organizational transformation; *management processes* induced by IT will

caused a redistribution of power and control, increased speed in information flow, and new methods of planning and control will be required; *strategy* will be influenced by the degree of interrelatedness within an industry and organization, blurred boundaries caused new collaborations, and constant flow of innovation and improvement requires vision and implementation skills if it is to be effective.

The organizational transformation framework has been helpful in providing a wide perspective on strategic IT exploitation and implementation for the current research.

The following section attempts to discuss the subject matter further by directing the scope of the discussion on the issues affecting the information systems (IS) and information technology (IT) strategic implementation.

3.2.1 Information Systems (IS) and Information Technology (IT)

Strategies

Before going further into discussing information strategies, the terms information systems (IS) and information technology (IT) must be defined and distinguished. This is because practitioners, researchers, and contributors in the field often use the terms synonymously or interchangeably (Jacoby, 1995). Some authors distinguish clearly the difference between IT and IS, for example Curtis (1995).

Definition of IT has been discussed earlier in the chapter based on the Macmillan Dictionary of Information Technology, nevertheless IT encompasses only part of the total information processing that takes place in an organization. According to Jacoby (1995), information system (IS) can be viewed as information technology embedded

in an organization or social system, as well as the formal and informal information flows around the technology which may be linked with its functioning.

Curtis (1995) differentiates the two based on their differing strategic focus. IS strategy is focused on determining what information system must be provided in order to realize the objectives of the business. On the other hand, IT strategy is focused on determining what technology and technological developments are needed in order that the business information system strategy can be realized.

The concentration of the IS strategy is on determining *what* information needs is required and ensuring the IS strategy is aligned with the business strategy. In contrast, IT strategy concentrates on *how* to provide the information and how the information resources and IS development is to be managed. In terms of literature, it has been suggested (Earl, 1989) that IS strategy literature focuses on aligning the investment in IS with business goal as well as the exploitation of IT for competitive advantage. While the IT strategy literature is focused more on the development of technology policies and architectures.

Apart from making a distinction between IS and IT strategies, some authors have also attempted to distinguish information management (IM) strategy, these include Earl (1989) and Reponen (1994). Earl suggests that information management strategy (IMS) involve the process of directing efficient and effective management of IS strategy which should concentrate on a holistic view (Galliers, 1991) of the information system. To meet this objective the information management strategy may be defined (Reponen, 1994: 30) as, “a long-term precept for directing, implementing and supervising information management”. Reponen further suggests that the strategy consists of the following elements:

- a) external opportunities for using IT as a competitive weapon,
- b) internal opportunities for supporting competitiveness by means of IT,
- c) other application areas of IT,
- d) organizing the information management function,
- e) a rough architecture of information technology,
- f) an estimation of the IT capacity needs and investments,
- g) an estimation of the benefits of strategy realization

Some of the above elements, however, have also been identified as the focus of either the IS or the IT strategies by other authors (Curtis, 1995; Earl, 1996a) as discussed earlier. In other words, the focus of the different strategies may at times overlap each other and could not be developed in absolute isolation. This makes sense especially when they are analyzed according to a holistic framework of the organization (Galliers, 1991).

Even though they differ in terms of their specific strategy focus, the development of overall IS, IT and IM strategies are part of the innovation process. The degree of their synonymy or interchangeability in the use of their terms in the context of the current research depends on the specificity of the issues discussed. Their different meanings and focus will be strictly observed when the issue discussed is in relation to their specific strategy. However in certain occasions their difference may be observed less strictly when the focus of the discussion is more on the innovation process rather than specific strategy. The concern of the current research is more on the implementation issues that affect the innovation process, after all the development of IS/IT/IM strategies is part of the innovation process itself.

The following section describes a general methodology as well as the various components for performing strategic information system planning.

3.2.2 Information Systems Planning and Implementation: Methods and Approaches

According to Reponen (1995) information systems (IS) planning has recently concentrated on information system strategies. He also observed that the focus of IS planning has moved from a special target of planning into an integral part of business planning. In this planning process competitive aspects has been strongly emphasised and many different methods have been used. In his review, Reponen listed a representative list of planning methods and framework which include:

- Business System Planning (BSP) (IBM, 1984)
- Critical Success Factors (CSF) (Rockart, 1979)
- Stages of Growth Model (SOG) (Gibson & Nolan, 1974; Nolan 1979)
- Strategic Grid (McFarlan & McKenney, 1983)
- Customer Life-Cycle Model (Ives & Learmonth, 1984)
- Strategic Option Generator (Wiseman, 1985)
- The Framework or Frameworks (Earl, 1989)
- In house models

The in-house models are proprietary models (Earl, 1996a) which are developed by organizations as an attempt to simplify the planning procedure and to construct an approach that fits with their organizational constraints and capabilities (Reponen, 1995). Adopting any of these planning models however, do not promise that the implementation process will be instinctively successful, especially with the absence of

robust understanding of the organizational processes as well as the need to align strategic purpose of the IT exploitation with the business goals (Davies, 1987; Earl, 1987, 1989; Scarbrough & Lannon, 1988; Galliers, 1991, Scott Morton, 1991; Curtis, 1995; Brady & Targett, 1995).

Aim at developing an understanding of the theoretical development of IS planning in the context of the current research; some of the theoretical models listed above will be discussed. These theoretical models include Gibson & Nolan's Stages of Growth model and McFarlan & McKenny's Strategic Grid model.

3.2.2.1 The Nolan's Stages of Growth Model

In this model, Nolan explains that the extent and type of information systems used within an organization is determined by the maturity of growth within that organization. His original thesis suggests that organization went through four stages of growth but was later refined into six stages (Nolan, 1979). These stages include - *initiation, contagion, control, integration, data administration* and *maturity*. The level of information system expenditure increases as the organization went through the stages of growth from initiation to maturity.

During the *initiation* stage, organization uses computer system for low-level but high-volume transaction processing such as billing, accounting and payroll with the absence or very minimum planning on information systems. The organization enters the *contagion* stage when the awareness of the possibilities of IT increases amongst users but there is little real understanding of the benefits or limitations. As continuing problems occur with the unbridled development of projects, the organization enters the *control* stage where there is growing awareness of the need to manage the

information systems function. The data processing (DP) department is reorganized with increased authority and accountability to justify increasing expenditure and activities.

Having achieved this, the organizational data processing function takes new direction with increased orientation towards information provision, which signifies the *integration* stage. Users demand for applications were better satisfied and facilitated with increased support. This rapid growth leads to ineffective reliance on computer-based control particularly due to problems of duplication and data redundancy. The *data administration* stage is a response to reduce these problems by introducing controls on proper administration of data. The emphasis shifts from data as inputs to data as a resource within an organization which is characterized by the development of integrated database serving organizational needs. The *maturity* stage typifies the mature organization where information system is integral to the functioning of the organization. There is recognition of the strategic importance of information with a more coordinated and comprehensive information system planning. Within each stage of growth four major growth processes must be managed and coordinated (Curtis, 1995):

1. **Application portfolio:** the set of applications that the information system must support e.g. financial planning, order processing, online customer enquiries.
2. **DP organization:** the orientation of the data processing e.g. centralized technology driven or management of data as a resource.
3. **DP planning and control:** e.g. degree of control, formalization of planning process, management of projects, and extent of strategic planning.

4. **User awareness:** the extent to which users are aware of and involved with the technology.

Despite being widely accepted due to its descriptive ability in providing evolutionary explanation for IS development within an organization, this model was criticized (Curtis, 1995) because it was developed based on empirical research in the 1970s. Its particular concentration on database technology ignores the impact of new technologies in the 1980s which include – the increase in users knowledge and ability in using information technology; increase in communications and networks technologies; and emergence of new software development tools and decision support tools that have shifted the emphasis to the user as development agent.

3.2.2.2 The McFarland and McKenny’s Strategic Grid Model

Another well known theoretical model in IS planning is the produced by McFarlan and McKenny (1983) which helps organization to evaluate their position before developing the IS strategy. In this framework, past and future strategic impact of IS and IT are assessed to produce four strategic grid to describe the requirement of information management.

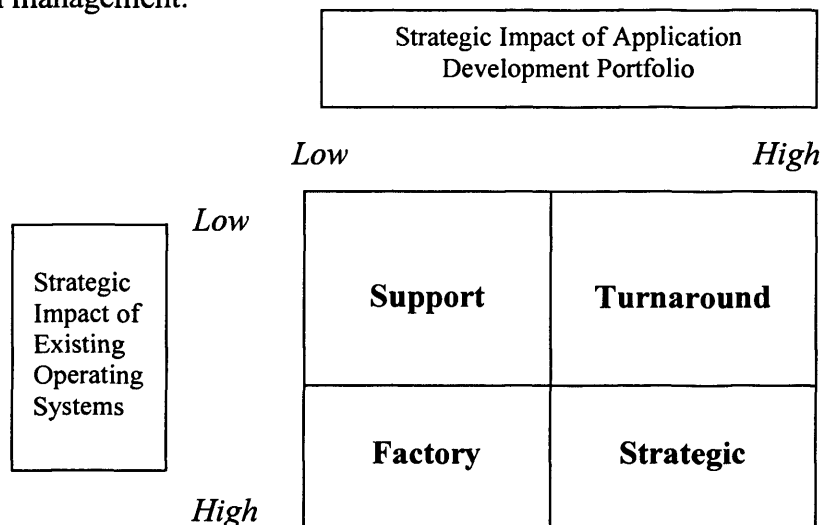


Figure 4: The Strategic Grid. Adapted from McFarland & McKenny (1983)

The McFarland & McKenny's Strategic Grid plots an organization's position on the strategic grid against two dimensions – the strategic impact of the 'existing' applications portfolio; and the strategic impact of the 'planned' applications portfolio (see above figure). The resulting plots produce four possible categories of position – *support, factory, turnaround, and strategic*. Curtis (1995) provides a summary of the possible categories as follows:

1. **Support:** The role of the information system is to support the transaction-processing requirements of the organizations. The emphasis is in cost reduction and information is produced as a by-product of the process.
2. **Factory:** The current information systems as an integral part of the strategic plan of the organization. Few strategic developments are planned and the focus of activity is on improving existing systems.
3. **Turnaround:** This is a transitional phase where organizations move from 'support' category to this as a result of internal and external pressures. Internal pressures result from the confidence of management in the support systems together with the recognition of the strategic benefits of information technology as a competitive weapon. The external pressures comes from improving technology acting as an enabler for development together with the increasing use of information technology by competitor firms within the same industry. If the firm continues with strategic innovation it will enter the 'strategic' category, otherwise it will revert to the 'factory' category.
4. **Strategic:** This category requires a continuing development of information systems at a strategic level. It can only be accomplished with the commitment of senior management and the recognition of the integral part

played by the information system within the entire fabric of the firm's activities.

The strategic grid assists the organizations in determining within which of the four categories an organization finds itself with respect to its information systems strategy. Each of the categories implies a strategy for the IS management of the organization.

It can be derived based on the above summary that each category has an implication on the senior management involvement. The concern of the 'support' and 'factory' positions are more on the effective and efficient use of the existing applications portfolio. As such their positions are essentially static and do not require extensive senior management involvement.

In contrast, the 'turnaround' and 'strategic' positions imply a dynamic strategy which require involvement of the senior management in an active way in the implementation to increase chances of success. In summary, an organization moving from one category to another in the strategic grid should be prepared to adopt the appropriate involvement of senior management.

Both Nolan's Stages of Growth and McFarlan and McKenny's Strategic Grid models imply that introduction, development and use of computing information systems cannot be achieved overnight. It requires organizations to undergo a learning process. These models suggest that organizations need to understand and evaluate their positions so that appropriate IS strategies can be formulated and implemented. The learning process towards building organization's core competence and transforming itself into a more IT enabling organization will be discussed later.

Having discussed some of the theoretical IS planning methods; the discussion now advanced into a broader spectrum of strategic IS planning. Earl (1993, 1996a) has

distinguished between the terms methods and approaches in information system planning. According to him method concerns centered on the strategic IS planning techniques, procedures, or methodology employed (Earl, 1996a). Based on this, the list of variety of models used for IS planning (Reponen, 1994) can be characterized as methods, and this include in house and proprietary methods. Earl (1996a) reported that it is possible for an approach used in a particular strategic IS planning to use more than one method.

One of the widely discussed approaches in information system planning is the Strategic Information System Planning (SISP) approach. SISP has been one of the highly regarded theoretical approaches in the literature of information system planning since the late 1980s. Based on a number of studies, SISP seems to be most accurately characterized as an approach rather than a particular methodology (Earl, 1993, 1996a; Suhaimi, 1998). SISP is concerned with the development of strategic planning by linking information system and technology strategy with the business strategy. According to Lederer & Sethi (1988) SISP can be defined as “the process of deciding the objectives for organizational computing and identifying potential computer applications which the organization should implement”.

The conceptualization of SISP as an approach rather than method is based on his empirical study of stakeholder concerns on effective strategic information systems planning (Earl, 1996a). Stakeholder concerns such as – unsuccessful features, resource constraints, not full implemented, lack of top management acceptance, length of time involved, and user-IS relationship – apparently extend beyond method or technique.

According to Earl (1996a) the approach views the effective strategic information systems planning as investment in method, process and implementation (*Figure 5*).

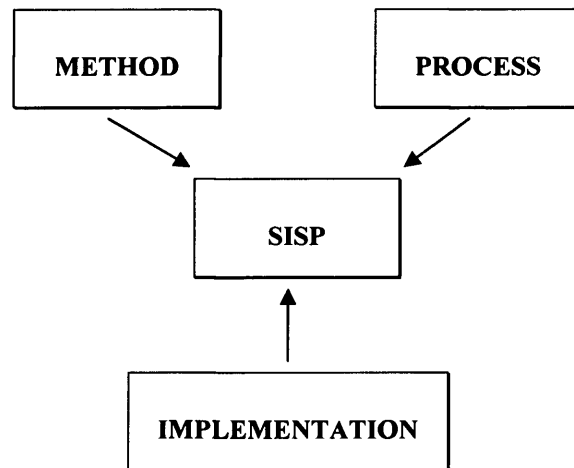


Figure 5: Necessary condition for successful SISP. Source: Earl (1996a)

Earl (1996a) summarised the conceptualization of method, process, and implementation as follows:

- **Method** concern centered on the SISP technique, procedure or the methodology employed. Concerns regarding the method used include lack of strategic thinking, excessive internal focus. Too much or too little attention to architecture, excessive time or resource requirements, and ineffective resource allocation mechanism.
- **Process** concerns include lack of line management participation, poor IS-user relationship, inadequate user awareness and education, and low management ownership of the philosophy and practice of SISP.
- **Implementation** was a common concern. Even where SISP was judged to have been successful, the resultant strategies or plans were not always carried out or fully implemented. Implementation concerns include resources were not made available, management was hesitant, technological constraints arose, or organization resistance emerged.

Based on his study, Earl (1996a) developed five approaches to SISP which he labeled – *business-led, method-driven, administrative, technological, and organizational*. Business-led approach assumed that the current business directions or plans are the only basis upon which the IS plan can be built. Therefore business planning should drive SISP. IS executives are required to specify IS needs based on business strategies formulated by senior managers. They might find the business strategies unclear or not detailed enough to specify IS needs. They might discover that top executives may be more forceful in their views and expectations. Users and line managers are likely to be involved very little.

Method-driven approach assumed that SISP is enhanced by or depends on the use of formal technique or method. IS executives assume the management will not think about IS needs and opportunities without the use of a formal method, or the intervention of consultants. However, business strategies may be found to be deficient for the purpose of SISP use. Formal methods used are unlikely to be sufficiently robust or comprehensive for formulating business strategy while method's practitioners might be unskilled or credible in such work.

Administrative approach emphasis is on resource planning. The management expects to achieve the aims of SISP through formal procedures for allocating IS resources. Typically, IS development proposals are submitted by business units to review committees who will examine project viability, common system possibilities, and resource consequences. A planning investment or steering committee makes all decisions and agrees any changes. This approach may be seen as not strategic (being bottom-up and not top-down), not favourable to accommodate change, inertia, and

enterprise level remain in the background. Conflict, dramas, and game-playing may be the more emotional downsides.

Technological approach assumed that an IS-oriented model of the business is the outcome of the SISP. Therefore analytical and modeling methods are appropriate. The emphasis is on building architectures or blueprints for IT and IS and often information engineering terminology is used. This approach is demanding in terms of both effort and resource requirements and tends to be high profile activities. Stakeholders commented on the length of time involved in the analysis and implementation. Managers may react negatively to the complexity of the analysis and may perceive technical dependencies to displace business priorities.

Organizational approach appears with quite a different underpinning assumption. SISP is viewed as not a special endeavor. IS decisions is being made based on continuous integration between the IS function and the organization. As such IT applications were identified and selected in a much more multi-dimensional and subtle language. Methods were employed as required and to fit a particular purpose. The emphasis is on process, especially management understanding and involvement. Organizational learning is a central theme to this approach. Major SISP methods applied in the past is seen as both a process-enabler as well as an analytical investigation which leave behind lessons about executive teamwork and an understanding of how IT might contribute to the business. According to Earl (1996a), there is some supporting evidence in the literature for the likely effectiveness of the organizational approach. It was also found that (Suhaimi, 1998), companies which adopt the organizational approach are likely to be operating in a more volatile

environment than organizations adopting other approaches and they are the most advanced in their use of information technology.

3.3 Problems of IT Implementation

3.3.1 IT implementation defined

In software engineering, implementation is often referred to as the final stage of putting a system into productive operation (Fincham et. al., 1994). Such a perception could be misleading and reflects a shallow understanding of the term. Thus, in arguing the scope of implementation, Fincham et. al., contend that implementation should denote a wider scope than the term use. As such they define implementation as: “the process through which technical, organizational, and financial resources is configured to provide an efficiently operating system” (p.190). In this respect, the act of commercializing the implementation of a new IT system requires an overall understanding of the organization before the overall expected benefits could be achieved. In fact, the commercial use of new technology, such as implementing a new IT system is a form of innovation since according to Lockett (1996) innovation can be defined as “the commercial application of new technology – as opposed to invention of new ideas (Freeman, 1974)”.

In the preceding chapter, it was argued that innovation is a process that moves through three different stages: invention, innovation and diffusion. Thus, from a technological diffusion point of view, IT implementation can be defined (Cooper & Zmud, 1990) as an organizational effort directed toward diffusing appropriate information technology within a user community. Earlier in the preceding chapter it

has also been argued (Bourgeois & Brodwin, 1984) that implementation is a question of total organizational involvement.

Against the backdrop of innovation process, the above argument implies that IT implementation is a process that happens over numerous sub-stages and would be affected by the interlink factors connected to the organization's characteristics.

Earl's (1996a) five approaches to SISP perhaps illustrate this argument. In discussing the major concerns raised for each of the approaches, Earl indirectly highlights the potential problems faced in implementing the strategic IS plans developed based on each approach. It can be implied that those problems may be inherent to the characteristics of the approach used. In the final analysis, Earl underlines the importance of organizational learning process in overcoming the problems and provides evidence to suggest that organizational approach to SISP is the likely approach to achieve this aim.

The literature search of this study particularly on the subject of IT implementation problems has not been successful in finding literature that could suggest a comprehensive list on this subject. This could be due to the fragmented nature of the implementation researches (Noble, 1999). The literature search also seems to confirm Noble's argument that the issue of implementation is typically conceptualized and defined based on a diversity of perspectives.

The discussion on IT implementation problems in this section will be developed based on Noble's argument combined with Earl's perspective. In other words, because of the fragmented nature of implementation literature, the current research has taken the perspective in a way which highlight the problems and issues affecting IT implementation that is directed towards the need to build organization' IS core

competencies (Feeny & Willcocks, 1998) and transform into IT-enabled organization (Scherer, 2000; Venkataraman, 1994; Earl & Sampler, 1988) i.e. against the backdrop of Earl's organizational approach.

3.3.2 Socio-political problems

One of the problems facing IT implementation is the socio-political issues. As argued in the earlier section (McCosh et. al., 1981), strategic IS developments would have to deal with not only economic issues but also socio-political issues. According to McCosh et. al., strategic objectives of the IS planning are subjected to compromise and bargaining in a world where economic, political and social orders are changing rapidly.

The findings of their study seem appropriate as an illustration of the socio-political issue. They explained that the design and implementation of IS plans are by no means simple, smooth and sequential. This complexity is attributed to three types of 'interrupts' affecting three different phases of Simon's (1960) framework of strategy decision making. The three phases are; *intelligent* phase – typically supported by ongoing scanning systems by forecasting facilities and by access to strategic databases; *design* phase – enhanced by database enquiry systems, modeling systems, decision-environments or information centers which facilitate group decision making; and *choice* phase – supported by modeling systems to evaluate alternatives and feedback systems and decision environments monitoring implementation. The three interrupts are summarised as follow (McCosh et. al., 1981: 356):

- 1) Internal political interrupts during the intelligence phase, where there is disagreement on the existence of a decision situation. Resolution is achieved through bargaining, delays and political design.
- 2) Internal interrupts which hinder the choice phase. Examples include resistance from affected parties and lobbying by pressure groups. Resolution is achieved through modification of strategies, development of new resolution, or bargaining.
- 3) New option interrupts which occur during the design and choice phases. Here, as conditions change, new alternatives may appear so that either re-design occurs or choice is amended.

These interrupts suggest that there are uncertainties facing the development and implementation of strategic IS. They also highlight the potential problems facing the process of managing organizational and technical change if a business is to be transformed under the influence of information technology.

3.3.3 Lack of core IS capabilities

The issue of exploitation of IT as a strategic resource has been raised and discussed in the earlier section. According to Feeny & Willcocks (1998), strategic IT exploitation is faced with three enduring challenges namely – business and IT vision, delivery of IS services, and design of IT architecture. In effect, these challenges seem to relate to IS strategy, IM strategy, and IT strategy respectively when examined along Earl's (1998) definition of information strategies.

According to Feeny & Willcocks the *business and IT vision challenge* is concerned with the problem of addressing the need for a two-way strategic alignment between business and technology. *Delivery of IS services challenge* is concerned with the

problem of being able to manage effective sourcing strategies to deliver IS services to the market at low cost and high quality level. Finally the *design of IT architecture challenge* is concerned with the problem of making technology choices to build the technical platform on which to mount IS services.

Feeny & Willcocks (1998) have identified nine core capabilities that are required by organizations to respond to the challenges. The nine core capabilities are shown in figure 6.

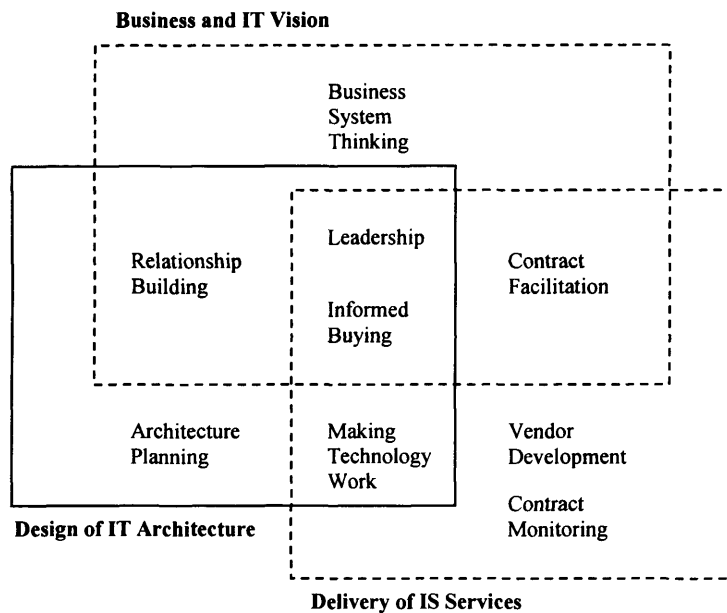


Figure 6: Nine Core IS Capabilities. Source: Feeny & Willcocks (1998)

From the perspective of the current research the nine core IS capabilities identified by Feeny & Willcocks presents a set of problematic areas in the implementation process.

The nine core IS-capabilities can be summarised as follows:

1. **Leadership** – problems related to the process of integrating IS/IT effort with business purpose and activity e.g. structures, processes, staffing, their interdependencies, setting goals and direction, perception of business/IT relationship, values and cultures, and instilling belief that IS staffs could contribute to achieving business solutions.

2. **Business System Thinking** – problems related to envisioning the business process that technology makes possible e.g. lack of progress in integrating business development with IT capability, and inability to get IS representation in the business reengineering task force.
3. **Relationship Building** – problems related to getting the business constructively engaged in IS/IT issues e.g. difficulty - in achieving dialogues due to culture gaps between the ‘techies’ and ‘users’, developing users’ understanding of IT potential, helping users and IT specialist working together, and ensuring users ownership and satisfaction.
4. **Architecture Planning** – problems related to creating the coherent blueprint for a technical platform that responds to current and future business e.g. absence of in-house expertise, inability to understand the viability of addressing new demands on technology, and supplier reluctance to place priority on moving to a lower-cost platform due to lower profit to the supplier.
5. **Making Technology Work** – problems related to rapidly achieving technical progress e.g. absence of technical ‘fixers’ who can contribute in rapidly troubleshooting problems that are disowned by others across the highly complex (environment of complex networked, multi-supplier systems) technical supply chain, and to identify how to address business needs that cannot be properly satisfied by standard technical procedures.
6. **Informed Buying** – problems related to managing the IS/IT sourcing strategy that meets the interests of the business e.g. inability to analyze external markets for IS/IT services, selection of a sourcing strategy to meet business needs and technology issues, leading to tendering, contracting, and service management processes.
7. **Contract Facilitation** – problems related to ensuring the success of existing contracts for IS/IT services e.g. unavailability of a single point of contact through which the user can ensure that problems and conflicts are resolved fairly and promptly within the framework of agreements and relationship especially when users have to deal directly with suppliers.

8. **Contract Monitoring** – problems related to protecting the business's contractual position, current and future e.g. underestimating the extent of the contract monitoring task, ineffective contract monitoring to hold suppliers to account, and inadequate number of people in-house to monitor vendor service performance.
9. **Vendor Development** – problems related to identifying the potential added value of IS/IT service suppliers e.g. the much talked-about added value of outsourcing did not materialize, suppliers have had changes in management staff so they were driven by what is written down rather than the initial understandings.

The above summary reflects the problematic areas in IS/IT implementations and suggests that building the core capabilities require organizations to translate core IS capabilities into organization structure, job specifications, and management processes (Feeny, Willcocks, 1998) which in essence might be achieved through a long term learning process.

It has been argued (Prahalad, 1993) that core capabilities should not be confused with core competencies. In distinguishing the two, Prahalad argues that capabilities in some cases are prerequisites and it is the price one has to pay, while competence permeates through the whole organization, and it represents tacit learning in an organization. Thus he asserts that cumulative knowledge base involving a large number of people is critical to understand core competence. However, the acquiring of core IS capabilities as mentioned above do require some sort of learning process.

3.3.4 Business Process Reengineering and Transformation

In the course of strategically exploiting IT, organizations may redesign their business processes with the aim to improve their business performance (Earl, 1996b). This redesigning or restructuring process may have an impact on the IT implementation process because certain decision model used in that process may influence implementation activities.

For example, decision model for restructuring such as Business Process Reengineering (BPR) advocated by Hammer and Champy (1993), assumed that reengineering must be top-down and not bottom-up. The rationales being lack of broad perspective required by reengineering and lack of authority for cross-functional decisions among middle managers.

This however, provides little participation of lower level managers and employees. It was argued (Stoddard et. al., 1996), in contrast, that reengineering should happen both ways, where top-down goals and objectives created motivation for reengineering, and bottom-up acceptance of the design drove implementation success. As Wolfe (1994: 189) said: "Interaction between decisions made by managers in user organizations and the expertise contributed by technical personnel (internal and external) can thus result in creative outcomes with far wider applicability". While Waema (1990) stressed that, human behavior and social context have to be decently dealt with in any system implementation. Additionally the role of leadership is important because it provides insight and sense of direction into the organization activities. The role of a champion or leadership may be crucial in deciding the adoption of IT innovation and might allow us to put technology investment in a business perspective (Farbey et al, 1995; Prahalad, 1997).

Business Process Re-engineering (BPR) is one of the popular approaches to business transformation. The reengineering process is often implemented under the influence of IT. BPR supporter describes it as a means of facilitating significant and fundamental change in the way organization operates (Hammer & Champy, 1993). The conceptualization of what is regarded as traditional organizations and organizations that have been re-engineered can be distinguished from the following table.

	Traditional organization	Re-engineered organization
Organization structure	• Hierarchical	• Flat/delayered
Work units	• Functional departments	• Process teams
Nature of work	• Simple tasks	• Multi-dimensional work
Employee role	• Controlled	• Empowered
Managerial role	• Supervisors	• Coaches
Executive roles	• Scorekeepers	• Leaders
Value system	• Protective	• Productive
Job preparation	• Training	• Education
Promotion criteria	• Performance	• Ability
Performance measurement and compensation systems	• Activity (inputs)	• Results (outputs)

Table 7: From the traditional to the re-engineered organization. Adapted from Hammer and Champy (1993)

It was claimed that this conceptualization shows a holistic approach to strategy, structure, process and technology (Johansson et. al., 1993; Galliers, 1995). However, Earl (1996b) provides a contrasting view in that companies apply the concept of reengineering in practice as a process view of input-output activity of business and not as a functional, responsibility centered, and structural view. More recent study suggests the need for a systematic process of organizational development to help structure and direct the change process (Jager et. al., 2004).

Transformation through a radical re-engineering process had been the underlying philosophy of BPR (Hammer & Champy, 1993). Thus, the measurement of success of

a BPR process is often concerned with post transformation short-term results (O’Neill & Sohal, 1999). The long-term success is however, uncertain because radical approach can pose great risk upon established organizations. Carr and Johansson (1995) identified two types of risk in the implementation of BPR – *technical risk* which is a fear that the process of changes will not work, and *organizational risk* which is possibility of corporate culture reaction against the changes. Nevertheless, more recent study has suggested some ways in coping with such challenges (Benamati & Lederer, 2001). The coping mechanisms include – education and training, vendor support, endurance, internal procedures, and consultant support.

Venkataraman offers a more comprehensive perspective of reengineering process. He developed broad perspective framework to measure the business transformation in IT-enabled organization through his model of five levels of business transformation (see Figure 7).

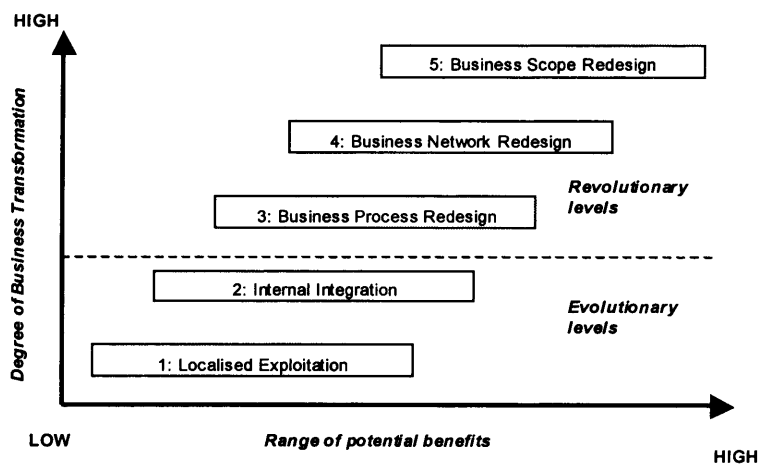


Figure 7: Business Transformation Model. Adapted from Venkataraman (1991)

This model offers a long-term perspective toward change that BPR approach is limited due to its short-term nature. This adds another critique to BPR approach,

which is too risky for large, successful and well-established companies to make the drastic change required to achieve it over a short period

Managing the changes in the organization as a result of new technology implementation is a difficult task due to complex interactions among organization structure, management processes and technology. In their study on new technology in banking, Scarbrough & Lannon (1988), argue that textbook solution written by writers of ‘strategic management of technology’ may underestimate the technical and organizational barriers to the strategic deployment of technology.

The textbook model assumed that top management would rationally respond to the impact of IT by formulating a coherent technology strategy, which brings considerations of technological factors into the strategic planning process. Scarbrough & Lannon (1988) summarizes the variety of guidelines proposed in terms of the textbook model of the strategic management of technology in figure 8.

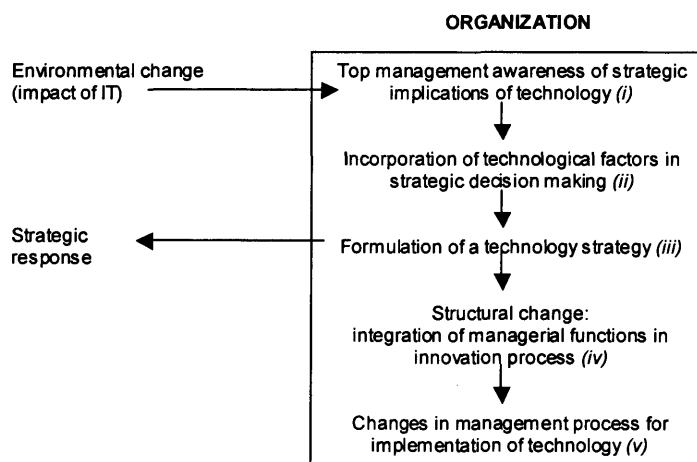


Figure 8: Strategic management of technology – guidelines. (Adapted from Scarbrough & Lannon, 1988)

Scarbrough & Lannon (1988) contend that textbook approach to technological change is seen as simply a question of firms adapting to the impact of technology. However technological change within business organizations involves a complex set of

interactions between the management process, technology and organization structure. They argue that treating technology as a question for top management alone is to understate the significant influence, which the structure, culture and politics of the organization exert upon strategy making.

Which approach of implementation is the best to adopt, is a question of how the management understands the interrelationship between socio-political and technical components within the organization.

Apart from what has been discussed above, one of the most important considerations for information systems planning implementation is the problem of expertise (Scarborough, 1992, Fincham et. al., 1994). Large and established organizations may have the technical skills and managerial expertise that they have developed over a long period of time (Fincham et. al., 1994). This expertise provides competence for organizations to carry out innovative activities. In other words, smaller and less experienced organizations without such expertise may be required to strategically formulate an approach to solving the problem of expertise such as sourcing it out.

At times alternative decisions on information systems development might need to be made especially when in-house developed systems is found to be costly and time consuming. Whereas monopolistic supplier may result in higher prices and lower quality delivery while a multi-vendor approach strategy may require better management coordination (Scarborough, 1992). Nevertheless, outsourcing IT requirements is one of the feasible options for many organizations. IT outsourcing, however is not without risk. Willcocks et. al., (1999) outlined some of the risk factors in IT outsourcing (see Table 8).

Risk factors

1. Treating IT as an undifferentiated commodity to be outsourced
2. Incomplete contracting
3. Lack of active management of the supplier on contract and relationship dimensions
4. Failure to build and retain requisite in-house capabilities and skills
5. Power asymmetries developing in favour of the vendor
6. Difficulties in constructing and adapting deals in the face of rapid business/technical change
7. Lack of maturity and experience in contracting for and managing 'total' outsourcing arrangements
8. Outsourcing for short term financial restructuring or cash injection rather than to leverage IT assets for business advantage
9. Unrealistic expectations with multiple objectives for outsourcing
10. Poor outsourcing and contracting for development of new technologies

Table 8: Risk factors in IT outsourcing. Adapted from Willcocks et. al., (1999)

In the ever-growing popularity concept of outsourcing is not without pitfalls. Basuki, (2002) argued that there is evidence to suggest the potential complications that may arise from 'committing to a marriage of seeming convenience' without enough due considerations. Such complications include - non delivery of the promises and the real value-realisation of outsourcing; hidden costs of transitioning the activities to the service provider and cost of managing outsourcing effort; the expense to switch vendors or to re-integrate the outsourced activities; the issue of confidentiality, and flexibility that has to be factored in the outsourcing contract.

Basuki (2002) also stressed the need to understand that organizations can outsource the delivery of strategy but not the strategy itself. Whereas Feeny et. al. (2005), stressed on the need to know the key criteria and to take measures of the core capabilities for screening the outsourcing providers.

The increasing number of successful outsourcing arrangements in the late 1990s and the difficulty in using BPR approach in dealing with legacy information systems (Currie & Weerakkody, 2003) had encouraged firms to resort to outsourcing models

in their attempt to better manage their IT resources. Moreover there was a growing trend of firms trying to reduce the total cost of ownership (TCO) of their business computing and also the evolution of internet which has provided a dynamic, secure medium and possibility of sharing information and software in a cost-effective way. These factors have further developed into the emergence of application service providers (ASP) in the market. Banking firms have been one of the fast growing clients that provide business to these ASPs and embedding them into their business models. This trend in turn has begun to change the landscape of traditional outsourcing model which quickly spurs into new varieties of business process outsourcing models (Weerakkody et. al., 2003). These models range from providing efficiency services for non-core applications to providing process management expertise (Weerakkody et. al., 2003) for large corporate clients as well as Net-centric providers (Ekanayaka et. al., 2003) that offer software applications procurement on a rental or utility basis typically for SMEs.

3.3.5 IT Implementation and Organizational Learning

Having discussed how major IT implementations integrate into the various organizational facets, the discussion can be extended to find out if this may have links to organizational learning and knowledge creation. It was said that the phenomenon of knowledge production that was evident in the 1950s and 1960s has regained attention in the 1990s and onwards (Merx-Chermin & Nijhof, 2005). The concept of knowledge production within this perspective is based on the idea of facilitating organizations on the basis of their own learning potential to stay ahead of the competition through innovation.

In addition to the above argument on organizational learning and knowledge creation, Scarbrough (2003) have highlighted the need to consider knowledge management (KM) as medium as well as outcome of innovation process which in itself encompass technological development and organizational forms. In his perspective there are several focuses of examining related changes in the innovation process which among others include the critical need to integrate knowledge and action and; the consequent interactivity that these changes demand with a range of groups inside and outside the organization. From the perspective of technology and innovation management learning Liyanage & Poon (2003) came up with a techno-managerial approach that suggest that critical technology management knowledge should include among others knowledge of strategic management of technology; organization of business functions; as well as innovation management in relation to technology and business environment.

In looking at the relationship between IT implementation and organizational learning, some authors have cautioned the impact (Damsgaard & Scheepers, 1999) and limits (Currie & Kerrin, 2004) to technology in pursuit of knowledge management. In their work Currie & Kerrin (2004), illustrates how 'technical fixes' via intranet implementation may have wider impact on management issues such as political and cultural issues. Through a case study they found that this kind of technical fixes may harden existing practices causing employees to be unwilling and unable to share knowledge and is likely to inhibit the contribution of technology to the management of knowledge.

The above arguments and discussions which have been presented in a number of subheadings highlighted a range of the potential problematic areas as far as IT

implementation is concerned. Nevertheless the perspective of IT implementation and the issues affecting its process can be extended to a higher level of IT exploitation i.e. organizational transformation as well as organization learning and knowledge management as discussed above, will provide a useful theoretical framework for the current research.

The following section discuss IT implementation within the scope of financial services. It attempts to provide a description on how IT is being exploited strategically by the financial institutions especially the banks. A number of case studies were also discussed to highlight the important issues in IT implementation in financial services.

3.4 IT Implementations in Financial Services

Financial services organizations such as banks and insurance companies have long been the major user of information technology and have played an important role in the emergence of IT and the computing industry itself. This development not only came about in the western countries like the U.S. and Europe, but also in developing countries.

As IT becomes increasingly central to the competitive dynamics of financial services, the management of IT has strategic as well as operational consequences. IT applications are used innovatively to sustain the competition in the industry (Whaling, 1996).

3.4.1 Early Technology in Banks

In developing an overview of the IT implementation in financial services industry, this research has heavily drawn upon the work of Steiner & Teixeira (1990) and Essinger (1999).

According to Steiner & Teixeira (1990), banks have begun to use machinery to handle information processing as early as the 1880s. During this time the industrial revolution is in full swing with the vast increases in the array of raw materials available, the amount of goods produced, and the speed of transportations and communications. Volume of transaction grew and their lending and financial decisions became more complex. Analog computers built to solve differential equations that appeared in the 1890 were useless for major data processing needs of the banks i.e. to keep records of transaction in extremely high volumes.

Electrical Tabulating machine that can store data on punch card invented in 1880 by Columbia-trained engineer, Herman Hollerith began to be used by the US government in the 1890 census with great success. Prudential Insurance Company had two of Hollerith systems running by 1891. By 1894, Hollerith's Tabulating Machine Company, the ancestor of IBM, had sold more than 100 millions punch cards. In the decade before the World War II the machines were widely employed by banks.

In 1923, IBM introduced the first electric keypunch for coding data on 80-column cards. Other technologies used early in banking in the US include electronic fund transfer that eventually became Fedwire in 1918 and check photographing in 1925.

According to Steiner and Teixeira (1990), in 1948 banks began purchasing the IBM 604 that could perform arithmetic operations on 100 cards per minute. Prior to the

1960 the significant technology used by banks was the sorting machine NCR Postronics which could encode and read magnetic strip on ledger cards. Magnetic Ink Character Recognition (MICR) began in 1960 and allowed the first automated handling of checks. Based on Stanford Research Institute, Bank of America was the first to use MICR.

The real rush by banks to computerize began with the introduction of IBM System/360 in 1964, the first family of compatible computers offering a wide range of performance. Banks began to realize that extensive automation is possible and they began to adopt the technology despite the expensive investment.

According to Essinger (1999), by the mid-1970s computers had to a large extent already been implemented in banks to about the fullest extent in automating manual calculations and processes.

Steiner and Teixeira (1990) argued that banking transactions have been automated in observable stages. The first stage is the Back Office Automation – which began by automating core record-keeping in early 1960s. Automated functions include nightly account updates, monthly cycling of accounts, statement preparations and general ledger maintenance. This stage is characterized by the batch processing routines.

The second stage is the Front Office Automation – which began with the development of the on-line terminals in the early 1970s. Front office automation helps bank employees in their interactions with customers. Bank built networks to connect their central data centers with many access devices – teller machines and terminal controllers. Parts of the networks also include check reader/sorter and laser printers. Large banks may invest in telecommunications network. Transactions were still originated by customers in paper form.

The third stage is Customer Interface – which is reached when the actual customers interface is automated. This results in elimination of bank employees between the customers and the banks. Transactions in electronic form eliminate paper right from the start. Introduction of Automated Teller Machines (ATMs) is a third stage automation. In this stage electronic networks may extend the banks' reach to the outside corporate treasurers' offices, retailers, brokers, insurance companies and correspondent banks.

According to Essinger (1999), the application of ATM offers enormous advantage to customers that it could provide cash withdrawal facilities outside the bank's branches and at times when the banks are not opened. Initially banks only made the cash machines available to their best and wealthiest customers. After a relatively short period, the importance of making cash machines available to all customers was inevitable and became a norm. Essinger noted that an unavoidable fact about ATM is that they are relatively expensive to buy and install and banks will inevitably be engaged in a constant struggle to maintain profit due to the huge capital expenditure.

Shared network and ATM network have arisen subsequent to this situation (Steiner & Teixeira, 1990) allowing banks to significantly reduce capital expenditure by sharing the cost with other banks (Essinger, 1999). According to Steiner and Teixeira, a shared network is a utility that includes both a consortium that switches transactions as well as a third party that does processing for a multitude of competing players. In addition, other significant benefits in participating in a shared network, or in other consortia organizations include electronic fund transfer at point of sale (EFTPos) and remote banking in wide range on-line banking possibilities (Aladwani, 2001)

including – telephone banking, desktop banking, interactive television, internet terminals, screen phone, and mobile cellular banking.

According to Channon (1998), the increasing range of new delivery systems made possible by the use of IT is making conventional branch structure too expensive. He further emphasizes that, as a result banks began to undergo reorganization programs and retention rate of traditional bank managers has reached up to eighty percent. The role of branch manager has been redefined in the light of the changes in the cost structure and new branch oriented service configuration.

It seems that along with the changing landscape of technology in the banking industry, banks are faced with constant challenges in their pursuit to maximize the benefits from adopting new technology (Aladwani, 2001). This benefit may not be fully realized without careful management of the entire process adoption and implementation process. The more critical challenge facing bank management nowadays is to lead their organizations through the transformation process inevitable in a turbulent business environment (Scott Morton, 1991).

3.4.2 Selected Case Studies

One of the studies that the current research has heavily drawn upon is the work of Fincham et. al. (1994). Their study investigate the management of expertise and innovation in IT implementations in the UK financial services sector. They found that competence and expertise are critical to financial institutions in terms of their capability to manage IT innovations.

The prominent studies by Fincham et. al. (1994) on IT innovations in financial services in the U.K., highlight important lessons to be learned by the organizations in the financial services industry. The study involved case analysis of several IT implementations in Scottish financial institutions namely:

- The Bank of Scotland – development of ‘CABINET’, a large-scale Branch Information Network.
- Clydesdale Bank – joint development of ‘TELEBANK’, a remote banking product for retail and corporate customers.
- Royal Bank of Scotland – development of ‘ROYLINE’, a remote banking product for retail and corporate customers.
- Highland Life – development of a customer database.
- Home & Auto Ltd. – development of a corporate management information system.
- Premier Financial Services – development of INDEX, acquisition and customization of a credit card processing package.
- Bank of Scotland VISA Centre – acquisition of a credit card processing package.

The findings from the cases draw attention to a number of issues. One of the issues is how the role of both institutional and sectoral context, and the internal structuring of expertise in favouring or inhibiting the new categories of action associated with IS strategy formulation. The principle role of the IS function within the organization structure have influential impacts on the strategic actions taken by the organization.

The findings also bring up the importance of managing expertise in IT implementations. They highlight the significance of taking account of the role of social action in communicating technical knowledge and organizing transactions

(Scarbrough, 1995), such as in the exchange of knowledge between the buyer (banks) and seller (suppliers and consultants).

Technical knowledge according to Scarbrough, can take various forms in the context the cases, including hardware, packaged software and human expertise. The findings from the cases also highlight the issues on the management of IS expertise, and produce critique on the conventional understanding of the management of expert group (Scarbrough, 1993). They provide evidence that the conventional understanding tend to focus on the problems of integration or control at the point of production, neglecting the interplay between organizations and the wider structure of the IS expertise.

Buzzacchi et. al. (1995) in their analysis of innovations originating from the diffusion of IT in Italian banks stated that technical change happened in two phases, which they termed as mass automation and smart automation. Mass automation stage happened during 1960s and 1970s which was characterised as the mechanization of back-office procedures. Mass automation was revolutionary in nature, fostering radical innovation that brought about significant changes in the organizational structure of banks. Introduction of mainframes, establishment of electronic data processing (EDP) departments, centralized information systems, creation of specialised staff functions aimed at improving efficiency of operations, described the major leap in technical changes during this time (1970s).

The diffusion of distributed data processing marked the period of smart automation, which is the second phase of the technological trajectory. Smart automation takes a non-radical technical changes involving structural re-designing of banks information systems, and gradual decentralization of computing power to local branches. The

opportunities offered by technology in product innovations are greater during this period. The integration of inter-bank networks, reconfiguration of front-office activities, interfaces between producers and users laid the foundation such as electronic banking (EB) services.

According to Buzzacchi et. al. (1995), during the transition between the two phases management began to discover the key role of banking information systems as a result of the development of an 'IT culture' during the mass automation period, whereas the personnel at all levels gained experience in the use of IT. This formed a knowledge base needed by the banks in order to offer more innovative products during the smart automation phase. The same development can be impliedly attributed to the U.S. retail banking sector where during the smart automation period, retail banks are looking to client-server, open systems, groupware, workflow software and imaging technology (Whaling, 1996) to restructure and consolidate their operations.

Technical changes during this phase are not simple to manage. Even with the help of re-engineering approaches such as BPR there are factors that can stand as barriers to its success. This phenomenon can be seen in the case of New Branch Columbus project involving a large-scale BPR project at the Royal Bank of Scotland (Currie & Willcocks, 1996). Under-estimation of the technical difficulties of interfacing PC based client server technology with the mainframe by the senior business and IT managers, caused the effort to implement large-scale BPR became diluted in practice. The structural separation of the business units and IT divisions caused disagreements and conflicts amongst senior managers and IT staff about the key strategic and operational aims of the project.

Whether a step-by-step approach (Watkins, 2000) or strategic leap is the best approach to tackle the transition from automation to integration depends on the ability to understand the interaction among components within the banking organization as well as the relationship between the organization and its environment. Watkins (2000) in his study of retail financial services sector in the U.K. over a 7-year period looked at the viability of step-by-step approach to transformation. While step-by-step approach is perceived as the safest approach, drastic implementation could pose risk of failure, which may occur in long term. One example where this approach can endanger the competition is when firms from other sectors with large client database enter into the competition. In Britain, the largest grocery retailers have entered into retail financial service, which marks an escalation of competition in financial services retailing (Essinger, 1999; Alexander & Pollard, 2000). Three major grocery retailers – Tesco, Sainsbury and Safeway – now offer an increasing variety of financial services. They were preceded by Marks and Spencer, which has been selling own-brand financial products for more than a decade.

At least one case study has shown how a business transformation process failed when implemented using dramatic BPR approach. The case study of package-driven business process re-engineering in a financial services company in New Zealand raises question of the term success and failure of a system implementation (Larsen & Myers 1999). They argued that ‘success’ is a moving target and may be so at the time the system was first delivered and evaluated but could be viewed otherwise by various stakeholders over a long period of time. In other words, there seems to be a requirement to understand the interdependence of technological and organizational factors in managing transformation to realize the impact of an IT implementation.



The case of a large Norwegian bank (Fuglseth & Grønhaug, 1997), exhibited how IT can be used to enable a new process of evaluating business loans, for example using Decision Support (DS). The authors argued that business process redesign and decision support can be useful as complementary approaches to redesign processes. Decision Support is an area of research with the purpose of improving the effectiveness of decision making in complex and uncertain tasks (Sprague & Watson, 1993; Gray, 1994). Decision support (DS) approach is aimed at improving the effectiveness of decision making in complex and uncertain tasks typically involving interaction between man and computer. While BPR provides a radical focus on IT utilization, and change of power and control structures, DS provides consideration to the special requirements of complex and dynamic tasks for support of human judgement and flexible adaptation to environmental changes.

In another case study, it is argued that the focus of business process re-engineering on the 'process' concept put pressure on the need for consistent methods and techniques for the capture, representation and performance assessment of business processes (Mentzas, 1997). This author views this as especially important for banking organizations since banks also need to manage the transition of their costly legacy systems to modern Customer Information Systems (CIS). In the case of Alpha Credit Bank, the largest private commercial bank in Greece (Mentzas, 1997), the Banking reengineering with Object-Oriented Modelling (BROOM) is used in the re-design of current accounts-oriented IT systems to customer-oriented systems. Object-Oriented Modelling is a system development methodology and technique based on objects rather than data or processes (Hoffer et al., 2002). Mentzas (1997) argues that object-orientation provides the needed transparency and consistency between the models of business systems and the models of IT systems and adopts the use of

object-oriented methods as a basis for redesigning banking business processes and information systems

Broady-Preston and Hayward (1998) highlighted the need to more fully integrate strategy formulation and implementation information in the retail banking sector. They suggested that Balanced Score Card (BSC) model might be one of the tools to help the bottom-up flow of information. This model is supported and exemplified by a case study of one of the U.K.'s largest retail bank (Littler et. al., 2000). The case illustrates how the BSC might be used as part of a strategy process, which can capture bottom-up information. BSC works by depicting strategy formulation and implementation using four scorecard quadrants: financial, customer, internal business processes and learning and growth. The case demonstrated how the new approach integrates strategy formulation using defined strategic objects with strategy implementation measurement through the simultaneous construction of a balanced scorecard framework. Each strategic object is described in terms of its resource, action and intent. The integration of these strategic building blocks provide a construction of a graphical representation of strategic architecture that could be effectively used to communicate a bottom-up flow of information throughout the organization.

A study on delivery systems in U.K. retail banks in the 80s (Howcroft & Lavis, 1986), revealed that banks require to change their organizational structure to facilitate the introduction of the new electronic delivery systems. Conservative structure and norms in the practice of the banking operations could hinder the innovative effort of exploiting new technology. In the case of the introduction of HOBS (Home & Office Banking System) in the Royal Bank of Scotland, Scarbrough (1988) emphasized the

need for a strategic approach to decisions on technology. The case highlighted how an investment decision using *return on investment* (ROI) approach was not conducive for changes. In another example, a state-owned European bank faced difficulty in making sense of their telebanking information systems (Faia-Correia, 1999). The case findings indicate that while the information system supports the operators' work practice in routine situations, it fails to do so when the workflow is disrupted. The case highlighted the need for banking organizations to reconfigure technological platform around social and organizational issues.

There is a wide range of choice of technology available with great potential to be exploited by banks. However the effective use of information technology is very much dependent upon its strategic exploitation by organizations (Scott Morton, 1991). An example of an effective exploitation of information technology is demonstrated by case study findings at Banco Comercial Português (BCP) who is in many ways a leader in the strategic use of IT among European banks (Dutta & Doz, 1995). Its leadership position arises not from using the cutting edge technology but from deliberate attempt to link IT to its business strategy. In contrast cutting edge technology may be perceived as controversial in terms of its potential such as in the case of multimedia home banking in Italian banks (Garrone & Colombo, 1999).

They argued that certain technology would undergo an embryonic stage i.e., while the technology is technically feasible, it is yet to be commercialised. Similar themes were also highlighted in the case study of 'Banking 2000?' at the First national Bank of Southern Africa which involves the reorganization and restructuring of a major bank and the retraining of a traditional branch to create a branch of the future. Information technology application in the new branch provides some insight as to how the

technology may be used strategically in the banking sector, it also raises a number of questions about the form future banking may take.

The case studies selected and discussed in this section was aimed at highlighting some of the issues raised in the preceding sections and chapter in the light of each of the bank's specific experience. They also serve as supporting evidence to reflect the importance and the relevance of the issues raised and discussed earlier which in a way would strengthen the theoretical perspective of the current research.

3.5 Conclusion

Although it may be true to suggest that organizations pursuit of new technology are often driven by motives stemming from the market and control objectives (Noon, 1994), there is also a need to emphasize that organizations should increase their awareness of the character and impact of technology and should not underestimate them as often the case. As Fincham et. al. (1994) have cleverly put it, technology is often regarded as exogenous to social and economic systems. Thus technology is often created through its own internal dynamics and it has impacts on the structure and performance of organizations. As a form of technological innovation, IT or IS development in organizations might need to take into account the potential influence that the above elements may create during the implementation process.

In addition, it has also been argued by McCosh et. al. (1981) that the non-routine and unstructured nature of strategy-making and the difficulty in predicting information needs make the strategic planning difficult to organize and manage. Thus, they suggest that the design of strategic IS, is as much on developing information, or on

intelligence, as it is on subsequent processing. Since strategic planning increasingly has to focus not only on economic questions, but also socio-political issues, the development of a strategic IS cannot be isolated from its organizational context.

As has been discussed in this chapter, IT is one of the components of technology, as such IT innovation shares the same characteristics as other technological innovation. Like others, implementation of IT innovation is concerned not only with the technical questions. The success of its implementation will very much be dependent upon the degree of understanding of how economic and socio-political components affect the process within the larger context of the organization.

This chapter has highlighted a number of major issues in relation to the innovation process, strategic planning and implementation as well as the problematic areas in IT implementations. It has also provided an overview of the strategic impact of IT on the banking industry as well as its strategic exploitation. A number of case studies were selected and discussed to demonstrate how banks have responded to the issues raised in this and the preceding chapters.

As with the preceding chapter, this chapter has also been organized in such a way that would further advance the theoretical perspectives of the current research. At this juncture, it becomes more comprehensible that IT implementation as part of an innovation process could be seen as being influenced and affected by the organizational characteristics, elements and processes. As the organization went through the learning process in transforming itself to adapt to the changing environment, IT implementation will be a matter of concern to the whole organization.

The next chapter is specifically focused on the Malaysian financial services industry which provides a scenario of the landscape of the sector, their developments and major issues of concern within the sector.

Chapter 4

MALAYSIAN FINANCIAL SERVICES INDUSTRY

4.0 Introduction

This chapter provides background information of the financial services industry in Malaysia. It has been structured in such a way that would reflect the historical development, industry composition, regulatory framework, socio-economic as well as technology developments. In writing this chapter attempts are made to include all possible important aspects and issues that could provide sufficient background information to the reader. It aims to assist the reader to be familiar with the important elements that make up the financial services industry in Malaysia.

The chapter begins with a description of the history of banks in Malaysia and its role in the economy. It explains when and where the first bank was established. It further highlights the development of foreign and domestic banks over the past century in Malaysia. It also explains the role played by the financial institution as source of funding for financing economic activities.

Next, it explains the structural division and the institutions in the industry. They include commercial banks, Islamic banks, merchant banks, finance companies and other financial institutions. Supervision and regulation systems that govern the financial services industry are discussed along the role played by the Central Bank and Banking and Financial Institution Act (BAFIA).

The Malaysian financial services industry has undergone several major developments some of which occurred in the past ten years. The developments include a number of

reforms to strengthen the industry that has spurred better competition among the institutions. Between the year 1998 and 2002, the industry went through a major consolidation exercise supervised by the Central Bank. This is perhaps the most important measure undertaken by the industry in response to globalisation of the world economy.

The final part of the chapter includes discussion about technological development of the industry highlighting the level of information technology utilisation. It looks at why and when banks adopted such technology. It also observes the various era of computerisation and examines the potential use of emerging technology for modern banking. In particular it discusses the factors affecting the new technology adoption in the Malaysian banking industry, the state of automation and electronic banking services which include the shared ATM network and issues affecting its implementation. It also discusses the emerging new technologies in the banking delivery channels in terms of their potential exploitation by the Malaysian banks which include the internet and electronic commerce, proprietary PC banking systems, the use of smart card technology, telecommunications infrastructure, and a number of concerns that influence their adoption.

The advantage of using such a structure in this chapter is that it would provide the readers with an overview of how the financial institutions especially banks in Malaysia have developed across different economic eras since the establishment of first bank in the nineteenth century. It reflects the transformation of the financial institutions in Malaysia from being deposit-taking institutions to becoming important institutions for economic development. It also emphasised the importance of technology within the banking industry as well as technological issues affecting the

industry. The chapter highlights the importance of technology in terms of its past, current and future development in the industry.

Various sources have been used in developing this chapter. The sources include academic journals, academic textbooks, academic theses, annual reports, trade journals, magazines, directories, press releases, statements of public announcement, newspaper reports, company special reports, company special publications, on-line reports, internet websites as well as informal interviews with industry experts. The aim of using such a diverse range of sources is to provide an enriching discussion on this subject.

4.1 History of Banking in Malaysia

Historically, Malaysia was a British colony until its independence in 1957. It was then known as the Federation of Malaya. From that time onwards, Malaya had undergone through several important political and geographical reorganisations until Malaysia was formed in 1963. Whilst under the British colony, the monetary activities were governed by the Currency Board (Lee, 1986).

The development of banking and banks in Malaysia is more than one hundred years old (Johnson, 1994). In fact, its history could be traced back as early as the nineteenth century. The early need for banking activities had close links with economic events of that century. Banking in Malaya during this period, was linked to commodity trading activities primarily with tin and rubber. According to Khoo (1994), other commodities were mainly agricultural produce, which included coffee, pineapple, coconuts, gambier and pepper. During that time the banking scene was dominated by the foreign

banks that were established primarily to facilitate the export of tin as well as other commodities.

4.1.1 Development of Foreign Banks

The earliest banking activities in Malaya could be traced in Singapore during the nineteenth century. Singapore, which was part of the Straits Settlements at that time, was the main port serving the whole Malay Peninsula. The practice of foreign banks at that time was to appoint representatives, usually trading companies to carry out banking activities on their behalf.

For example, a British bank, Coutts & Co., was represented by Guthries beginning 1830 while Bousted represented The Hongkong and Shanghai Banking Corporation (Cheah, 1994). Ten years later the Union Bank of Calcutta became the first commercial bank to establish branch office in Singapore in 1840. Six years later the Oriental Bank set up a branch in Singapore. The Asiatic Bank and Commercial Bank of India followed this few years later.

Outside Singapore, The Chartered Merchant Bank of India, London and China became the first commercial bank to establish a branch in Penang in 1875 and the bank subsequently set up additional branches in Taiping and Kuala Lumpur in 1888 (Johnson, 1994).

4.1.2 Development of Chinese Banks in Malaya

The population of Malaya during that time was made up predominantly of Malays, Chinese and Indians. Malays made up the majority of smallholders in the agricultural sector. The Chinese were primarily traders and merchants providing services for the smallholders produce, including collection, transport, storage, sale, import, export, retail, wholesale and credit facilities. The Indians worked mostly as plantation workers owned mainly by the English and Japanese (Khoo, 1994). Until the outbreak of World War II, the scenario remained basically unchanged.

The development of domestic (local) banks began when the Malayan Chinese started to venture into banking in Malaya and Singapore in the early twentieth century. Banking activities were primarily based on territorial and dialect affinity of the Chinese clan – Cantonese, Teochiu and Hokkien (Khoo, 1994). The development of Chinese banks could be seen by their incorporations during the early twentieth century.

Incorporation of Chinese Banks in Malaya (1903 – 1935)	
Kwong Yik Bank	1903
Sze Hai Tong Banking & Insurance Co., Ltd.	1907
Chinese Commercial bank, Ltd.	1912
Kwong Yik (Selangor) Banking Corporation, Ltd.	1913
Ho Hong Bank, Ltd.	1917
Oversea-Chinese Bank, Ltd	1919
Batu Pahat Bank, Ltd.	1919
Lee Wah Bank	1920
Bank of Malaya, Ltd.	1920
Oversea-Chinese Banking Corporation	1932
Ban Hin Lee Bank, Ltd.	1935

Table 9: Chinese Banks in Malaya.

Adapted from: Khoo Khay Kim, 1994 (p.9)

The orientation of foreign banks was on export trade as well as to meet the needs of the foreign agents and British businessman. According to Cheah (1994) this had resulted in the neglect of the financial needs of the local economy, especially of those among business and small industries, which were oriented to the domestic market. The general shortage of funds and financial services, especially among the local Chinese merchants led to the emergence of local banks.

The first domestic bank in Malaya was incorporated in 1903, more than half a century after the presence of the first commercial bank; it was basically a branch of a foreign bank in 1840. By the end of 1959, the banking scene was still dominated by foreign bank where there were eighteen foreign banks and six domestic banks (Tan, 1991). However, some studies found that more than six domestic banks had been incorporated during that time (Khoo, 1994; Shanmugam, 1989a).

In fact, Khoo (1994), a prominent emeritus professor in Malaysian history, strongly believes that the number could be higher. In his study he found that during the period between 1903 and 1935, there were already twelve domestic banks being incorporated mostly by Malayan Chinese merchants and suggests that there could be more domestic banks at the end of 1959. There is no evidence to suggest if the study has considered some banks which could have short lived and ceased to exist by that time. Example of such bank includes the bank¹ which was setup by *Kesatuan Melayu Muda* (United Young Malays) party which was setup as a financial intermediary to manage members fund meant for enhancing their welfare.

During the period between 1959 and 1984, the number of bank branches has increased by about 545 per cent, which constitute an average growth rate of 7.7 per cent per

¹ Believed to be the first Malays bank established in 1940s in the eastern state of Terengganu (Source: Majid Saleh the author of 'Anak Merdeka', publisher unknown).

annum. In 1959, there were 26 banking enterprises with a total of 111 branches, but in 1984 there were 38 banking enterprises with 716 branches (Shanmugam, 1989a). This showed that the growth of bank branches had indeed been rapid and that resulted in more banks servicing the financial needs of the population. According to Johnson and Savarimuthi (1985) the expansion of the domestic banks' network have resulted in the increase of credit and banking facilities across a wider section of the population, in particular, people in the rural areas. This was partly due to the Central Bank's role in changing the orientation of the banks from a profit orientated role into a more fulfilling role for the nation.

4.1.3 Role of Banks in Malaysian Economy

The historical development of Malaysia's banking system was influenced by the structural and economic development of the country during the colonial times.

The discovery of tin in 1848 in Larut District of Perak and further discovery in Kinta Valley in 1880 brought about rapid development and expansion of the economy of Malaya (Johnson, 1994). By the early twentieth century, the automobile industry in the U.S. was undergoing revolution through the adoption of mass production technique. High volume of production achieved using this technique had created great demand for rubber (Khoo, 1994; Johnson, 1994).

The increase of export trade of these commodities had encouraged greater activities in the commodity sector, thus greater demand for banking facilities. The foreign banks seized the golden opportunity by opening additional branches in the more thriving townships, such as Klang, Seremban, Kota Bharu, Malacca and Ipoh (Johnson, 1994).

As reported by Bank Negara², the Malaysian economy up until 1970 was largely dependent on the export of rubber and tin. The structure of the Malaysian economy is obviously reflected in its financial structure. The prominence of international trade has resulted in the banking sector, which was then dominated by foreign banks to concentrate their credit activities in financing of trade (Cheah, 1991)

4.1.3.1 Saving and Utilisation of Funds

According to Shanmugan (1989) the importance attached to banks comes along with the recognition of capital as a scarce commodity and an essential component for development. In relation to this, the function of banks can be divided into three. Firstly they encourage saving. Secondly they make way for investment of the saving, and thirdly they seek to ensure the efficient allocation of the mobilised funds – advances (Shanmugam, 1989b).

It is argued by Cheah (1994) that in a developing economy like Malaysia a major component of domestic saving came from private saving,³ since government sector and corporate sector savings are relatively small. It is necessary to generate adequate saving within the domestic economy to be able to finance the formation of capital and hence output. Here, the function of the financial institutions especially commercial banks is to promote efficient utilisation of financial resources in an economy. They mobilise funds from financially surplus units and channel funds to deficit units.

According to Dayal and Shanmugam (1987) as banks seem to deal with huge sums of money, the policy maker was obviously attracted to interfere with these institutions,

² Source: Bank Negara Malaysia, Annual report 1994.

³ Particularly during period between 1960 – 1970 (Source: UN, *Economic Bulletin for Asia and the Pacific*, June 1975).

for purposes, which sometimes euphemistically termed as maximum utilisation. This is where the basis of conflict between liberalisation and regulation lies. A study into banks expansion activities and involvement in development activities found that Malaysian banks were tightly regulated (Dayal and Shanmugam, 1987).

An examination of sectoral distribution showed that during the period from 1959 - 1984, banks were found to lend to all sectors but slightly bias toward manufacturing and commerce sectors. Agricultural sectors appeared to be neglected even though more than half of the economically active population was engaged in it. A third of the gross domestic product (GDP) was generated by this sector. This became more obvious as the landscape of the major economic activities changed as seen from the sectoral loans distribution in 2003 and 2004.

Sectors	Percentage of total loans (%)							2003	2004
	1959	1964	1969	1974	1979	1984			
Agriculture	7.9	5.9	9.7	7.5	6.6	6.1	-	-	
Mining and Quarrying	2.0	1.6	2.6	1.8	0.8	1.1	-	-	
Manufacture	12.4	13.1	17.3	18.9	16.8	18.2	25.0	25.0	
Electricity	-	-	-	-	-	0.1	-	-	
General Commerce	38.8	46.5	36.5	28.7	28.8	18.8	16.0	17.0	
Building and construction	3.1	6.5	8.9	8.3	7.0	7.5	6.0	6.0	
Real Estate; Residential property	-	-	-	3.0	5.1	13.9	-	-	
Housing	-	-	-	7.2	10.8	11.8	8.0	8.0	
Transport, storage & communication	-	-	0.6	1.1	2.2	1.8	-	-	
Finance, insurance & building societies	-	-	2.4	5.8	4.3	12.0	8.0	7.0	
Passenger Cars	-	-	-	-	-	-	6.0	6.0	
Credit Cards	-	-	-	-	-	-	7.0	7.0	
Miscellaneous	35.8	26.4	22.0	17.7	17.6	8.7	24.0	23.0	
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	

Table 10: Distribution of loans as a proportion of total loans

Adapted from: Money and banking in Malaysia: 1959 – 1984, BNM (1984); BNM Annual Report (2004)

Also a rise in the loan-deposit ratio indicated that there has been an increase in the utilisation of resources. Thus, on the whole one can safely say that banks in Malaysia have continuously assisted the country in economic development (Shanmugam,

1989b). The economic crisis of the late 1990s has also clearly shown evidence of recovery given the increasing deposits and loans in the period post 2000.

As at end of	Loans outstanding (RM million)	Total deposits outstanding (RM million)	Loan : Deposit ratio (percentage)
1959	387.1	818.0	47.3
1964	1983.7	1521.5	71.2
1969	1998.9	3029.6	66.0
1974	5575.6	7029.9	79.3
1984	43504.0	46907.8	92.7
2002	19800.0	25300.0	84.9
2003	21600.0	49500.0	80.9
2004	40200.0	70100.0	78.6

Table 11: Loan deposit ratio.

Adapted from Bank Negara Malaysia (1984), *Money and banking in Malaysia: 1959 – 1984*, Kuala Lumpur, and Bank Negara Malaysia (1984), *Annual Report*, Bank Negara Malaysia (2004), *Annual Report*.

This structure of the economy was significantly changed in the following decade when export figure of rubber and tin was reported to be not more than one-eighth of the export in 1985. Petroleum and to a lesser extent palm oil, have emerged as an important source of foreign exchange⁴. Later diversification programs have brought about spectacular increase in export of manufacturing goods.

Over the years, there have been changes in new sources of growth for the economy. While in 1985 the major export was commodities, in 1998 it was electronics and electrical products⁵. As the Central Bank (BNM, 1999, p.152) puts it, ‘the financial system would have to play a role in developing products and solutions that can meet the changing and more sophisticated needs of new areas of economic activity’. There is already a significant growth and social improvements in the past ten years with a well-diversified economy. The current leaders have aggressive goals to further build the economy around high technology. Despite the recession in 1997 the emphases on technology developments remain strong (Barouski and Beutel, 1999; Jegathesan et.

⁴ Source: Bank Negara Malaysia, Annual report 1997.

⁵ Source: Bank Negara Malaysia, Annual report 1999.

al., 1997). The Malaysian Multimedia Corridor (MSC) is the major project that represents this economic future.

4.2 Structure of the Financial Services Industry

The financial institutions in Malaysia can be classified into two main groups: banks and non-banks financial institutions. As a single group, the commercial banks represent the largest and the most significant financial institution in the country. The other banking institutions include the National Saving Bank (NSB) and the development banks. The Islamic bank became part of the banking institution when the first Islamic bank was set up in 1983. As at the end of December 2004, the components of bank financial institutions is summarised in figure 9.

Banking Institutions (As at 31 December 2004)

CENTRAL BANK OF MALAYSIA					
Assets: RM284.9b of which; External reserves: RM298.7b					
Number of Banking System Institutions: 41					
Islamic Banks	Commercial Banks	Finance Companies	Merchant Banks	Discount Houses	Other Financial Intermediaries*
Assets: RM24.7b	Assets: RM736.8b	Assets: RM68.7b	Assets: RM42.3b	Assets: RM31.7b	Assets: RM382.5b
Deposits: RM114.9b	Deposits: RM434.1b	Deposits: RM284.6b	Deposits: RM147.8b	Deposits: RM125.9b	Deposits: RM361.3b
2 Islamic Banks	23 Commercial Banks	6 Finance Companies	10 Merchant Banks		
ATM Networks: 280	ATM Networks: 4098	ATM Networks: 273			
* Supervised by the Central Bank					

Figure 9: Structure of the banking institutions (adapted from BNM Annual Report 2004).

The non-bank financial institutions include the merchant banks; finance companies; insurance companies; provident funds; discount houses; building societies; unit trusts;

urban credit co-operative societies; rural institutions and other specialised non-bank financial institutions; Malaysia Export Credit Insurance; and the Pilgrim Management and Fund Board. Within this group (in terms of total resources) finance companies and merchant banks have expanded at a significantly higher rate than the rate of growth of the financial system as a whole (Aziz, 1984).

In terms of classification, Aziz who currently heads the Central Bank as governor did not categorise merchant banks and finance companies as part of the banking institutions when she wrote about the Malaysian financial institutions in 1984. Instead she categorised them as non-bank institutions. However, the Central Bank in its annual reports as well as other authors categorise them as part of the banking institution.

Since the scope of the current research is more concerned with the commercial and Islamic banking institutions, their development in the Malaysian banking scene will be discussed in a relatively greater detail in comparison to other financial institution.

4.2.1 Commercial Banking

As the most important of all the financial institutions, the commercial banks have been the major deposit taker and loan provider. In Malaysia today, the commercial banks are so far the only institutions authorised to offer current account, which provide chequing facilities (Cheah, 1994).

Due to rapid deposit growth and expanded activities, the domestic commercial banks by the end of 1980 accounted for 62 per cent of the total assets in the banking system. The relative importance of foreign banks has gradually decline. As at the end of 1980,

there were 147 foreign bank offices (Aziz, 1984). It has been the government policy not to encourage more foreign bank branches in Malaysia by imposing restrictions.

It was later made as requirement for foreign bank to be locally incorporated to continue their operation in the country. By the end of October 1994, all foreign banks completed the exercise of local incorporation to local subsidiaries. The purpose of this incorporation is to ensure that foreign banks are supported by permanent paid up capital in Malaysia, an attempt to liberalise the banking industry under a managed process (Public Bank, 1996a).

It is quite difficult to judge whether the number of banks serving the population is adequate or otherwise. In 1995, the *Asian Banker* issued a delivery statistics for Asian region and made general comparison with delivery statistics of the US banks. The general comparison shows most Asian countries including Malaysia seems to have inadequate branches per million population when compared to US branches per million population, which is 270 branches per million population used as a benchmark.

Country	Population (million)	No of commercial banks	No of branches for all banks	Branch per 1 million population
HONG KONG	5.9	380	1,542	261.4
JAPAN	121.6	150	15,147	121.6
SINGAPORE	3.2	132	447	139.7
SOUTH KOREA	45.1	76	6,071	134.6
THAILAND	58.6	29	5,690	97.1
TAIWAN	20.7	79	1,634	78.9
MALAYSIA	19.3	37	1,283	66.5
PHILIPPINES	65.7	33	2,743	41.8
INDONESIA	191.2	240	4,648	24.3

Table 12: Bank and population ratio in East Asia countries

Adapted from: *Asian Banker Journal*, "Is your country over-banked?" June 1995, p.18

By the end of 1997, the Central Bank in its annual report mentioned that there were thirty-five commercial banks in operation. Thirteen of them were foreign banks. In total, there were 1,671 bank branches all over the country. Figure 10 provides a list of all commercial banks as at the end of 1997 according to their tier category.

Tier 1	Tier 2
Bank Bumiputra Malaysia Berhad Bank of Commerce (M) Berhad DCB Bank Berhad Kwong Yik Bank Berhad Malayan Banking Berhad Public Bank Berhad The Pacific Bank Berhad Citibank Berhad Hongkong Bank Malaysia berhad OCBC Bank (Malaysia) Berhad Standard Chartered Bank Malaysia Berhad	Allied Bank Malaysia Berhad Arab-Malaysian Bank Berhad Ban Hin Lee Berhad BSN Commercial Bank (Malaysia Berhad) Bank Utama (Malaysia) berhad EON Bank Berhad Hock Hua Bank Berhad Hock Hua (sabah) Bank Berhad Hong Leong Bank Berhad Multi-Purpose Bank Berhad Hong Leong Bank Berhad Perwira Affin Bank Berhad Sabah Bank Berhad Southern Bank Berhad Sime Bank Berhad Wah Tat Bank Berhad ABN AMRO Bank Berhad Bangkok Bank Berhad Bank of America Malaysia Berhad Chung Khiaw Bank (Malaysia) Berhad Deutsche Bank (Malaysia) Berhad Overseas Union Bankl (Malaysia) Berhad The Chase Manhattan Bank (M) Berhad United Overseas Bank (Malaysia) Berhad

Figure 10: List of Commercial banks (end of 1997)

Source: Bank Negara Malaysia, Annual report 1997

In December 1994, The Central Bank introduced what is called the “Two-Tier Regulatory System” (TTRS) as its supervisory guidelines over the management of the banking system. With this regulatory system, the commercial banks are categorised into two groups. Those with strong financial standing are allowed to carry out certain aspects of their operations under a more liberal regulatory environment. This is in line with the Central Bank’s aim to accelerate the pace of liberalisation for strong and healthy institutions. Under the tier system, the larger banks tend to fall under tier-1 category.

In general Malaysian banks conform to the classic economies of scale model (Asian Banker, October 1995b), where the larger banks have better operating cost to asset ratio. While the smaller banks clearly suffer from higher operating costs relative to their asset size. Even though smaller banks fall under tier-2 category and generally have higher operating cost to asset ratio, there have been times when they outperformed the larger banks in terms of efficiency ratio. As Asian Banker's analysis found out that the year 1994 was a bullish year for securities and merchant bank activities of banks and thus boosted their fee-based activities strongly. This enabled some smaller banks to reflect better operating efficiency compared to some larger banks in tier-1 category, which means that the tier system may not be reflective of the banks size and efficiency at all point of time. This tier system was abolished in 1999 for reasons discussed later in the chapter.

The financial crises beginning 1997 sparked a major alteration to the banking industry. Reasons behind this crisis will be dealt with later in the chapter. At this point it is suffice to say that the crisis has triggered a major consolidation in the banking industry with extensive intervention and supervision by the Central Bank. This is part of a strict and regulated capital control by the government and has been seen from the point of view of the public as controversial plan (Netto, 1999) since the consolidation plan started off with a high degree of government intervention.

In 1998 The Deputy Finance Minister announced a possibility of eight anchor banks out of the 39 banks (Sidhu, 1998). The number was however changed to six in 1999 where more than 80 per cent of Malaysian's domestic financial institutions will disappear when they merged into 'six money supermarkets' (Netto, 1999). In the following year the government reviewed the merger plan to allow some degree of

freedom for the banks to find their merger partners making a total of 10 anchor banks eventually⁶. At the end of December 2000 the banking institutions has been consolidated into 10 anchor banks with a few banks still at the stage of due diligence before the consolidation exercise is completely over. Figure 11 provides a list of all the domestic anchor banks.

ANCHOR BANKS	CONSOLIDATED MEMBERS
Bumiputra-Commerce Bank	Bumiputra Commerce Bank Berhad Bumiputra-Finance Berhad Commerce International Merchant Bankers Berhad
RHB Bank	RHB Bank Berhad Delta Finance Berhad – <i>Interfinance Berhad</i> RHB Sakura Merchant Bankers Berhad Utama Merchant Bankers Berhad
Hong Leong Bank	Hong Leong Bank Berhad – <i>Wah Tat Bank Berhad</i> Hong Leong Finance Berhad – <i>Credit Corporation Malaysia Berhad</i>
Alliance Bank	Alliance Bank Malaysia Berhad – <i>International Bank Malaysia Berhad</i> Alliance Finance berhad – <i>Sabah Finance Berhad</i> Alliance Merchant Bank Berhad – <i>Bumiputra Merchant Bankers Berhad</i>
Southern Bank	Southern Bank Berhad – <i>Ban Hin Lee Bank Berhad</i> United Merchant Finance Berhad – <i>Cempaka Finance Berhad, Perdana Finance Berhad</i> Perdana Merchant bankers Berhad
EON Bank	EON Bank Bhd – <i>Oriental Bank Berhad</i> EON Finance Berhad – <i>City Finance Berhad, Perkasa Finance Berhad</i> Malaysian International Merchant Bankers Berhad
Maybank	Malayan Banking Berhad – <i>The Pacific bank Berhad</i> PhileoAllied Bank Berhad Mayban Finance Berhad – <i>Sime Finance Berhad</i> Kewangan Bersatu Berhad Aseambankers Malaysia Berhad
Public Bank	Public Bank Berhad Hock Hua Bank Bhd Public Finance Berhad – <i>Advance Finance Berhad</i> Public Merchant Bankers Berhad
Affin Bank	Affin Bank Berhad – <i>BSN Commercial Bank Berhad</i> Asia Commercial Finance – <i>Affin Finance Berhad, BSN Finance Berhad</i> Affin Merchant Bankers Berhad - <i>BSN Merchant Bankers Berhad</i>
Arab-Malaysian Bank	Arab-Malaysian Bank Berhad Arab-Malaysian Finance Berhad Arab-Malaysian Merchant Bank Berhad MBf Finance Berhad

Figure 11: Consolidation of Malaysian Local Financial Institution

⁶ Bank Negara Malaysia, Public Announcement (2000) – Consolidation and Rationalisation of Domestic Banking Institutions.

According to BNM Annual Report (1999) the consolidation exercise beginning 1999 allowed the banking industry to recover from the financial crises. The improvement was evidenced by performance of the banking sector which registered preliminary unaudited pre-tax of RM5.3 billion for calendar year 1999 compared with a pre-tax loss of RM5.7 billion in the previous year. At the same time, further industry consolidation through the merger process took place, resolving some of the problems associated with smaller and weaker banking institutions.

4.2.2 Islamic Banking

Banking based on Islamic principles began to emerge in a number of countries since the early 1970s (Cheah, 1994). Islamic banks are commercial banks too, however, they are different in that they are based on Islamic principles. According to the rules of the Islamic Shariah⁷ *riba* (usury or interest) is prohibited, but provides non-interest-based concept such as sharing of profits. *Riba* or usury, in Islam refers to excessive charges on the use of financial resources. What constitutes excessiveness is a relative concept, nonetheless most people would agree that usury is not desirable (Cheah, 1994). Islam gives a great emphasis on the issue of *riba*, which the religion forbids the imposition of interest on the lending of money. This prohibition is specifically and repeatedly stated in the Al-Quran. Involvement in the practice of interest imposition is *haram* (not permissible) and anyone found involved is urged to stop.

A major composition of the Malaysian ethnic group is the Malays that are predominantly Muslims. Since independence in 1957, Islam has been the official religion stated in the Malaysian Constitution. Due to the demand from the Muslims

⁷ Islamic Law

population, Islamic Bank, a new evolution of banking system was established under the Islamic Banking Act 1983. The Islamic banking system grants the Muslims population to conform to the Islamic principles in order to meet their banking and credit needs.

The first Islamic bank in Malaysia was set up in 1983 is the Bank Islam Malaysia Berhad (BIMB). For 17 years since its inception, BIMB was the only fully Islamic commercial bank in the country. It not only served the Muslim population in particular but also the entire population in general.

Just like other commercial banks, BIMB is subjected to certain regulations imposed by the Central Bank. The enactment of Islamic Banking Act 1983 stipulates that BIMB has to abide by the rules imposed on commercial banks and yet do not go against the Islamic principles. BIMB is required to maintain statutory reserves with the Central Bank according to the same ratio imposed on conventional commercial banks. The National Shariah Advisory Council for Islamic Banking and Takaful guides the operations of Islamic banking institutions whose members are appointed by the Central Bank.

Apart from BIMB, the conventional banks are also allowed to offer interest-free banking services within their premises. This is a provision under the *System Perbankan Tanpa Faedah* (SPTF), i.e. the interest-free banking scheme (IBS) introduced by the Central Bank in 1993. Through the IBS, the conventional banking institutions can offer Islamic banking products and services using their existing infrastructure. The Central Bank has acknowledged the significant growth of Islamic banking within the banking system (BNM, 2001a). Since 1983, the Central Bank has

implemented measures to expand Islamic banking on a nationwide basis in terms of the number of players including through the introduction of IBS.

It was reported by the Central Bank that in 1996, the Islamic banking sector showed encouraging progress during the previous three years with more players, higher deposits and financing base with a broader array of products. As at the end of 1996, the number of financial institutions participated in the IBS has grown to forty-nine. In 1997, a total of twenty-five commercial banks, twenty-one finance companies and three merchant banks have been given approval to offer this banking scheme. At the end of 1998, the number increased further with a total of 52 financial institutions offering the interest-free banking scheme, of which 25 were commercial banks, 22 finance companies and 5 merchant banks⁸.

Since its inception, the significance of IBS has been on the progressive upward trend. The total deposits mobilised by the BIMB and IBS increased by 2.8% to RM10.1 Billion at end of July 1998 as compared with RM9.8 billion as at the end of 1997. The recorded average annual growth over the period 1994-2000 is 64 per cent in terms of assets. At end of 2000, the total assets of IBS stood at RM33 billion (BNM, 2001a).

An important event in Islamic banking in 1999 was setting up of the second Islamic bank in Malaysia namely Bank Muamalat Malaysia Berhad (BMMB). It started its operation on October 1, 1999. This bank emerged in the midst of merger between Bank Bumiputra Malaysia Berhad (BBMB) and Bank of Commerce (M) Berhad, which marked the beginning of consolidation exercise of the banking industry in 1999. BMMB operates on combined assets and liabilities brought over from the then Islamic Banking Windows (counters) of Bank Bumiputra Malaysia Berhad, Bank of

⁸ Economic Report 1998/99, Chapter 8: Developments in the Financial System

Commerce (M) Berhad and BBMB Finance (Bank Muamalat, 2000; BNM, 1999). BBMB was given 40 branches of BBMB and BBMB Finance in various locations throughout the country (BNM, 1999). As a second Islamic bank, BBMB is expected to play a key role towards fostering an active and progressive Islamic banking system.

The present Governor of the Central Bank quoted that the assets of the Malaysian Islamic banking system have reached almost RM 50 billion, which indicates the effectiveness of the system (Lee, 2001). The Governor was further quoted to claim that Malaysia was the first country to implement dual banking system, with the Islamic banking system complementing the conventional system. The country aims to raise banking integrity and Islamic finance in the eyes of the world through effective and efficient management of Islamic financial institutions. The most recent plans (BNM Annual Report, 2004) include increasing the number of Islamic banks to enhance competition as well as building stronger management.

4.2.3 Merchant Banks, Finance Companies and Other Financial Institutions

Apart from commercial banking which is the most important banking institutions within most economies, the merchant banks and the finance companies are the two other major banking institutions. Compared to commercial banks, merchant banks are like 'wholesalers' while commercial banks are the 'retailers' in banking, whereas the finance companies are the next most important deposit-taking institutions after commercial banks (Cheah, 1994).

According to Cheng (1986), the merchant banks were established in Malaysia to provide specialised financial services that the commercial banks were not adequately

equipped to perform. The services they offer include underwriting, loan syndication, portfolio management, management advice and restructuring of ownership. Cheah (1994) argued that the government desire to develop a more efficient private sector that require more comprehensive financial services to the private companies. Commercial banks are not keen and not capable of offering these services, hence the establishments of merchant banks to supplement commercial banks to offer these services.

Cheng (1986) articulated that merchant banks were originally incorporated under the Companies Act, 1965. With effect from 1975 they operates under a set of operational guidelines prescribed by the Central Bank, which among others require them to maintain a statutory reserve of 1.5 per cent and they were also allowed to accept deposit up to certain amount determined by the Central Bank from certain financial institutions. From January 1979, they were brought under the ambit of the banking Act, 1973 where they were required to comply with certain reserve requirement and liquidity ratio. Finally in March 1979, they were allowed to take fixed deposits from corporations.

In Malaysia, the first merchant bank was established in 1970 and the number had since increase steadily with one new merchant bank emerging every year until 1976. However, no new licence has been issued since 1976 (Cheah, 1994).

Year	Number of new merchant banks which commenced business
1970	1
1971	1
1972	1
1973	1
1974	1
1975	1
1976	1

Table 13: New merchant banks 1970-1976

Adapted from Skully (1983)

Generally, merchant banks in Malaysia represent partnership between local commercial banks and foreign merchant banks. According to Skully (1983) there were about 30 financial institution worldwide involved in the merchant banking sector in the 1970s. While based on a study by Cheng (1986), there were 12 merchant banks with about 15 branches in Malaysia at the end of 1984. The total deposits of the merchant banks had increased by forty times from approximately RM100 million in 1973 to RM4 billion in 1984, of which one-third was placed by corporations.

At the end of 1998, the number of merchant banks remained at 12 but the number of branches had increased to 24. Total assets of the merchant banks declined by 14.4% from the end of 1997 to RM32.9 billion at the end of July 1998 compared with an increase of 30% during the same period in 1997⁹. This was due to the slowing down of intermediation activities during the first seven months of 1998 because of the financial crisis.

Finance companies are the second largest group of deposit taking financial institutions in Malaysia after the commercial bank. As of 1997, there were 39 licensed finance companies with 1,144 offices registered under the Finance Companies Act 1969.

Lending activities in the form of hire purchase activity is the primary domain of the finance company industry. In 1997, the Central Bank reported that finance companies have concentrated in the financing of motor vehicle. Even though there was an attempt by the industry to diversify into industrial machinery and equipment, their proportion is still small. Housing loans and leasing finance are also among major business of the finance companies.

⁹Source: Economic Report 1998/99, *Chapter 8: Developments in the Financial System*

Similar to the case of commercial banks, the Central Bank had implemented the two-tier regulatory system in its supervision over the operations of the finance companies.

In expectation of worsening crises after 1997, the Central Bank had issued statement on 2nd January 1998, urging 39 finance companies in the country to begin merger talks (Hielbert, 1998). Many of the finance companies are small and by merging themselves with the bigger players, they were expected to endure the tough crisis.

Besides merchant banks and finance companies there are a number of other financial institutions in Malaysia. These institutions include discount houses, non-bank financial intermediaries, saving institutions, provident and pension funds, pilgrimage funds, insurance companies, and financial markets.

4.3 Supervision and Regulation of the Financial Services Industry

The money creation process has profound effects on the economic health of a nation (Rose and Fraser, 1988). In pursuing their goals, financial institutions are not free to behave as they choose. Acquisitions of loans, investments, and deposits; the management of capital; the territorial expansion of the institution; and sometimes the prices charged and interest rate paid are closely regulated by government (Rose & Fraser, 1988). They face an array of laws and regulations enforced by the government to guarantee that financial institutions protect the public interest in their management decisions and operations.

In the Malaysian financial system, supervisory role is being carried out by the Central Bank (Bank Negara Malaysia), while the Banking and Financial Institution Act (BAFIA) plays a regulatory role.

As a highlight to the importance of a sound supervision and regulation toward the operations of financial institutions, the Bumiputra Finance (BMF) scandal was perhaps the best example to quote in the history Malaysian financial services industry. It also highlighted how the government was obviously attracted to interfere in the affairs of the bank.

The year 1983 marked the heavy loan losses suffered by BMF, a Hong Kong licensed deposit-taking company and subsidiary of the largest domestic bank in Malaysia – Bank Bumiputra Malaysia Berhad (BBMB). BMF, together with many other international financial institutions, was heavily exposed to the now defunct Carrian group of companies, whose rapid growth was fuelled by the volatile, speculative and often euphoric property and stock market in Hong Kong, and whose demise was precipitated by the Anglo-Chinese agreement for the return of the colony to China (Tan, 1991). An enquiry into the scandal revealed that BMF's non-performing loan amounted \$2.4 billion, and there were *prima facie* cases of irregularities against several of BMF's former senior executives (BNM, 1984a).

The losses caused by its subsidiary (BMF) in Hong Kong's operations exceeded the capital BBMB available capital. In order to enable BBMB to absorb this loss, the Government, as principal shareholder restructured the bank's ownership by calling in PETRONAS, the national oil corporation to acquire 90% stake of the bank. BBMB wrote off \$1 billion of the problem loans and sold the balance of such loans to PETRONAS for \$1.25 billion (BNM, 1984a).

According to Tan, (1991) the public outrage against BMF scandal was still widespread when news in July 1985 of the failure of a large bank in Hong Kong sparked off a wave of unrelated and unfounded rumours against a major domestic

bank, which led to a run on several of its branches. Prompt action by the bank concerned together with the Central Bank's assurance that the bank was sound, quickly defused the run (BNM, 1985).

4.3.1 Central Banking System

During the time of British colony, the Currency Board governed the monetary activity of the country (Lee, 1986). The Currency Board assumed the government role in issuing currency as a principle medium of exchange and did not play much positive role in economic development. As a result, according to Cheng (1986), the World Bank Mission in 1955 recommended the establishment of a Central Bank.

Prior to 1967, the Currency Board was the sole issuer for the Malaysian, Singapore and Brunei regions, where the currency was defined in terms of gold - M\$1 = 0.290299 grammes of fine gold (Aziz, 1984). When the Currency Board ceased its operation in June 1967, the Central Bank took over the responsibility of issuing the currency separate from Singapore and Brunei. There was a period under agreement when the Malaysian currency was made interchangeable at par with Singapore and Brunei currencies (Aziz, 1984). According to Aziz, in 1973 the Malaysian dollar value was determined in terms of US dollar, which later allowed it to float freely while the interchangeability agreement between Malaysian and Singapore dollar was also terminated. There were large fluctuations in Malaysian currency due to conditions in the USA. The Central Bank later decided that it was more appropriate to determine the value in terms of a group of countries that were significant trading partners with Malaysia. Since the Central Bank's intervention the value of Malaysian

currency was reflected by weighted average of a group of currencies rather than changes in US dollar alone.

The Malaysian currency value determination began to operate under managed float. This method of determining the Malaysian currency went on for many years until the Asian financial crisis started. Malaysia adopted to a pegged exchange rate arrangement, by pegging the ringgit (RM) exchange rate to the US dollar at a level of RM3.8 = US\$1 beginning September 2 1998 (BNM, 1999). This method was adopted to reduce the volatility of the ringgit exchange rate and to promote a stable environment conducive to economic recovery. The pegged exchange rate will be expected to continue since its current pegged rate is close to its market rate as reiterated by the present Central Bank Governor. Such reiteration denies recent rumours that the ringgit might be re-pegged with a lower rate against the US dollar (*Utusan Malaysia Online*, May 21 2001).

As mentioned by Cheng (1986) the World Bank Mission recommendation in 1955 provides that the Central Bank would be the currency issuing authority as well as having responsibility to promote and develop financial services that is capable of providing positive role to economic development. Cheah (1994) reiterated that the primary objective of the Central Bank could be summarised as follows:

- Ensuring the financial stability of the country
- Improving the country's financial structure so as to facilitate economic activities in the nation.

The Central Bank of Malaysia was established under the Central Bank Ordinance 1958. The primary role was to stipulate the licensing of banks, duties of licensed

banks and the powers of the Central Banks. This enables the Central Bank to enforce regulations, examinations and control over the commercial banks.

In Malaysia, the Central Bank acts as banker, budget agent and financial adviser to the Federal government (Cheah, 1994). It carries out the role of managing government accounts, obtaining loans for the government as well as maintaining the government's public debts. It is also responsible of issuing government securities. Besides supervising and regulating the financial institutions in general, the Central Bank also offers a number of facilities to other banks (Cheah, 1994). In this aspect, the Central Bank is responsible for:

- The licensing of banks and other banking institutions.
- Acting as banker to all commercial banks where all banks must have accounts with the Central Banks for the purpose of cheque clearing.
- Being the lender of last resort in case all depositors demand to withdraw at the same time, thus giving confidence to the public regarding the banking system.
- Inspection of banks to ensure sound banking operations in the interest of and for the benefit of the public.
- Distribution of currency by being sole issuer and distributor of paper money and coins to meet the demand of banks.

BNM (1989) described the structure and organization of the Central Bank. Its board of Directors formulates the Central Bank policies. A Governor who is the chief officer heads the Central Bank. There are five departments headed by two deputy Governors. An adviser (known as assistant Governor) heads each of the department that undertakes the task of supervising several units. The departments include economy department, operation and investment department, organization development department, supervision department, and control department. These departments

describe the core functions of the Central Bank. The structure of the Central Bank is continuously being modified by the inclusion of new units as its responsibilities increases due to creation of new types of financial institutions (Cheah, 1994).

An important aspect of the Central Bank that is significant to this study is the supervisory role particularly on IT in banks. A study on supervisory impact on technology conducted by the SEACEN¹⁰ Centre (Barouski and Beutel, 1999) revealed the Central Bank's role in supervising technology deployment among financial institutions in Malaysia. The Information Systems Supervision Unit of the Malaysian Central Bank is carrying out this role. This unit is responsible in ensuring that the IT environment as a whole contributes to a safe and sound financial system. It also review various portfolios of IT risks at the institution level, which include management, computer operations, computer security, system development and programming, telecommunication and electronic fund transfer.

An interview with one of the senior executive in the Information Systems Supervision Unit, explained the areas of concern regarding a financial institution's information system (IS) risks. These areas of concern will be evaluated and audited by a team of examiners from this unit. The following table summarises the risk areas to be evaluated.

IS Risks	Details
Strategic	Risk to financial business arising from adverse business decisions or improper implementation of the decisions on IT that will result in loss of competitive advantage, further significant incurrence of capital outlay on IT and incapable of the system in meeting organisational need.
Compliance	Risk to financial business arising from non-compliance with or violations of laws, statutory requirement or ethical standards through the use of information technology (IT) that will result in financial loss and legal/regulatory problems.

¹⁰ South East Asian Central Bankers group – A supranational organization comprised of the following central bank members: Indonesia, Malaysia, Myanmar, Nepal, the Philippines, Singapore, South Korea, Sri Lanka, Taiwan and Thailand.

Operational	Risk to financial business arising from system failure caused by system breakdown, system disruption and interruption will impede business operational function.
System Security	Risk to financial business arising from the lack or the absence of system security, either by the computer hardware or software, or weak implementation of security measures that will result in the system being compromised, fraud, malicious damage to data and program or error.
System Support	Risk to the financial business arising from or the absence of good system support, either by the computer hardware or software vendor, service provider and outsourcer or the system itself that will result in the failure or interruption to the operations of the information system.
Business Resumption	Risk to the financial business arising from non-recoverability and continuity of system that would result in financial losses.
Reputation	Risk to the financial business arising from negative public opinion through the use of the IS that will result in financial and non-financial losses, such as loss of public confidence.

Table 14: Adopted from: BNM's explanatory notes on information system (IS) risks and examiners' ratings.

4.3.2 Banking and Financial Institution Act (BAFIA)

Prior to 1959, the operations of the commercial banks in Malaysia came within the ambit of the Companies Ordinance 1948 (*Association of Bankers Malaysia, 2000*). The Central Bank of Malaysia Ordinance 1958 led to the establishment of the Central Bank in 1959. The commercials came under the Central Bank's supervision enshrined by the Banking Ordinance 1958. Banking Act, 1973, later replaced this Ordinance. The Central Bank regulatory powers are also enshrined in the Islamic Banking Act 1983 and Finance Companies Act 1969 (Tan, 1991). In October 1989, the Banking and Financial Act 1989 (BAFIA) combined the Banking Act, 1973 and Finance Companies Act 1969 under a single legislation (*Association of Bankers Malaysia, 2000*). With the introduction of BAFIA (the Act), all financial institutions supervised by the Central Bank including the discount houses and money and foreign exchange brokers now come under one common legal supervisory framework.

BAFIA 1989 (Act 372), enacted by the Duli Yang Maha Mulia Seri Paduka Baginda

Yang di-Pertuan Agong (Head of the Royal Council of Rulers) is an Act:

“to provide new laws for the licensing and regulation of institutions carrying on banking, finance company, merchant banking, discount house and money-broking businesses, for the regulation of institutions carrying on certain other financial businesses, and for matters incidental thereto or connected therewith” (Legal Research Board, 2000).

The Act is arranged into several sections from Part I to Part XVI as listed in the following table.

PARTS	CONTENTS
I	<ul style="list-style-type: none"> • Preliminary
II	<ul style="list-style-type: none"> • Licensing of banking, finance company, merchant banking, discount houses and money-broking businesses.
III	<ul style="list-style-type: none"> • Scheduled businesses and representative offices.
IV	<ul style="list-style-type: none"> • Restrictions relating to acceptance and solicitation of, advertisement for, and inducement to make, deposits.
V	<ul style="list-style-type: none"> • Subsidiaries and offices of licensed institutions.
VI	<ul style="list-style-type: none"> • Restrictions on dealings of licensed institutions.
VII	<ul style="list-style-type: none"> • Financial requirements and duties of licensed institutions.
VIII	<ul style="list-style-type: none"> • Ownership, control and management of licensed institutions.
IX	<ul style="list-style-type: none"> • Restrictions of business of licensed institutions.
X	<ul style="list-style-type: none"> • Powers of supervision and control over licensed institutions.
XI	<ul style="list-style-type: none"> • Investigation, search and seizure.
XII	<ul style="list-style-type: none"> • Application of Parts X and XI to non-scheduled institutions engaged in provision of finance.
XIII	<ul style="list-style-type: none"> • Information and secrecy.
XIV	<ul style="list-style-type: none"> • Offences.
XV	<ul style="list-style-type: none"> • General Provisions
XVI	<ul style="list-style-type: none"> • Amendment, repeal and transitional provisions.

Table 15: Sections of the Banking and Financial Institutions Act 1989

To enable the depositors and the financial institutions to understand their rights and responsibilities based on the Banking and Financial Institutions Act 1989, the Central Bank issues guideline documents to provide further explanation about the Act. Part XV of the BAFIA 1989 is the General Provisions (GP), which provides explanation to certain sections or application of related acts such as Companies Act 1965 and Exchange Control Act 1953 mentioned in the Act (Legal Research Board, 2000). For

example BNM/GP11 document is an explanatory Guideline on Consumer Protection on Electronic Fund Transfer. These Guidelines are issued pursuant to sections 119 and 126 of the Banking and Financial Institution Act 1989. This document contains:

- Part 1: Preliminary – Scope and Interpretation, and Definitions
- Part 2: Scope of Electronic Fund Transfer
- Part 3: Terms and Conditions for Electronic Fund Transfer
- Part 4: Telegraphic Transfer
- Part 5: Erroneous and Unauthorised Electronic Fund Transfer
- Part 6: Duties of Financial Institutions
- Part 7: Investigation and Resolution Procedure
- Part 8: Miscellaneous

The presence of such documents would assist the financial institutions as well as the public to have a clear understanding of the terms and conditions of outlined in the General Provision allowing them to come to a common interpretation.

One of the most current issues that have received attention from the Central Bank as well as legal experts is the legal aspects related to banking and information and communication technology (ICT) developments. There is an increasing recognition of the enormous potential for these developments to transform the financial industry in a manner that will bring tremendous gains to businesses and consumers. The Central Bank's attention was being highlighted by the Governor in a keynote address to the delegates of the Third Annual Banking and Financial Law School in Kuala Lumpur. The Internet being one of greatest ICT developments of the digital era provides an unregulated, open channel and information repository that is growing at an exponential rate. In the inter-connected world of Internet, there is prevalent risk of mistakes, fraud or incidences of system failures, and most importantly the risk of various forms of violation to information security, which have serious repercussions to the financial system. The Governor further emphasized:

“In the digital era, the science of hacking, filtering, intercepting, spying, on-line copying, transmission corruption and transmission re-routing are elements of a different type of forensic law in cyber-crime management. The study of encoding, encrypting or enciphering data is perhaps not something most lawyers have engaged in so far, but you may find yourselves involved in this in the near future” (BNM, 2001b).

As financial institutions continue to invest more in ICT and increase their electronic banking and electronic commerce services, there is greater demand for a regulatory framework that promotes innovation, while reinforcing the prudential limits to ensure that elements of instability do not emanate from such innovations. The initiatives undertaken by the Malaysian Government to establish the Multimedia Super Corridor (MSC) include new legislation as one of its major component of the project. The Digital Signature Act, Computer Crimes Act and Communication and Multimedia Act are all new legislations that provide the legal framework for electronic transactions in Malaysia.

4.4 Recent Developments on the Management of the Financial System

According to Aziz (1984), major developments on the management of the financial system in Malaysia are closely linked with the economic performance of the country. Deliberate efforts have been made by monetary authorities to develop the financial infrastructure. Since 1970, these efforts have been particularly intensified not only to accommodate increased and more diversified financial needs but also to promote an efficient monetary policy. This is to ensure that the country can withstand the economic stress during the time of crises.

Since its independence in 1957, Malaysia has encountered several economic crises over the years. Major crises in the past include commodity crises (between 1956 – 1972), the first oil crises of 1973-74, the second commodity/oil crises 1980-81, and the electronic/third commodity crises of 1985-86 (Okposin and Cheng, 2000). The most recent economic crisis is the financial and currency crises, which started in 1997.

The financial crisis, also known as the ‘Asian Crisis’ hit Malaysia in July 1997 when the equity markets and currency depreciated (Barouski and Beutel, 1999 pp. 68). The general economy suffered from slow down with unemployment figures and non-performing loans increased. However, the crisis was not as appalling as some of the countries in the region. In 1998, the IMF predicted that the economy would recover with positive growth in the following year (*The Star*, Oct. 29 1998). This is due to the diversified economy and stronger supervisory oversight of the banking system (*The Asian Bankers Journal*, Issue 03). Moreover, it seems that the aggressive efforts by the government to strengthen banking system would contribute in sustaining the competitiveness of the economy.

The following sections discuss some of the major reforms introduced into the financial system since 1970 and measures undertaken by the monetary authorities to strengthen the financial system in the light of globalisation of the world economy.

4.4.1 Reform of the Financial System

The 1970s and the 1980s have witnessed the Central Bank expanding the financial structure and instituting reforms to induce a more efficient financial system. Among the objectives of these reforms are (Aziz, 1984):

- To develop a more efficient domestic financial and capital markets.
- To improve links between Malaysian financial system and international capital markets.
- To provide a system conducive to an effective implementation of monetary policy.

According to Aziz (1984), one of the major reforms during the 1970s was the liberalisation of interest rate. The determination of interest rate prior to October 1978 was via consultation between the Central Bank and the Association of Bankers in Malaysia. This policy was liberated with effect from October 1978 allowing banks to determine their own deposit and lending rates. The Central Bank, however, continues to set the maximum lending rates to the priority sector.

In order to meet the demand for more diversified financial instruments, the Central Bank introduced in May 1979, negotiable certificates of deposits (NCDs) and bankers' acceptance (BAs). These are attractive instruments for the corporate sector in view of their liquidity and high rate of return (BNM, 1984b).

In 1981, the Central Bank introduced measures in the form of fiscal incentives to induce stability of deposits. Tax exemptions were given for interest earned on all saving deposits at the National Saving Bank (NSB), also for all fixed deposits with commercial banks and finance companies with maturities exceeding 12 months.

According to Aziz (1984) the Central Banks also prescribed a number of guidelines for lending by commercial banks and finance companies to ensure that priority sectors have access to funds at reasonable rate of interest. This measure aims at allocating credit to agricultural food production, manufacturing, small enterprises, individuals for housing, and the *bumiputra* (indigenous) community. During these two decades (1970s-1980s), the focus of the financial system reforms were to increase efficiency of the financial institutions as well as to drive them to play active roles in economic development.

She also added that during the last decade the Central Bank has demonstrated a greater role in strengthening the financial systems by introducing even greater scale reform policies. These policies seen as more proactive were aimed at strengthening the financial system at an accelerated pace in the light of changes in the world economic environment which among others include increased competition and globalisation.

The progression of Malaysian economy was evident at the beginning of last decade. Bank Negara began a process of deregulation to encourage local banks to play greater role in the development of the economy. Foreign banks were required to have their operations incorporated locally. This incorporation exercise was completed in October 1994. This resulted in the banking operation of sixteen foreign banks being sold and transferred to their wholly owned locally incorporated subsidiaries.

Not all measures undertaken by the Central Bank during the 1990s were effective. The Tier system was one such measure. Two-Tier regulatory system (TTRS) was introduced for commercial banks (October 1994), merchant banks (January 1996) and finance companies (April 1996). Under TTRS, the financial institutions were

categorised into 2 groups depending on a minimum requirement for their shareholders' fund and a stringent rating framework (Public Bank, 1996b). This rating framework evaluates their capital adequacy, asset quality, management efficiency, earning performance, and liquidation position. Tier-1 is a category of well capitalised and managed institutions that are allowed to undertake a wider array of activities and conduct their operations under a more liberal regulatory requirement, leaving the rest of the institutions not meeting the criteria as Tier-2 category.

However, the emphasis on absolute capital size as one of the pre-requisite for the Tier-1 status, led banking institutions to embark on over-zealous capital expansion program funded by shareholders' borrowings (BNM, 1999, p.134). As a result many commercial banks borrowed to increase their capital base to qualify for Tier-1 category (Okposin & Cheng, 2000, appendix 9). Significant pressures were exerted on the management to increase their loan portfolio in order to generate the requisite return to meet debt-servicing obligations of their shareholders. They had to lend these borrowed funds, which obviously affected the asset quality, particularly during the crisis. Realising this unintended effect, the Central Bank abolish the TTRS on April 10, 1999. As a result, incentives previously given to Tier-1 institutions were now given to all institutions.

The rapid growth of lending prior to the crisis was partly due to the introduction of the TTRS for commercial banks particularly for property and shares. Many banks exercised poor credit decisions, which contributed a wide range of non-performing loans (NPLs) during the crisis. Many commercial banks and big companies borrowed heavily from abroad. According to Jomo (1998) commercial banks' net foreign liabilities increased from RM10.3 billion at the end of 1995 to RM25.2 billion in June

1997 whereas their net external reserves position declined from -RM5.3 billion to -RM17.7 over the same period. He said that:

“Increased political interference, lack of experience due to high staff turnover and the reduced scope for regulations in the face of reorganisations, devolution and financial liberalisation, both globally and domestically, has all reduced the efficacy of the Central Bank in ensuring sound national monetary management” (Jomo, 1998, p.183).

He contended that although the Banking and Financial Institutions Act (BAFIA) of 1989 provided a good legal framework for effective regulations by the Central Bank, there has been a growing perception of less effective prudential regulation by the Central Bank.

Meanwhile the financial crisis associated to excessive NPLs within the financial system demands policy measures from the monetary authorities. The government announced a comprehensive National Economic Recovery Plan (NERP) through the National Economic Action Council (NEAC) in July 1998. As part of the NERP, the Central Bank established Danaharta Nasional Berhad in June 1998 and Danamodal Nasional Berhad in August 1998. Danaharta is the national asset management company set up to acquire and manage NPLs of the banking institutions (Okposin & Cheng, 2000) while Danamodal is a special purpose vehicle to recapitalise, revitalise and restructure the banking sector (BNM, 1999; Danamodal Nasional Berhad). As at 31 December 2004, Danaharta acquired and managed NPLs amounting to RM52.4 billion from the financial system of which RM30.8 billion have been received i.e. 57% recovery rate; and lowest NPL ratio since Asian financial crises in 1998.

In case of recapitalisation, the Central Bank injected RM3.0 billion as a seed capital into Danamodal and raised RM7.7 billion through issuance of zero-coupon bonds in October 1998. By end of June 1999, the Malaysian approach in banking

recapitalisation had gained recognition for its effectiveness. The success of the recapitalisation process has contributed to the speedy recovery of the Malaysian economy.

4.4.2 The Financial Sector in a Globalised Economy

The growing competition and pressures from the external front to liberalise the banking sector has shown that the domestic banking institutions can no longer remain protected. The financial liberalisation envisaged under the General Agreement on Trade in Services (GATS) framework to gradually remove barriers to entry and access among the ASEAN countries and the world at large (*Association of Bankers Malaysia*, 2000).

The pressure to liberalise is arguably is the result of globalisation where globalisation of finance has been central to the globalisation trend in 1990s. Economic developments in the developed countries resulted in banks and other financial institutions as well as institutional investors to be awash with liquidity (Jomo, 1998). These institutions are in search of investment avenues that yield quick returns. This certainly gives developing countries an unprecedented access to international finance in the wake of their financial liberalization, and as a result most developing countries liberalised their financial markets in the early 1990s (Jomo, 1998).

While Malaysia is increasingly opening its economy to the world through financial liberalisation, it exposed the financial institutions to a more competitive environment. To strengthen the financial institutions in the face of global competition, it is necessary for the Malaysian financial institution to embark on a rationalisation

exercise by consolidating the financial institutions into bigger but fewer numbers of institutions. In February 2000, the Central Bank announced the consolidation exercise of the domestic banking institutions into 10 banking groups. This consolidation exercise represents an important step to transform the financial sector towards meeting the new challenges.

Apart from restructuring the domestic financial institutions into a stronger and bigger banking groups, the Central Bank also undertook protective measures through proper sequencing in liberalising the financial markets to ensure that the associated risks are maintained at a prudent and manageable level (BNM, 1999). Measures such as temporary restriction of new entrant and expansion of foreign banks provide environment which is conducive for the domestic banks to rationalise and strengthen themselves prior to being exposed to an open global competition. With the wide use of the Internet in e-commerce, banking via the Internet will be another venue for the banks to deliver and cross-sell their financial products and services. Allowing the domestic banks to introduce Internet banking ahead of the foreign banks also put them in better position to establish a critical customer base before competing at par with the foreign banks. Moreover recent study has shown how the role of government and national environment can impact the consumer adoption of Internet banking (Brown et. al., 2003).

To further facilitate the development of a more competitive environment, the Central Bank released the Financial Sector Masterplan (FSMP) in early 2001. The masterplan outlines the medium and long term strategies for the development of the financial sector. Under the first phase of the FSMP, the focus would be to enhance the capacity and capabilities of domestic banking institutions before proceeding to the second

phase of the development towards creating a more competitive environment (BNM, 2001c).

4.5 Modern Banking

In its recent edition of the *ABM Banker Directory 2000*, the Association of Bankers Malaysia has highlighted the importance of technology and its role in the modernisation process of the banking services in Malaysia. The electronic payment mechanisms that are currently being used by the banking institutions include credit cards, debit cards, store value cards, ATMs, telebanking, desk-top banking and Internet banking.

The directory also reports on the use of imaging technology for cheque clearing in the National Automated Check Clearing System (SPICK) which was introduced in November 1997. The system could speed up the clearing process of outstation cheques. The directory also announces the launch of RENTAS, a real time gross settlement system for high volume interbank fund transfer and securities transactions. The Interbank Giro Payment (IBG) system was implemented to facilitate electronic interbank payments for third party transactions of less than RM50,000 with the initial participation of 5 banks. The industry also saw the launch of the electronic share application (ESA) where initial public offerings could be done electronically.

The above describes the state of modernisation of Malaysian banking services. However not all banks in Malaysia have implemented all of the banking services described above. Some banks take a leading approach in introducing modern banking services; others take either follow the leader approach or wait and see approach. In

Malaysia the Central Bank still plays an important role in pushing the domestic banks to adopt the modern banking services while at the same time it took initiatives by developing, maintaining and providing modern banking facilities such as SPICK and RENTAS systems.

4.5.1 Factors Affecting the Use of Technology

Barouski and Beutel (1999) in their SEACEN study on the supervisory impact of technology have identified five factors affecting technological innovation in the banking industry. These factors include economic factors, political environment, demographic factors, communication infrastructure, and payment system.

Malaysia economy has enjoyed a consistent high rate of growth since independence. Focus on commodities has shifted into a wider range of economic activities including manufacturing, commerce and technology based activities. As disposable income increase, demand for technology-based consumer product increased. For example PC sales in Malaysia was estimated at US\$0.5 billion in 1994 and would increase close to US\$2.0 billion in 2000 (Hitachi Research Institute, 1997).

According to Barouski & Beutel (1999), politically Malaysia is an active participant in the World trade Organisation (WTO) and Asia-Pacific Economic Cooperation (APEC) and has worked to reduce tariff levels over time. The government is active in de-nationalising the economy but maintains equity stakes in several industries. The government plays active role in promoting technological development. The establishment of MSC has further developed the e-commerce legislative front including the Digital Signature Act 1997 and the Computer Crime Act 1997.

On the other hand, demographically the population is almost split between urban and rural with 55 per cent of the population lives in urban settlements. Literacy rate is as high as 83.5 per cent. There is a shortage of labour in professional sectors. Higher government spending in education would continue to increase the supply of skilled labour in the market.

According to Kanagalingam (2000), telecommunication infrastructure in Malaysia is generally modest. In 1996 telephone penetration per 100 people were about 17 and 74 mobile phones for every 1000 people. Competition in telecommunication industry is limited with majority of infrastructure is provided by government-owned companies.

Apart from the systems mentioned earlier, Kanagalingam (2000) added that the Central Bank was in the process of implementing the Real Time Gross Settlement (RTGS), which can reduce risks associated to large value payments. Currently there are 2 consortiums of ATM networks with SET Payment Gateway being implemented to support payments for Internet business transactions. The national electronic money and payment multipurpose cards are also being developed.

4.5.2 Computerization and Electronic Banking in Malaysia

Electronic banking in Malaysia is relatively a recent phenomenon (Ong & Cheng, 2003). Until late 1970s, banks in Malaysia process their transactions primarily using manual or semi-manual operations. Bank customers commonly hold a passbook that kept their transaction records processed by the banks. Some of the early applications of technology include the use of Postronic (Johnson, 1994). Postronic is an electro-

mechanical accounting machine utilised in the processing of book-keeping records of current account holders.

The U.S spearheaded the automation in the banking industry throughout the 1960s and the 1970s (Essinger, 1999), especially in the deployment of computer technology. This development has started the banking industry in Malaysia to see the potential use of computers that can tremendously reduced the workload of manual transaction processing.

According to Johnson (1994), this automation process not only could cut down the processing time but also increase the accuracy of the voluminous transaction records to be processed. During that decade, the increasing volume of banking transactions especially in the current account and saving accounts department in Malaysian bank necessitated the introduction of computers to process those transactions. Computer technology was greatly demanded to process the ever-increasing volume of transactions particularly as a result of increasing number of bank branches. Since then, the Malaysian banks have started to deploy computer systems to process their customer transactions.

Many banks in Malaysia completed implementing their computerization exercise in the 1980s. It can be strongly suggested that, computer technology had to a large extent already been implemented in Malaysian banks to about their fullest extent by the mid 80s. At least as a tool to automate what would have otherwise been manual processes. The next development after the computerization era was the realisation by the bankers about the greater potential use of computers to enhance customer service.

Johnson (1994) also argued that the use of Automated Teller Machine (ATM) was part of bankers' realisation of the potential use of computerization to enhance

customer service. An ATM is a convenient self-service computer assisted machine that provides certain predetermined banking services during and after banking hours and was first deployed by the Malaysian banking industry in 1981. However, the number of ATM began to grow rapidly only in the late 1980s. This strongly implies that the modern concept did not catch on during the early 1980s despite its first installation in 1981. Table 16 summarizes the growth of ATM Machines in Malaysia.

Year	Number of ATMs	% of Growth
1985	278	22.0
1986	330	18.8
1987	609	84.5
1988	868	42.5
1989	1027	18.3
1990	1202	17.1
1991	1335	11.1
1992	1439	7.8
1993	1558	8.3
1994	1975	26.8
1995	2230	12.9
1996	2326	4.3
1997	2528	8.7
1998	2647	4.7
1999	3317	25.3
2000	3694	11.4
2001	4169	12.9
2002	4213	1.1
2003	4396	4.3
2004	4651	5.1

Table 16: The growth of ATM Machines in Malaysia.

(Source: Hitachi Research Institute (1997); BNM Annual Report (1986-2004).

In 1994, the financial institutions have installed nearly two thousands ATMs serving roughly three million cardholders in the country (Johnson, 1994). In fact an optimistic forecast had estimated that at the end of 1996, the total number of ATMs installed by the banking industry would be approximately 3500 units if the numbers increase about 1000 units a year¹¹. However, based on the actual number the total number of ATM installed by the end of 1996 was 2326¹². By the end of 2004, it was reported that the commercial banks alone have installed a total number of 4651 units of ATM

¹¹ Source: Hitachi Research Institute (1997)

¹² Source: BNM Annual Report (1986-2001) refers to commercial banks only, also excludes Islamic banks..

throughout Malaysia (BNM, 2004). The majority of ATMs concentrated in Klang Valley and the major towns.

4.5.3 Shared ATM Network

The early stages of ATM revolution showed that the banking institutions in Malaysia tend to adopt a proprietary network system. However, due to the enormous capital outlay, the banking institutions had to go along with the concept of shared ATM network for cost effectiveness and productivity (Johnson, 1994). This concept involves the grouping of banking institutions to link up their proprietary ATM networks through a central computer, thus the shared ATM network was implemented. With this shared network, the customers have a wider choice of ATMs available since they are able to use the ATMs of the shared member banks.

In 1994, there are three shared ATM networks in Malaysia namely:

- **ABC** – Automated Banking Consortium
- **MEPS** – Malaysian Electronic Payment System Sdn. Bhd. This is a payment consortium owned by banking institutions in Malaysia.
- **GREAT** – Group Electronic Automated Transfer

According to the *Asian Banker Journal* (October 1995), despite the availability of three shared ATM networks, the nature and range of banking services were still perceived to be rather limited. The benefit of having more than one pool of ATM network is perceived as not creating healthy competition. The growing trend towards a single shared ATM network for domestic debit card access has implications for the relationship between banks and their customers. In 1995, the Central Bank had requested the three networks to be merged. In 1996, two of the networks – MEPS and GREAT – were interconnected. In the same year, MEPS and ABC were merged,

leaving only two ATM networks to be used i.e. MEPS and GREAT, which were able to interconnect¹³.

One of the problems associated with the use of ATM technology in Malaysia is the problem with lack of security. All Malaysian banks provide their customer with magnetic strip ATM card with the exception Bank Islam that uses embedded chip on its smart card. Early 2000 marked the fiasco caused by the cloning of ATM cards causing excessive amount of unauthorised cash withdrawal from many ATM machines. It was reported that in April 2000, unauthorised withdrawal amounting to RM 500,000 had caused outrage among 323 customers of Ban Hin Lee Bank in Penang (Chow, 2000). More cases of unauthorised withdrawals were reported a week after in Selangor (*Berita Harian*, April 11, 2000).

In the light of this issue, The Central Bank in its annual report (BNM, 2000), reiterated its advice to all banks to be vigilant and to increase their security needs, including the request for banks to consider the use of smart card technology which offers increased security feature. This includes advising local banks to use embedded chip ATM and EMV (association of EuroPay, MasterCard, and Visa) compliant credit cards.

In the third quarter of 2003, the Malaysian banks were required to replace the magnetic strip cards provided to their customers with embedded chip cards known as *Bankcard* issued by MEPS (Malaysian Electronic Payment System) which is the national provider of payment systems, a consortium owned by local financial institutions. A grace period was given for all banks to complete the replacement by April 2004. Apart from enhancing security for ATM transactions, the Central Bank

¹³ Source: Hitachi Research Institute, (1997)

issued this advice as part of its efforts to break the society's preference for cash. The *Bankcard* can be used as MEPS Cash, the alternative electronic payment mode to using cash for making retail payments.

4.5.4 Electronic Banking

According to Johnson (1994), despite proliferation of ATMs by the Malaysian banking industry, the range of banking services is still limited. Banks could make more effective and productive use of ATMs in their marketing strategy to cross-sell their financial products. They could also take advantage of the technological advancement to develop other by-products and banking services.

Johnson also argued that while Malaysian banks were increasing their attempt to exploit new technology in delivering their services they failed to influence their customer to use the services. New banking services such as Electronic Funds Transfer Point of Sale (EFTPOS), corporate banking, and home banking have not been widely accepted.

In 1995, the only two banks that offer Point of Sale (POS) service were Maybank and Bank Bumiputra, which started the service with supermarket giants. Maybank started the service with Yaohan, and Bank Bumiputra with Metrojaya. But the latter failed to successfully develop it and had since suspended the service¹⁴.

In a news analysis the *Asian Bankers* magazine stressed: "Even with hindsight of HK and Thailand's experiences, and that of Bank Bumiputra in its own country,

¹⁴ Ibid

Malaysia's Malayan Banking and MBf Card Centre appear not to have learnt enough to promote EFTPOS correctly" (*Asian Banker*, Nov 1995, pp 6).

The analysis suggested that one of the problems was because the efforts were not coordinated between banks. Some departmental stores had to invest in one terminal for each bank, which in turn took up valuable retail space. Both of the players were going on EFTPOS alone with no interconnectivity. Processing time was slow and tedious, so customer did not bother. In addition such service had to compete with the proliferation of credit cards which have wider acceptance in the country and abroad.

According to the *Asian Banker* (October 1995), the Malaysia's experience in developing cashless delivery systems, such as GIRO and EFTPOS is proving difficult to break society's preference for cash, which the banking industry has itself to blame for this impasse. The lack of coordinated leadership can reduce public confidence in cashless delivery systems. The magazine also reported on the formation of Malaysian National Payments Council in the early 1990s which was intended to provide the much-needed leadership to developing a cashless society. The report seems to suggest that major steps need to be taken to improve public acceptance before the intended payments system superhighway can get underway.

However, after about a decade since the idea of the national electronic payment system was first introduced, the Malaysian banking customers are still in the dark and confused as to where the development is heading. On the one hand the government had invested and launched *MyKad*, the national multipurpose card based on smartcard technology which can be used for electronic payment – *MyKad* is one of the flagship applications of the Multimedia Super Corridor (MSC). On the other hand, banking customers were given no choice but to possess *Bankcard* which can be used as e-

purse for electronic payment and pay for its annual fee – *Bankcard* is another national payment multipurpose card developed by MEPS introduced since 2000.

An interview conducted during the study fieldwork with one of the senior executive¹⁵ at the Malaysian Central Bank revealed the types of payment systems used by Malaysian banks. The existing payments systems include an imaging system for check clearing, an electronic network of ATMs, a bond trading system and interbank fund transfer system. The Central Bank also maintain a clearing system known as the Real Time Gross Settlement System (RTGS), a newly developed system in 1999, to reduce risks associated with large value payments. At the same time, the Malaysian Electronic Payment System (MEPS), is undertaking various projects to enhance the existing retail electronic payment systems of the country. One of the projects involves the implementation of the SET Payment Gateway to support payments for business transactions conducted through the Internet. Others include the introduction of national electronic money scheme and payment multipurpose card, which was expected to complete in early 2000.

4.5.5 Emerging Technologies in Banking Delivery Channel

As the most prevalent technology in delivery channel, the Malaysian banks have used ATM for almost twenty years. Based on statistics on Malaysian commercial banks from 1970s to 1990s, there has been rapid growth in the number of physical branches and ATMs of Malaysian local banks (Adham, 1999). Foreign banks did not contribute to this growth because since 1970, according to Cheah (1994), the Malaysian Central

¹⁵ Information Systems Unit, Bank Negara Malaysia. Information revealed based on survey conducted on electronic payment systems in SEACEN countries.

Bank has not issued any licenses for foreign bank neither to open a new bank nor to open new branches of existing foreign banks.

Besides ATM, banks in Malaysia as well as in the neighbouring countries are putting effort into the deployment of emerging technologies that enhance and diversify their existing retail delivery channels. These technologies include the Internet and electronic commerce; integrated chip cards (smart cards); proprietary PC banking systems; telephone call centres and data warehouses; electronic trading; and electronic bill payments (Barouski and Beutel, 1999 p.24-32).

Even though relatively late compared to its western counterparts, Malaysia is among the earliest among Asian countries in introducing direct banking via telephone together with Japan and Singapore. It was reported that in 1995, at least two banks have introduced the service (*The Asian Banker Journal*, October 1995c). Phileo AlliedBank launched what was believed to be the first direct banking service in Malaysia when it introduced PALDirect. Southern Bank later introduced Direct Access, which was perhaps the most significant step made towards the introduction of a true direct banking service.

The South East Asian Central Banks (SEACEN) survey on remote banking services that include home banking (Kanagalingam, 2000), suggests that most Malaysian banks targeted this service for corporate and small business segment of the market. The most popular mode was telebanking followed by PC-banking, which is also known as desktop banking. Some banks have already offered this service since 1999. They include ChoiceOnline by Bumiputra Commerce Bank, BHL Connect by Ban Hin Lee Bank and Al Aman PC Banking by The Pacific Bank. Most of these services

were offered on Intranet¹⁶ systems due to restriction to use the Internet for offering banking services by the Central Bank during that time. A total of 75% of the banks included in the study mentioned that they would offer the service over the Internet connection, which suggests preference towards open system over proprietary system. Maybank was perhaps the first bank to offer some form of desktop banking using proprietary system that was offered much earlier than other banks.

The trend of offering direct banking services both via phone banking and PC banking have continued to increase. It was reported that in June 2001 (Shanmugam & Guru, 2003), ten local commercial banks and four locally incorporated foreign banks were known to offer phone banking services. Whereas only nine commercial banks have offered PC banking services to their corporate as well as individual customers. However, Shanmugam & Guru (2003) suggest that PC banking tends to be more popular among corporate customers and represents only a relatively small portion of bank customers. They argued that the public comprised mainly older generation who still prefer traditional banking. In addition, the acceptance of PC banking depends largely on the quality and comprehensiveness of banking services that are offered.

Another distribution channel offered by banks to their customers is the Internet banking. On June 15, 2000, Maybank became the first bank in Malaysia to offer Internet banking service through its own web portal at www.maybank2U.com.my, when the Central Bank lifted the restriction for Malaysian banks to use the Internet as a delivery channel as of June 1, 2000 (Shanmugam & Guru, 2003).

¹⁶ A private network runs by a bank where the bank will provide its customers a number to dial in order to connect them to their bank.

There were several reasons why prior to June 2000 the Central Bank did not allow banks in Malaysia to offer retail banking via the Internet. Some of the reasons include the following (Barouski and Beutel, 1999):

- The regulatory framework is not well established, including cyber laws and risk management.
- The local financial institutions will face intense competition and may require the Central Bank support if profitability is eroded.

In April 2000, the Central Bank announced that the domestic bank will be allowed to offer a full range Internet banking services (BNM, 2000). The domestic banking institutions were given a one-and-half year grace period until January 2002 before the policy is reviewed to allow incumbent foreign banks to offer Internet banking services.

Apart from Internet banking, Smart card technology is another technology in the pipeline. It was expected that the Smart card technology would be deployed following the launch of the Multi-Purpose Card by the government and the Central Bank in 2001 (Kanagalingam, 2000). Once this digital technology is widely embraced and made practical by acceptable levels of telecommunication line costs and transmission speed, other technologies such as computer imaging and data warehousing will become more attractive. As Kanagalingam (2000, p.2) expressed: “The interdependency of these technologies requires many components to be simultaneously in place before any practical application can be taken to market. Another major drawback to actual implementation is the shortages of qualified professionals who can bridge the business-technology gap. It may yet be a few years

before senior management is comfortable using full-fledge EIS for on-line decision-making”.

The current study could not find formal research data that could accurately describe the level of utilisation of these emerging technologies. However, an informal interview with a senior executive at the Malaysian Central Bank who was involved in the SEACEN study exposed main issues that describe the state of the deployment of these technologies. The issues include strategic planning issues, technology issues, and risk management issues. The following points summarised the findings of the study:

- The Malaysian telecommunications infrastructure can be described as above average with respect to the rest of Asia-Pacific. Telephone penetration is 5.5 people per telephone - compared to USA 1.3:1; Singapore 2:1; Taiwan 2.1:1; Thailand 13.1:1; Nepal 174:1; the Philippines 38.1:1; Indonesia 47.7:1; and Sri Lanka 65.1:1 (*The Asian Banker Journal*, Issue 14, June-July 1998). Integrated Services Digital Network (ISDN) and fibre-optic lines are also available.
- Although the availability of PCs at home is increasing, the cost of a PC and software is still considered high for many homes. This is partly a result of recent devaluation of the Malaysian currency.
- Malaysia has not yet achieved critical mass in terms of Internet subscribers. By the end of 1999, there were some 350,000 subscribers. Bank executives suggested at least one million subscribers would make an adequate critical mass.
- Lack of leadership from key players in the telecommunication industry, retail business sector and banking industry to collaborate in the setting of standards, procedures and regulations for E-Commerce.

- Electronic Banking (E-banking) is seen as an alternate delivery channel, and the main benefit is reduction in the cost of operating large physical branches. However the high cost associated to establishing sophisticated infrastructure has caused banks with smaller customer-base to become reluctant to venture into electronic banking.
- Many of the domestic banks in Malaysia faced difficulty having to confront a steep learning curve in the implementation of electronic banking. They have been traditionally depended on an extensive physical branch network, and lack the requisite management and technical skills to operate an electronic banking environment.
- Banks customers outside major cities (Kuala Lumpur, Johor Bahru and Penang) do not feel the significant value-added service with electronic banking as compared to customers in major cities who find it as 'banking with convenience'. Many banks offer electronic banking to maintain competitive edge even though it may not be commercially viable to avoid 'loss of savvy' among their high-income customers in the cities.
- Intranet and Extranet products provide potential growth opportunities for Business-to-business (B2B) E-Commerce arrangements in which banks serve the role of channel provider as well as payment intermediary. However lack of standards and inadequate legal infrastructure become stumbling blocks on this type of venture.

According to Kanagalingam (2000), despite the potential opportunities that can be reaped, a huge amount of effort is still required in building the infrastructure and preparation before the financial institutions in Malaysia can make a big way for these emerging technologies. In the case of electronic banking for instance, many banks are pushing the technology, but show little appreciation for the business processes and changes that must accompany the electronic banking initiative. Electronic banking will develop at a slower pace than anticipated. Nonetheless its advent into the

Malaysian banking is expected to persist. In short, this clearly suggests that the new banking delivery systems offered by these technologies are still at their infancy stage.

4.6 Conclusion

The structure of Malaysian financial institutions has undergone a remarkable transformation in terms of types of institutions in the system from commercial banks to other banking and non-banking institutions. The emergence in the nineteenth century was to serve the trading facilities of the merchant. They have since evolved into institutions that play an important role in economic development. The establishment of the Central Bank within the financial system had further strengthened the financial industry, which led to more active economic development.

The financial system in Malaysia also went through several stages of liberalisation and is still undergoing gradual liberalisation process. The financial institutions still need to further improve their strength at both individual and industry levels. Various measures have been undertaken by the Central Bank to reform and restructure the financial system to enable the financial industry to recover from the recent economic crisis. Not all measures by the Central Bank were effective, however, the recent consolidation exercise have produced a healthier financial players in the industry which would be able to withstand the global competition in the coming open economy. Technology has been and will continue to be the central focus of the industry due to its potential to open business opportunities and financial institutions in Malaysia will continue to invest in technology.

This chapter is expected to provide adequate background information about the Malaysian financial services industry. This information would be useful in terms of making sense of the case subjects analysed in this research.

Chapter 5

RESEARCH DESIGN

5.0 Introduction

The preceding chapters have described the development of the theoretical framework, which informs and guides this study into implementation of IT systems in Malaysian banks. This chapter aims to present a discussion of the research design considerations employed by the current research and describes how it is implemented. It begins by developing an argument for an appropriate research design for this study. This is done by looking at various research approaches and methodologies and also by looking at their strengths and weaknesses.

As it could be observed later in the chapter, qualitative approach has been preferred over quantitative approach. The strength and limitation of qualitative approach will be discussed and subsequently followed by a justification for the choice of design approach employed by the current research. The method of data collection and analysis are discussed towards the end of the chapter. The discussion in this chapter begins with an overview of research perspectives.

5.1 Research Approach Perspectives

When conducting a research, one of the most important considerations that has to be established is to decide the kind of data to be collected and how it should be analysed. The decision may not be simple because there is a wide range of various research approaches and methods that can be used in collecting and analysing data.

One of the prevalent ways of understanding the difference among various approaches in research design is by looking at them from the point of view of quantitative and qualitative data. Quantitative and qualitative are the two major groups of approaches to data collection and analysis. Before discussing further on the two major approaches, it is perhaps essential at this point to provide a discussion on the background of these two main approaches in terms of how they have evolved and developed into its present stage. As it can be observed later, the two major approaches have argumentatively different philosophical development, which lead to different ways of deriving knowledge.

5.1.1 Historical Perspective

It has been argued that the traditional belief of the attainment of knowledge has a link with the philosophy of scientific inquiry. From very broad perspective, Von Wright (1971) argues that scientific inquiry present two main aspects, “one is the ascertaining and discovery of facts, the other the construction of hypothesis and theories” (p.11). He also suggests that these two aspects of scientific inquiry are sometimes termed descriptive science and theoretical science which is also known as theory building. Theory building he explains, serve two purposes i.e. firstly to predict the occurrences of events or outcome of experiments, and secondly to explain or to make intelligible facts, which have already been recorded. He further argues that these concepts (description, explanation, prediction, and theory) may be useful in the light of intellectual history.

He claimed that history of ideas could be distinguished by what he termed ‘the two main traditions’, namely the Aristotelian and Galilean. Both names were suggested to

have roots in the intellectual history of man, while worthy of noting that the former is more ancient than the latter. As to the view of scientific explanation, he characterised Aristotelian tradition as efforts to make facts teleologically or finastically understandable. While Galilean tradition is characterised as causal or could also be explained as mechanistic, this seems fit with the philosophy of scientific inquiry.

Von Wright (1971) also argues that the great awakening in natural science during the late Renaissance in the sixteenth century, established this paradigm on the intellectual stage. He considered social science, which emerged from humanistic studies in nineteenth century, is relatively a newcomer. Its methodology and philosophy to a certain extent was parallel to the philosophy of science employed by scientific studies. This philosophy of science is most typically represented by Auguste Comte's and John Stuart Mill's standpoint, which is known as the positivist paradigm. This paradigm has not only become the basis of the scientific studies but also the social studies. Methodology experts such as Popper (1957), suggests that there is a unity of method in both scientific studies and social studies. While he did not deny differences between the methods of theoretical sciences of the nature and of the society, he clearly suggests that deductive methods are widely used and important.

This view began to be criticised by other methodology experts in the 70s, for example Denzin (1971). He argued that existing formulation of naturalism as a distinct approach to empirical inquiry in the social science suffers from overriding flaws. He contends that there has been an absence of a general theoretical perspective that would integrate all phases of sociological acts. It implies that the deductive methods are not always the ideal way to direct social studies. He suggests a standpoint in social

studies, which he termed “naturalistic behaviourism” where the theory is grounded in the behaviours, languages, definitions, attitudes and feeling of those studied.

There seems to be a need to understand that the nature of reality is a social construction by human actors. As suggested by Orlikowski and Baroudi (1991), this standpoint does not involve hypothetical deduction but rather seeks to understand social process by getting inside the world of those generating it. The social actions and constructions need to be interpreted in its settings. This standpoint, which is known broadly as the interpretive paradigm has become one of the major influence on social research approaches.

In addition, there has been a call (e.g. by Orlikowski and Baroudi, 1991; Walsham, 1995b) for researchers to pay close attention to research questions and to the nature of the phenomena under investigation in order for them to be explicit about their ontological and epistemological stances. This issue is touched in the following section based on the argument by Whipp (1998) along with the discussion on main research approaches.

Besides, as Remenyi and Williams (1996) have pointed out, that one of the most important aspects of research in social sciences in general and information systems in particular is to decide on an appropriate starting point for the research and on the conceptual framework within which the data will be collected and analysed. This may require the researcher to decide whether the data collected will be of an essentially qualitative or quantitative in nature. The following section attempts to address this issue by discussing the nature and the differences of qualitative and quantitative approaches.

5.1.2 Qualitative and Quantitative Approaches

There are marked differences in the approaches to research and beliefs about underlying research knowledge. At this juncture, it is perhaps necessary to elaborate further the two main research approaches used in the social science studies, namely quantitative and qualitative. It has been argued that there is a clear distinction in terms of specialists who deal with each one of the two main approaches (Whipp, 1998).

Even though it has been argued (Bogdan and Taylor, 1975) that the distinction between the two approaches is profound and relates to theoretical and epistemological issues, Whipp (1998) is of the view that they are not antithetical. While the two approaches are appropriate for different types of research problems, they are often used together. Both have separate strength and in certain areas there is overlap. In the area of IS research for example, the two approaches are not mutually exclusive and research scientists will often work with both (Remenyi & Williams, 1996). In other words researchers should be ready to draw on both kinds of evidence in order to address different aspects of a research problem.

5.1.3 The Positivist and Interpretive Paradigms

According to Whipp, quantitative research arises from a positivist paradigm. This paradigm is centrally focused on objective truth, scientific method and systematic measurement of phenomena. The main underlying ontological beliefs held by researchers subscribing to this paradigm is based on the assumption that the empirical world is objective and exists as an external reality independent of human. Here, the researchers seek to investigate the existence of one or several fixed relationships within phenomena. This typically involves the development of formal propositions,

the establishment of quantifiable measures of variables, hypothesis testing, and the drawing of inferences about a phenomenon based on a fraction (sample) of a defined population. The inferences drawn from the sample become generalisable knowledge, which can be applied upon the whole population. The epistemological stance of positivist researchers assumes facts and values are distinct, and emphasises that scientific knowledge consists only facts. Deductive logic is the primary method used to test theory based on falsifiability principle where using statistical test, a theory can be shown to be false or not (yet) false.

By contrast, qualitative research arises from the interpretive paradigm. The main underlying ontological belief of qualitative researchers is that the nature of reality is a social construction by human actors. Contrary to the epistemological beliefs of the quantitative researchers, which assume that facts and values are distinct, qualitative researchers according to Whipp (1998) are part of a phenomenological tradition where no unambiguous objectivity is recognised. The way individuals construct the meanings of phenomena is paramount. The researcher emphasises the importance of subjective meanings as symbolic actions in the process through which human construct and reconstruct their reality (Orlikowski and Baroudi, 1991). This requires the use of field studies so as to examine humans in their social setting. The researcher attempts to describe, interpret, analyse, and understand the social world from the viewpoint of the participant's perspective. The key underlying epistemological beliefs held by qualitative researchers do not involve hypothetical deductions but rather seek to understand social process by getting inside the social setting of those generating it (Orlikowski and Baroudi, 1991).

5.1.4 Qualitative Approach and Theory Building

Bogdan and Taylor (1975) described qualitative methodologies as referring to “research procedures which produce descriptive data: people’s own written or spoken words and observable behaviour” (p.4). It allows researcher to understand people personally and see them as they developed their own definition of the world. Bogdan and Taylor argued that qualitative approach directs itself at the settings and individuals in those settings as a whole. They imply that the subject of the study, be it organization or an individuals, is not reduced to an isolated variable or to a hypothesis, but is viewed instead holistically.

In terms of theory building, these differing orientations have given rise to contrasting approaches. According to Whipp (1998), quantitative perspective relies on testing existing theory using a set of data. Through the use of statistical protocols, existing theory is tested; deductive reasoning may create new theory based on new sets of data. Qualitative research in contrast, develops theories inductively. There is no theory presumed at the outset of the study. The expectation is that eventually meaning would ‘emerge’ by itself from such ‘in depth’ exposure to the field (Silverman, 2000). Qualitative researchers construct explanatory frameworks by examining evidence relating to personal experience through interviews or observations (Whipp, 1998), as such theory ‘emerge’ from data and are grounded in the empirical detail. According to Silverman (2000), this idea has been accepted since the 1960s, where one of its profound supporters is Glaser and Strauss (1967) who have made famous the idea of ‘grounded theory’.

In summary, there are marked differences in term of traditions between quantitative and qualitative approaches, in practice they can be used together due to the fact that

researchers are pragmatic (Whipp, 1998). At least across the different examples of studies in the area of employment relationship examined by Whipp, it is feasible to link the qualitative and the quantitative approaches whereby bringing the result together are often instructive. In addition to that, as Ryan and Bernard (2000: 792) have argued, the distinctions between the two epistemological positions of the interpretivists and positivists paradigms will become less of practical importance despite their profound intellectual differences, as researchers pragmatically move easily and cheaply between qualitative and quantitative data collection and analysis.

Despite the marked differences of the two main approaches and the strong arguments about the possibilities of both approaches being used together in social science researches, the current research has taken the view that the qualitative approach is a more appropriate approach to be applied. The arguments that support this view are elaborated in the section on *the research design choices for the current research* later in this chapter. The discussion is preceded by the following section which discusses the possible main methods of the qualitative approach.

5.2 Main Research Methods of the Qualitative Approach

According to Miles and Huberman (1994) qualitative research may be conducted in dozens of ways, many with long traditions behind them. However they argue that the work of sorting the different varieties of qualitative research into comprehensive and clarifying catalogues and taxonomies may turn out to be basically incommensurate. The difficulty lies on both in the way the different qualitative strands are defined and in the criteria used to distinguish them.

According to Silverman (2000), the methods used by qualitative researchers exemplify a common belief that they can provide a ‘deeper’ understanding of social phenomena than would be obtained from purely quantitative data. He argued that such understanding arises from claims made by qualitative researchers about having entered and mapped such territories as ‘inner experiences’, ‘language’, ‘cultural meanings’ and ‘forms of social interactions’. These claims can be associated with different qualitative methods and their features as summarised in the following table.

Method	Features	Claim
Observation	Extended periods of contact	Understanding of ‘subcultures’
Texts and documents	Attention to organizations and use of such materials	Understanding of language and other sign systems
Interviews	Relatively unstructured and ‘open-ended’	Understanding ‘experience’
Audio and video recording	Precise transcripts of naturally occurring interactions	Understanding how interactions in organized

Table 17: Methods of Qualitative Research
Adapted from Silverman (2000: 90)

He cautions that there are two important points which need to be considered about the above table. Firstly, before choosing a particular method, a researcher should be clear that each of the claims shown in the table is not neutral because the justification of its preference depends on the implied models used to explain about the social reality being researched. Secondly, the researchers need to reflect upon the broader societal context in which the preferred method is deployed since it may have impact upon the question of whether the method deployed will provide valid, reliable and objective data. Furthermore, as Seidman (1991) has argued the choice of a research method is determined by what the researcher is trying to learn.

Despite the difficulty in sorting out the different varieties of qualitative research, some authors have identified and distinguished qualitative methods based on their

importance in terms of their deployment in qualitative researches. For example Walker (1985:4) considers in-depth interviews, group interviews, participant observation, and projective techniques as among the four most important methods in a large and growing repertoire of qualitative techniques.

According to Walker (1984), in an in-depth interview method, the interviewer is not bound by a rigid questionnaire schedule applied to all interviewees. The primary aim is to encourage the respondent or the informant to relate in their own words about the experiences, perceptions and attitudes that are raised by the researcher based on their relevance to the research problem. In group interview method, the interviewer may act as a moderator or facilitator with the aim of encouraging a comprehensive exchange of views in which the participants express in their own words. Group's dynamics may influence the views expressed by the participants and so differ from individual interview. These two methods differ from participant observation in that the latter emphasizes that the information is related or expressed by the informants in its 'natural' environment and the researcher may participate in the day to day activities. The aim of the researcher is to immerse himself in the natural setting of the informants. The researcher may use projective techniques by asking the respondents to make inferences about others' opinion rather than expressing their own. For some reasons the respondent may be unlikely to express their own opinion directly but are more willing to make projection in terms of what other people think. This allows the researcher to access the attitudes and feelings which would have otherwise remained hidden. Projective techniques may be used in varying degree of intensiveness both in in-depth interviews method as well as group interviews method.

It has been argued by Bogdan and Taylor (1975:5) that gaining phenomenological understanding is best achieved by the use of the participant observation method. In addition they also contend that participant observations as well as personal documents, including unstructured interviewing are the two approaches that have served as the stronghold of qualitative methods. Bogdan and Taylor (1975:6) argue that participant observation involves the researchers immersing themselves in the lives of people and the situation they wish to understand. By being part of the setting for a long period of time the researcher is allowed to view the dynamics of conflicts and change and thus see organizations, relationships, and group and individual definition of the phenomena in process. On the other hand, personal documents include accounts in which people reveal in their words their view of their life, or part of it, or some other aspects about themselves. Such personal accounts include diaries, letters, autobiographies, and transcripts of long and open-ended interviews. These materials allow the researcher to study the facets of people, events and settings that are not directly observable.

Some authors have classified the qualitative methods using the data collection techniques. For example, Oka and Shaw (2000) have considered interview, participatory observation, and document analysis as the three most classic (or older) data collection techniques employed by qualitative researchers. Similar to Silverman (2000), Oka and Shaw also consider visual images and sound as new techniques that could provide precise transcripts of naturally occurring interactions which could not be fully provided by the older methods

More sophisticated qualitative research techniques have been developed especially in the study of organizations and working relations. According to Whipp (1998), there

are three methods that are most commonly employed by qualitative researchers. These methods are interviews, ethnography, and case study. In addition, citing the work of Easterby-Smith et. al. (1991), Whipp also found that there are other specialised techniques namely - critical incident, repertory grid, cognitive mapping, and projective techniques - used in qualitative researches. The critical incident technique makes inference to relevant critical events in the past to explain current broader problems and processes. The repertory grid is used to match a person's view against a matrix of views or ideas used by other people. Cognitive mapping is a technique that documents a mind mapping exercise of individuals or groups by exploring a set of problems which lead to the building of perceptions towards the problems. The projective technique as discussed earlier uses a set of stimulus to uncover unconscious thoughts made by people.

In addition to those methods Whipp (1998) also stressed that being sensitive to context and natural settings of the problems being investigated are among the important advantages associated to qualitative methods. Because of such orientation, in the absence of strong theoretical framework, qualitative methods provide ideal instruments for the exploration of new research subjects. Whipp further argues that qualitative methods have the capability of revealing hidden features which cannot be achieved using quantitative surveys due to certain underlying assumptions used in the surveys that limits their conclusion. Whipp argues that qualitative methods are more able to reveal informal or illicit behaviour, allows full appreciation of processes in depth, and are more able to pursue processes in an unbroken way through time.

Despite the variety of techniques and their strengths, qualitative methods are not without limitations. A number of concerns have been raised in terms of the use of

qualitative methods in social science researches which is discussed more elaborately in the following section.

5.2.1 The limitation of Qualitative Approaches

The limitation of qualitative approaches can be assessed from the number of concerns raised by certain authors in terms of their deployment. For example include Bryman (1988) and Silverman (2000) have argued that some of the concerns about qualitative research approaches have arisen from the contrasting features of qualitative approaches from the point of view of quantitative researchers. These views include qualitative researches being essentially exploratory, lack of structured approach, and could not stand in their own right because they need to be verified.

Silverman (2000: 288-292) have identified four 'quality' issues that may have arisen based on the criticism made on qualitative researches. The quality issues include – analytic depth, reliability and validity, choice of techniques, and contribution to practitioners and policy-makers. He argued, to address the problem of analytic depth, qualitative researcher should not purely describe their data in terms of set of labels because description cannot itself build theories. Instead it was suggested that qualitative researcher should use a well-articulated analytic scheme on top of the data labels. He further suggests that the question of validity and reliability should be a central concern to qualitative research as in other researches. This can be achieved by documenting the procedure used in the qualitative research to ensure that the method used is reliable and the conclusion is valid. To address the question of the choice of methods he contends that a qualitative researcher should not use a particular research instrument such as interview because of its popularity or it is being widely used. The

choice of a research instrument needs to be justified and defended. Finally the question of whether the research findings can contribute to practitioners and policy makers could be addressed by supplementing the findings using evidences from other sources. Such a practice might increase the understanding of the intended and the unintended consequences of actions that could provide a basis for a fruitful dialogue.

Similar to quantitative researches, qualitative researches are also bound by the limitation of the methods deployed. On top of that, Whipp (1998) argues that the qualitative researches are limited by the researchers' standpoint and also constrained by their inherent strengths. He identified three 'technical terms' to illustrate problems that go with qualitative researches – generalisation, induction, and transparency.

The first limitation is the problem of generalization. It is argued that conclusion derived from qualitative researches may only be applicable to the specific context and location in which the researches are conducted. As such the results of the research may be less reliable in arriving to a general conclusion. However, generalisation may become possible if the research such as using case studies are conducted on a broad scale or covering the whole sector.

The second limitation is the problem of induction. This problem is concerned with the theory that develops from evidence emerging from the data. Proposed theory typically develops according to constant iteration between emerging evidence that grows along grounded propositions. In contrast to the nature of literature reporting of the deductive process in the quantitative arena, the process of qualitative inductions is not always fully reported. As a result replication of such research becomes difficult to others.

The final limitation relates to the problem of transparency which is perhaps the biggest concern in qualitative research. It is argued that despite the in-depth

examination of the research issues, the process of interaction and immersion by the researcher with the respondents of the study may provide ground for other researchers especially those subscribing to a contrasting research paradigm to question the validity of the data collected. Since close proximity is a requirement between the qualitative researchers, the respondents and their organizations, Whipp suggests that it become wise for them to treat the entire research process in a reflexive manner. In other words it is commendable for the qualitative researchers to be transparent and honest in reflecting their key choices, assumptions made in the framing of questions, data collection and conceptualising the ideas. Such a transparency might lend credence to the research output.

In summary, qualitative methods and techniques can provide powerful tools to researchers for conducting social researches. Nonetheless the quality of the research depends on the deliberate and careful evaluation of the methods used. As seen in the above arguments it can be strongly suggested that qualitative researchers need to justify and evaluate their choice of methods according to the purpose and the context of the research. A well thought research design would increase the chance of producing credible research work.

5.2.2 Interview Methods

Based on the number of arguments about qualitative methods discussed above, one of the methods – interview - has emerged as one of the most important methods. It is significant to mention at this point that open-ended interview has been adopted as one of the main method of data collection used in the current research apart from others such as observation and document analysis. Further elaboration on the selection of

approach and methods can be found as the discussion proceeds to the next section. This section aims to build an argument about the importance and choice of interview techniques.

Interviewing is one of the most common and powerful ways in which we can understand our fellow human being (Fontana and Frey, 2000). Through the interview process, detailed, vivid and inclusive accounts of events and processes may be generated (Whipp, 1998). Interview process may include a wide variety of forms. It can be in the form of structured, semi-structured, or unstructured interview.

In structured interviewing, the interviewer asks all respondents the same series of preestablished questions with a limited set of response categories (Fontana and Frey, 2000). The objective of such interview process is to produce quantifiable results from a set of samples, which may provide generalisable findings (Whipp, 1998). According to Fontana and Frey (2000), structured interviewing leaves little room for variation and the responses are recorded according to a coding scheme. The interviewer controls the pace of the interview using a standardised questionnaire for all respondents and follows the same order of sequence. They argue that structured interviews are typically associated with survey research which requires the interviewer to play a neutral role.

The second type of interviewing technique is the semi-structured interviews. According to Oka and Shaw (2000), this technique of interviewing is also known as guided interview. In terms of format, semi-structured interview is somewhere between structured and unstructured interview. The researcher develops a set of questions that serves as interview guides. The interview guides allow the researcher to further develop interesting areas of inquiry during the interviews.

In contrast to structured and semi-structured interviews, unstructured interviewing does not have any predetermined set of questions. Unstructured interviews may also be known by some of its varieties which may reflect slight difference in terms of its use. For example Siedman (1991) called it in depth interview; Oka and Shaw (2000) have identified conversational interviews as another way of calling it; while Silverman (2000) prefers to call it open-ended interview. Despite the many names associated to this technique, unstructured interview technique is commonly characterised by its ability to allow the researcher to converse liberally with the interviewees (Burgess, 1991). According to Siedman (1991: 3) the purpose of in-depth interviewing is not to get specific answers to a problem but rather is a reflection of an interest in understanding the experiences of other people and the meaning they make of the experience. Siedman cautions that despite the ability to exchange information freely, the researcher using this technique is required to keep his egos in check and should always reflect and indicate that others' stories are more important.

This technique makes it possible for the researchers to get access to the context of people's behaviour and thereby provides a way for them to understand the meaning of that behaviour. However, Siedman argues that this technique may take a great deal of time and sometimes money. The researcher begins by conceptualising the research project, making effort to establish access and make contact with participants, interview them, transcribe the data, and then work with the materials and then document the result of the analysis. In addition, according to Fontana and Frey (2000), the efforts that go into the design of unstructured interview may include, accessing the setting to increase chance of gaining access, understanding the language and the culture of the respondents, deciding on how to present oneself, locating an informant, gaining trust, establishing rapport, and collecting empirical materials.

In summary, the researcher has to evaluate and decide on the choice of interview techniques that is most suitable for the research. The researcher may also be required to be aware of the strength and limitation of a particular technique. In addition to that the researcher may also be required to design and plan appropriate strategy so that the chosen technique could be carried out effectively.

The above arguments and discussions have reasonably exposed the current researcher to the various perspectives, choices of approaches, methods, and techniques, as well as important issues that seems vital in designing a research. The following section attempts to discuss and argues the choice of approach and methods used in the current research.

5.3 The Choice of Research Design for the Current Research

As discussed earlier in this chapter, positivism's main characteristics can be superficially observed in the quantitative approach. Bryman (1988, p.18) contends, "quantitative research is often conceptualised by its practitioners as having logical structure in which theories determine the problems to which researchers address themselves in the form of hypothesis derived from general theory". Here, it can be implied that the development of concepts to be measured becomes central to quantitative research. Bryman (p.23) further argues that there are views taken by many writers on research methods that concepts used by social scientists are often fairly vague and abstract. The challenge to quantitative approach is then, to demonstrate whether concepts actually exist and to classify the subjects – people or organizations – in relation to it.

In the current research, the fact that despite quantitative approach appears to be more rule-driven and seek more objective description (Cassell and Symon (1994), it is less feasible. There is only a very limited literature that relates to management and organization in Malaysian banking industry.

There is no robust concept or even a good commentary on the sector, which could lead to a possible quantitative research. It is believed that this study is the first of its kind in an attempt to understand how banking organizations in Malaysia deals with the problem of IT implementations.

Due to the absence of robust theories and concepts available for the current context, qualitative approach is thought to be the most appropriate. Furthermore, the experience of previous doctoral research students working in the same sector that the current researcher had a chance to meet during his fieldwork, suggested that bankers often refused to respond to survey questionnaires due to the fear that the information given might be used against them or released to their competitors. Qualitative approach such as using face-to-face interview will give better chance to the researcher to convince the informants on the issue of the information confidentiality and security.

In relation to the current research, Orlikowski and Gash (1994) have argued that qualitative studies which link IT/IS implementation with the wider subject of innovation particularly in organisations is on the increase, and have demonstrated the strength of the qualitative approaches. The qualitative approach used by these studies provides tools for researchers to understand the process in practice from the participants' perspective. The primary research focus in this field is concerned with the meaning of the technology to the individuals and groups, as well as their

expectations around its use particularly with respect to their social, cultural, and work context.

Based on the above statements it can be implied that understanding IT implementation in the banking organization is largely dependent upon understanding the organization itself and its subsystems. Moreover, as Scott (2001) has argued, organization and its subsystems have cognitive elements. The process of understanding these elements may be achieved by closely looking at habits and skills of its carriers. As he puts it, “attention to cognitive elements at the organizational subsystems level has largely been provided by the ethnomethodologists and by students of corporate culture” (p.86) - which in essence, implies the importance of qualitative approaches to organizational research.

5.3.1 The Choice of Open-ended Interview Method

It has been presented earlier that interview technique is one of the most powerful tools available for qualitative researchers. According to Silverman (2000), the use of interview methods, particularly open-ended interview in various fields of qualitative research is noticeably wide spread. In the area of health research, for example Silverman found that seventy-one per cent (71%) of the researches have used open-ended qualitative interviews indicating its preference over other methods. He suggested that such a skewing probably reflects the fact that many of the authors are in nursing where the open-ended interview is regarded as both an appropriate research technique and a preferred model for communicating with the patient. While in the area of sociology research he suggests that the interview method clearly predominates as the single most preferred method.

In other social sciences the extent of use of the open-ended interview method may vary, but its choice is rather wide spread, for instance in the area of IS Silverman narrated, "Information systems (IS) is a discipline which studies the human consequences of information technology. In preparing a recent talk to an IS conference, I surveyed the methodologies chosen in research articles in a number of recent IS journals. Out of the six qualitative research articles, five were derived from interviews" (2000:291). This implies the preference on the use of qualitative interview in the area of IS research over the other methods. However, as has been argued earlier it seems vital to mention here the choice of such a method rely purely on the criterion of its popularity. In the current research, open-ended interview as a choice of method has been carefully evaluated in terms of its deployment.

Nevertheless there are more arguments that further support the preference of interview methods. For instance, Remenyi and Williams (1996) suggest interviews have been used in qualitative IS researches and such interview techniques may be structured to a greater or lesser degree. Interviews are carried out in order to collect the complex information about a particular aspect of the subject, such as about how firms formulate and implement strategic information systems. The reason why qualitative interview is preferred is because research into issues as strategic information systems requires the collection of complex evidence concerning 'why', 'how', and 'who', which simple survey techniques are not appropriate. Thus, the researcher has to engage in the use of a sophisticated research strategy.

In addition to the above, Seidman (1991: 7) has argued that the strength of interviewing as a method is noticeable because it is a powerful way to gain insight into people's issues through understanding the experience of the individuals. Besides,

Seidman also argues that as a method of inquiry, interviewing is most consistent with people's ability to make meaning through language and because of this researchers who are interested in others' stories will find interviewing as a method that can provide deeply satisfying results.

5.3.2 Guiding Theory

Qualitative approaches to gathering data require an underlying guiding theory, and the theoretical framework developed particularly in Chapters 2 and 3 are used in this context to serve this purpose. The underlying belief is that qualitative research is not only useful at the exploratory stage but also generalisable results can be developed from such studies, particularly when a broad scale covering whole sectors or almost all of the population is involved (Rasanen and Whipp, 1992). In addition to that, as argued by Barrett (1995) those who argue that the results from qualitative studies are not generalisable typically seek to impose notions of statistical generalisations as opposed to analytical generalisations applicable in qualitative studies which have a radically different underlying philosophical base.

Within the specific scope of the current research, the central focus is directed to the attempt of understanding the implementation problems in relation to IT implementation in Malaysian banks. Several arguments have been presented earlier that reflect the importance of establishing a theoretical framework as a starting point of the research (Bryman, 1991). Thus, the starting point of the research begins with the collection of concepts and theories based on research works which are primarily located in the Western nations and they are synthesised to develop the theoretical framework for the current research. The theoretical bases as discussed in the Chapter

2 and 3 suggest that IT implementation as a form of innovation process is influenced and affected by the organisational processes¹⁷.

Therefore the aim of the current research is to develop an understanding of the IT implementation problems and the innovation and organizational processes that influence and affect the implementation process within the context of Malaysian banking industry.

As such the research activities began by developing an understanding of the themes through a review of literature related to organisational innovation, particularly those focusing on the issue of implementation. In addition, specific literature related to financial services industry were also reviewed to further understand the specific issues on implementation which provide the bases of inquiry for the current research.

5.3.3 The Case Study Approach

Case study approach has been identified as an appropriate design for the current study. Some of the arguments raised in the preceding section support this choice. Before discussing further about case study design, it seems important to understand the concept of 'case' used in this research. According to De Vaus (2001) a 'case' is the object of study. In a case study design, it is the unit that we seek to understand as a whole. Based on this concept, the unit of cases in the current research refers to the IT implementation process within each of the banking organizations included in the study whereas the specific context is the Malaysian banking organizations.

¹⁷ Refer Chapters 2 and 3 for the discussion on the concepts and theories.

There have been numerous arguments about the strength and advantages of case study design in qualitative research. For example, according to Whipp (1998) that case study approach is capable of providing “detail investigation of single or small number of research objects (such as groups, organisations or whole industries) in their, often complex, context or settings” (p.). In addition, it is widely accepted by researchers that case studies are the preferred strategy to answer ‘how’ and ‘why’ question associated with the process study to gain a detailed understanding of phenomena particularly in the IS field (e.g. Benbasat et al., 1987; Walsham 1995a). Yin (1989) states that the case studies approach have a distinct advantage in situation where such questions “are being asked about a contemporary set of events, over which the investigator has little or no control”. Coupled with this definition, Yin (1989) also argues that the case study allows the researcher to examine the phenomenon in its natural setting, employs multiple methods of data collection, and allows for the effective tracing of phenomena over time.

Above all the case study approach is suggested as the most suitable for the current research because it is the first time the issue of IT implementation is being examined within the context of Malaysian financial services industry. Moreover, recent study on innovation adoption and implementation (Taylor & McAdam, 2004) seemed to confirm the suitability and correctness of the approach undertaken by the current research.

5.3.4 Perceived Limitations of Case Study Approach

While there have been numerous views that support the strength of case study design, it is worthy of mentioning honestly that its choice in the current research is made not

without considering its possible limitations. Case study design has been criticised for a number of perceived limitations (De Vaus, 2001; Lee, 1999), which include the apparent lack of rigour in the case study and associated problems of data validation and reliability, little basis for generalisation especially from a single case study, and difficulties involved in gaining access and ensuring research continuity.

In carrying out the current research these limitations are dealt with by using multiple primary and secondary sources, (including observations) of the phenomena which were gathered to provide richness in interpretation. Primary data for the case studies in the current research were gathered mainly using the open-ended and in depth interview techniques. A list of questions in the form of interview schedule was prepared but was not intended to structure the interview. The questions in the interview schedule were in no way intended to be asked to the respondents in a forceful manner, they are merely a list of possible questions that may be used to guide the interview conversations.

More specifically, the interview schedule is a sort of reflection of the theoretical framework developed from the literatures (see Chapters 2 and 3, as well as Chapter 4 to a certain extent). The theoretical framework is meant to be a starting point (Bryman, 1988) that provides the basis of interaction between the theoretical issues being studied and the data being collected (Barrett, 1995).

In relation to the interview schedule, Walker (1985) has stated, “interviews in which interviewers have prepared a long list of questions which they determine to ask, come what may, over a period say an hour and a half, are not depth interviews..... For in this way the interviewers have already predicted, in detail, what is relevant and meaningful to their respondents about the research topic; and in doing this they have

significantly prestructured the direction of enquiry within their own frame of reference in ways that give little time and space for their respondents to elaborate their own” (p.46). Having considered the point raised by Walker, it seems important to mention that even with the presence of the interview schedule, the actual interviews were discursive, in-depth and unstructured to enable the respondents to provide accounts of events and stories according to their own definitions.

5.3.5 Types of Informants and sources of information

The issue of triangulation has been widely raised by many authors in case study research. Hence, it is important that this issue be addressed in the current research. Triangulation is the employment of different methods of analysis to observe the same database (Johnson, 1987). Data for the current research is drawn from several sources. Apart from interviews with primary informant (bankers), there is a range of potential informants who were identified from various groups. They include academics, librarians, the association of bankers, vendors, consultants, columnists and journalists. These different groups provide specialist information for the research. The selection of a wide range of sources is to allow the possibility of gathering rich and comprehensive collection of information.

With regard to specialist informants, the information gathered from this source is particularly useful where there is disagreement in the stories provided during conversation with the primary informants. Specialist information might provide answers to conflicting views or responses. When used together with the information provided by primary information, the results might contribute a great deal to answering the research questions.

In addition to the above sources, data in the form of published and unpublished documents were also gathered during the fieldwork. Among the documents gathered were:

- Presentation materials
- Memoranda and minutes of meetings
- Consultant proposals
- Interim implementation reports
- Project Guidelines and procedures.
- Press releases
- Organizational charts
- Internal circulation bulletins, magazines
- System charts
- Sketches of diagrams – obtained during the interview
- Request for proposals
- Policy manuals
- System Development Life Cycle (SDLC) chart
- Program management office documents
- Project charters
- Business architecture blueprints
- System development architecture framework
- Business models
- Project organization guiding principles

In summary, the various sources of information coupled with the high number of cases included in this research are likely possible to increase the research values in terms of dealing with the issue of validity and credibility that were raised earlier.

5.4 Fieldwork Activities

Data collection for the current research was conducted in two phases. During Phase 1 a number of nine sites were chosen where the selection was based on an announcement of the improvement of the organizations' current system or implementation of a new system e.g. electronic banking system, as a form of indication that reflects innovation in their recent IT systems.

5.4.1 The First Phase

The information about the announcement was obtained from press releases and articles in trade journals. The nine sites that were chosen represent approximately thirty percent of the total number of banks in the banking sector. Most of the banks that participated in the study during this phase refused to allow their commercial or public names to be explicitly used in the dissertation and demanded to remain anonymous.

Another purpose of this phase also concerns the issue of construct validity of the subject being studied. Even though the concept of construct validity used in quantitative researches may not be fully applicable in qualitative researches, it can still pose potential problems (Yin 1984). In order to address this problem, the fieldwork began by reviewing literature on Malaysian banking industry and subsequently followed by several meetings and discussions with executives in a number of Malaysian banks. These are done with the aim of getting better insights into the issues that are being studied. According to Yin, getting better insights of a phenomenon based on multiple sources could be used as a way of addressing the potential problems concerning construct validity.

The start of the fieldwork was undertaken to gain an appreciation of the industry so as to provide important industry specific knowledge to the researcher. The first phase fieldwork also served as a means to establish a network of contacts – which was made easier by being in the field. In fact the work of establishing contacts began in spring 1999 – through telephone contacts, letters, e-mails as well as personal contacts. There was also a network of contacts not necessarily bankers that would assist in paving the way to be introduced to the bankers - making a larger network of contacts. Despite rigorous efforts, it must be mentioned that negotiating access into the banking organizations was not an easy task.

Only very few banks accepted the request to be involved in the research at the instance of the first or second telephone contact. For others, further negotiation had to be done before getting acceptance. Some required the request to be formally made in the form of an official letter. In this case, the researcher's formal request letter appended with support letter from the researcher's supervisors was sent to the banking organizations. The letter clearly stated the purpose of the study and guaranteed confidentiality. As argued by Buchanan et. al. (1988), the researcher should adopt an *opportunistic approach* to fieldwork in organizations. Thus, it is necessary to exploit the opportunities offered in the circumstances, For example, some banks demanded to know what questions would be asked during the meeting. In the desire to get access into the banks, a number of main questions were extracted from the interview schedule and trimmed in such a way that they did not raise controversy or touch on what might be perceived as sensitive issues. The aim at this stage was to exploit an opportunity that increases the chance of an access into the organization so that the interview can take place. As Seidman (1991) puts it; "Interviewing requires that researchers establish access to, and make contact with, potential participants whom

they have never met. If they are unduly shy about themselves or hate to make phone calls, the process of getting started can be daunting. Of course, overcoming shyness, taking the initiative, establishing contact, and scheduling and completing the first set of interviews can be very satisfying accomplishment” (p.6).

At this early stage, negotiating access to the banking organizations was found to be harder than was expected. Not only that the fieldwork was performed during the time when the financial industry was in crisis, but also the Malaysian economy was still in the midst of the worst crisis/recession during the decade. It was part of a regional economic crisis in South East Asia, which started in Thailand. The research work was made even more difficult because of the ‘new millennium’ factor since it was the turn of the twenty first century.

The main reason seemed obvious, the end of 1999 saw the race among major organisation taking steps to ensure their computer systems function without any problem comes the new millennium. Events such as Y2K¹⁸ projects were set to be the priority not only for the banking organisations but also other major organisations. Furthermore the turn of the century also cause an increase in the number of festive events and public holidays. To a certain extent these situations reflect what Buchanan et. al. (1988) have risen about the struggle between ‘the desirable’ and ‘the possible’ ideals from the point of view of the researcher. The desirable ideals are constantly compromised by the practical realities, opportunities and constraints presented by organizational research. Some of the instances brought up by Buchanan et. al. (1988),

¹⁸ (Y2K, or "millennium bug") A common name for all the difficulties in the turn of the century, or dates in general, bring to computer users. Back in the 1970s and 1980s, the turn of the century looked so remote and memory/disk was so expensive that most programs stored only the last two digits of the year. These produce surprising results when dealing with dates after 1999. They may believe that 1 January 2000 is before 31 December 1999 (00<99), they may miscalculate the day of week, etc. (Source: <http://www.hyperdictionary.com/dictionary/Year+2000>)

such as members of the organizations block access to information, constrain the time allowed for interviews, and go on holiday were experienced by the researcher himself during the fieldwork.

Numerous efforts were placed on writing carefully worded letters outlining the research project, its potential benefits to the organisations, and guaranteeing confidentiality. Where possible, the researcher took advantage of informed contacts such as academics, vendors, and other personal contacts.

The researcher was refused access to a number of organisations, including banking and vendor companies, mainly on the ground of confidential policies and the amount of times their employees would have to set aside to facilitate the research. However, the use of a more innovative strategy employed during the second phase of the fieldwork such as negotiating through the organizational ‘gatekeepers’ (Buchanan et. al., 1988) and personal contact rather than formal channel have helped the researcher to gain access to some of the organizations that had earlier refused. Despite exploiting every possible opportunity to negotiate access, there was just time when the process, as Buchanan et. al. put it, “is a game of chance, not of skill”. In this case, access into one of the banking organization was successfully negotiated and possible respondents including a branch manager had agreed to be interviewed. However, when the headquarter office was notified as a matter of routine by the branch, an official decision to indicate definite refusal was made by the headquarter office and communicated to the researcher via an official letter. Thus, the researcher had lost the opportunity to include that particular organization in the research.

An important achievement at the end of the first phase of fieldwork is that the contacts with some of the organisations during this initial phase has helped to confirm

the researcher's preliminary beliefs that in conceptualising IT innovation in banking, the traditional focus was invariably concerned with technical innovations and often neglected important social and organisational issues. This proposition is based on the preliminary mapping of issues made upon the data collected during this phase. This first phase of the fieldwork seems to suggest the relevance of the theoretical framework developed during the literature review phase.

5.4.2 The Second Phase

The second phase which took place through March and April 2000 adopted a different approach in negotiating access. During this stage, less formal channels were used to acquire access to banking organizations. Some of the lessons learnt during the first phase of fieldwork were used to guide and make improvements during this second phase. The second phase occurred at the time when the Malaysian banking sector had almost completed a major consolidation exercise highly regulated by the central authority. Since the number of banks had been reduced to only ten anchor banks, the design in the second phase fieldwork was altered to include all of the nine domestic anchor banks (with an exception of one anchor bank which officially refused to participate) as well as all of the Islamic banks, and an addition a foreign bank resulting in the research covering almost the whole sector of the Malaysian commercial banks.

The process of negotiating access during this phase was less difficult compared to the earlier phase. The problems of lack of negotiation skills and understanding of the culture were overcome during this phase which had resulted in an increased chance of

successful negotiation. The researcher's confidence had apparently increased and has become more persistent in increasing the number of interviews.

The second phase fieldwork was rigorous and labour intensive. The days were filled up with telephone calls, travelling and talking to numerous people. The researcher's diary was fully filled up with interview appointments. During the span of one month of the second phase fieldwork the researcher was able to set up at least two interviews in a day each one lasted between one to two hours. There has also been an occasion when the interview stretched up to more than four hours.

Most of the interviews took place within the organization's formal setting such as the informant's office, meeting rooms, guest room, or at the lobby area of the corporate office. There had been a number of occasions when the interview took place at dining places, restaurants, the informant's residence or automobile, and also over the telephone. While most of the interviews were conducted face-to-face with the informants in the organization's corporate premises during the weekdays, a number of interviews had to be conducted over the weekends.

The researcher also had developed some skills in the process of establishing rapport and gaining trust with the informants. The researcher also had the chance of visiting the IT training centres of two banking organizations and was able to make a brief observation into the working culture of the staffs in the two centres.

The invaluable skills and a wide range of experiences developed in the course of carrying the fieldwork activities were very meaningful to the researcher.

5.4.3 Interview Schedule

As it has been mentioned earlier, the primary purpose of setting up an interview schedule in the current research is to reflect the theoretical issues developed based on the literatures that are being studied in this research. It is worth to reiterate that the actual interviews were conducted in a discursive and unstructured manner. There were many specific questions that were prompted to follow up specific points mentioned during the interview so that certain points were sufficiently elaborated.

The questions in the interview schedule were group in two broad categories¹⁹. These categories are identified based on the themes that emerged in the literature review chapters. The first category is the organization strategy and structure related questions. The aim of the questions asked in this category is to find out about the IT implementation that was taking place in the organization and what motive drives its adoption. It also attempts to discover the nature of the strategic activities in the organization as well as the organization structure which would lead to an understanding of the nature of the control process that exists in the organization. This category of questions also seeks to unveil the important players involved in the IT implementation and the nature of their interactions among each other.

The second category is the technology related questions. The technology related questions are aimed towards exposing the experience of the informants in terms how the informants perceive the technology and its consequences in the organization. The questions serve as a way to initiate further discussion into other issues related to the IT implementations. The questions are used to probe the respondents so that they could reveal their own understanding and experience in terms of how the IT

¹⁹ The interview schedule can be found in the appendix.

implementation is executed. This involves asking question about the entire process of the implementation including strategic IT/IS planning, as well as project management and all the relevant issues that could contribute in understanding the whole process.

5.5 Data Analysis

It has been argued and discussed earlier that the aim of the current research is not to test a hypothesis. The limited nature of the literatures concerning IT management and organization in the Malaysian banking industry, and the absence of a robust concept and good commentary of the sector have made quantitative approach and the testing of hypothesis a less feasible choice.

As the choice of research approaches and methods have been argued and discussed earlier in the chapter, this section attempts to explain the method of data analysis.

One of the points that need to be considered during analysis stage concerns the unit of analysis. In the current research, each of the cases selected in this study forms the unit of analysis. According to De Vaus (2001) a case is the 'object' of study. The unit of case used in the analysis of the current research is the banking organization which the research aims to understand as a whole. Since according to Yin (1989) there is a need to look into the holistic aspects of a case. Based on this point of view, the banking organisations as unit of cases in the current research can be viewed as essentially being made up of a variety of components and processes. Therefore a better way to construct a full picture of the case is by collecting information from a wide range of elements. As discussed earlier, sources of data for the current research are gathered

from open-ended and in depth interviews as well as a wide range of internal and external documents.

The interview data was tape recorded and eventually transcribed. Based on the interviews and notes gathered from the first phase fieldwork, the preliminary mapping of issues was constructed. The initial themes that emerged from this preliminary mapping were analysed along the theoretical issues developed earlier. The approach used in the preliminary mapping of issues is based on thematic analysis by developing themes and codes (Boyatzis 1998). According to this analysis, codes may be developed based on either one of the two approaches residing on the opposite ends of a continuum. At one extreme is the theory-driven approach and at the other is the data-driven approach. Theory-driven approach develops themes and codes that are consistent with a set of concepts or theories that have been developed earlier. In contrast, data-driven approach constructs themes and codes inductively from the raw information obtained from the field.

The thematic analysis used in the current research stands in the middle of the continuum. Themes and codes are developed based on the theoretical issues as well as from the inductive process of primary data. According to Miles and Huberman (1994) the process of coding is in itself analysis.

The data collected from the more rigorous second phase fieldwork and the initial data from the first fieldwork was codified and analysed. It is followed by transforming the result of thematic coding into narrative description which is then combined with interview quotations, evidence from documents and field notes that would coherently reflect a categorisation and narration of the particular themes (Abdul-Rahim, 1999). Subsequent analysis involves analysing the particular category of themes based upon

the grounded theory methodology developed by Strauss and Corbin (1990) combined with case-oriented strategy developed by Yin (1984). According to Miles and Huberman (1994) using this strategy, a theoretical framework is used to study the anchor case in depth. In the current research the case which has the most detail information collected was selected as the anchor case. Successive cases are examined to see whether the pattern found matched that in the previous cases.

5.6 Conclusion

This chapter begins by presenting a broad research approach perspective. It discusses the thinking of research perspective from the historical point of view that has led to the development of various research paradigms. It also argues about the potential influence these paradigms might have in terms of how they may shape a researcher's research approaches and strategies. This is because the result of a researcher's choice of paradigm may further influence his or her choice of methods because it relates to their perception of reality.

The chapter also presented a discussion on two main research approaches namely quantitative and qualitative. Being the choice of the current research, an elaborate discussion was made on the strength of qualitative research as well as its limitation. The discussion then moves to present an argument on the variety of qualitative methods with special attention given on qualitative interview due to its preference to the current research. It also discusses the case study approach as a design strategy adopted by the current research.

The focus of the discussion is then directed to the specific design choice of the current research and presents arguments that support the choices. It reports the fieldwork activities and also discusses some of the problems in getting data from the field. It also explains the sources of data used in the research and how the data will be analysed. Finally it presents a methodology that will be used in analysing the data.

In conclusion, throughout the chapter a discussion on the important research design considerations is presented in a way that displays a sense of honesty in terms of providing a conscious view of the strength and the limitation of each choice. The case study organizations selected in the current research will hopefully be able to shed light into the problems of IT implementation in the Malaysian banks within the scope outlined in the research. The actual discussion of the analysis and the discussion of the results are presented in the chapters that follow.

Chapter Six

DATA ANALYSIS

6.0 Introduction

This chapter is one of the most important chapters in this dissertation by virtue that it deals directly with the actual subject of the research. In this chapter the analysis of the case subjects studied in this research will be presented.

The analysis process begins by studying the numerous sources of data that makes up each of the case. The primary source of data comes from the transcript of each and every interview with the informants in each bank. This primary source of data is analysed together with numerous other sources of data obtained from each banks. These sources include presentation materials, press releases, minutes of meetings, consultants' project proposals, project plans, project charts, interim implementation reports, post-implementation project reports, organizational charts, internally circulated documents, business models, system development frameworks as well as sketches of system diagrams used by the informants during the interviews.

In addition to the sources mentioned above, the researcher's note containing observations of the work setting and events that happened during the visits also adds in enriching the data. Examples of such events include observation of the project office environment where members of the project team worked on the project, discussion took place between vendors representatives and bank staffs, new hardware systems being installed, staffs continue working in late hours, a sense of secrecy when staffs seemed reluctance to talk to stranger (researcher), as well as a sense of being

welcomed. All these sources of data were obtained from each of the banks at different level of varieties. Some banks were considerably at ease in providing access to these sources of data while others were more restrictive.

The combination of all of these sources of data is used in understanding what went on in each of the bank. More importantly, they supply a picture in terms of what system was developed and implemented in each of the bank, who was the groups of people, teams and individuals that were involved, and what were the issues of concern in each project.

On the issue of confidentiality, it must be mentioned that anonymity has been a crucial condition agreed between the banks and the researcher before access into the organization was given prior to conducting the interviews. Therefore, in order to maintain anonymity of the cases, a numbering system is used to represent identification of each of the banks. A two-digit number beginning from 01 until 12 is assigned to each of the respective bank. As such, Case 01 represents the first bank, Case 02 the second bank and so on until Case 12 which represents the twelfth and the last bank.

The scope of the case study performed by the current research involved the study of an IT system implementation project that the selected case study banks have embarked upon. The following is the list of IT system projects implemented by each of the case study banks:

- CASE 01: Management Information System Upgrade Project (MUP)
- CASE 02: Implementation of Electronic Banking Centre (Automated Branch) Project.
- CASE 03: Systems Upgrade and Integration Project.

- CASE 04: System Migration to ALLTEL System through an outsourcing subsidiary.
- CASE 05: Implementation of a full Electronic Banking Operation.
- CASE 06: Direct Banking – Electronic Banking System Implementation.
- CASE 07: Implementation of a Computerized Online Central Host System.
- CASE 08: Implementation of a full Graphical User Interface (GUI) Computing System Environment.
- CASE 09: Integrated Multiple Loan Systems Conversion Project.
- CASE 10: Conversion System from SAFE to Silverlake Integrated Banking System.
- CASE 11: System Migration from SAFE to Integrated Banking System (IBS) on mainframe-based technology.
- CASE 12: Implementation of a Regionalized Application System.

6.1 Preliminary Data Analysis

The data analysis process gathered in this research did not start at the end of data collection stage. In fact, the first few interviews had provided the researcher with some basic ideas in terms of the emerging issues that surround the implementation of IT systems in Malaysian banks. These initial ideas were used in the process of formulating further interview questions that would allow the researcher to understand relevant issues related to the research subject.

In addition to that, data collected from the first field trip also allowed the researcher to focus on identifying relevant issues affecting IT system implementation in the Malaysian banking industry. Despite lacking in terms of richness of the data for a thorough analysis, the first field trip had permitted the researcher to develop a set of

expectations as to how to advance the process of gathering more data. It also allowed the researcher to be more focused in deciding what questions to ask so that relevant data could be obtained which later would provide answers to the problems related to the expected issues.

At the end of the first field trip, preliminary data analysis was conducted by mapping out the data to produce a set of initial issues. It was thought that these initial emerging issues could possibly further develop into themes. The research supervisors had been instrumental in providing guidance and giving their ideas that would increase the robustness of the data collection process as it advanced into the subsequent stage.

To a certain degree the preliminary data analysis provide a general outlook for all the case banks in terms of the range of issues that could possibly be categorized into a set of proposed themes. The analysis also brings to mind that some lead issues require further probing. The following table shows the result of the preliminary data mapping process and the proposed category of themes based on data collected during the first field trip.

Category 1: Strategy related issues

Issues	Remarks (early scenario)
<ul style="list-style-type: none"> • The potential of electronic delivery channel and its opportunity for market expansion. • Changing trend in the types of banks' delivery channels • Accounting belief – hard to justify the huge cost of IT investment • Role of corporate executives in initiating adoption of new or improved IT system. • Competition with branch-based channel • Existence of top level steering 	<ul style="list-style-type: none"> • Electronic Banking ranked as a very important delivery channel. • Growing demand for electronic delivery channel but majority of customers seems content with branch banking. • Bankers realised the intangible benefits from IT investment but there must be some level of accounting justification and control. • Top level steering committee exists to monitor information system projects. • Electronic banking generally complements and does not compete with branch banking. • IT inclined top executives prevail and are

Issues	Remarks (early scenario)
committee <ul style="list-style-type: none"> • Role of technology savvy leadership • Competitive pressure as impetus 	instrumental in the IT projects. <ul style="list-style-type: none"> • Technology savvy leadership and competitive pressure could both be the impetus or motivation to adopt IT innovation.

Theme 2: Structure (organisation and project) related issues.

Issues	Remarks (early scenario)
<ul style="list-style-type: none"> • Reorganisation as impetus for new IT system implementation • The level of autonomy given to the newly created or reorganised IT unit. • Opportunity for recruitment in the newly created or reorganised IT unit. • Reduce branch importance after reorganisation • Position of the new IT system within whole IS structure, e.g. electronic banking as a department or unit. • Distribution of employees within the IT unit in relation to other functional units. • Degree of centralisation governing the IT unit. • The nature of control or autonomy given to contractors or vendors in running the project. • Existence of functional division culture and how it affects implementation of the new IT system. • The importance of restructuring the existing organisation structure to accommodate new working procedures resulting from introduction of new IT system. • Change in accounting system due to new system implementation • Powerful department taking lead in implementation of new IT system. • Work overlap among departments in system design • Commitment of support staffs • Mounting political pressure affecting the implementation of new IT system. 	<ul style="list-style-type: none"> • Most banks claimed that only minor reorganisation is necessary in new IT system implementation (even though not much of what changes took place in the organisation structure were revealed). • Newer and smaller banks tend to have thinner organisation structure with better culture of cohesion. • Banks tend to segregate works according to functional areas. EB is generally developed and managed by the EB department. Marketing may be done by the department's own marketing unit or in collaboration with the marketing department. Marketing department not necessarily seen as a powerful department in pushing new IT system required to serve new market segment. • There are also banks that provide full autonomy to the EB unit in developing and marketing the EB products. This unit would later transform into a subsidiary running own its own resources. • Sources of impetus for the new IT project may comes from top executives (push down approach) or head of IT division who have access to top executives initiating the idea (bottom up approach). • Generally electronic banking system exists as an extension of current core IS. • Collaboration of various departments exists in IT project implementation but not much was mentioned on how the process was done in detail. • Generally top management backs the idea of new IT system to improve performance but may show conservative attitude in providing financial support that is required. • Little is known on how suppliers, hardware and software packages were selected. Details on suppliers' involvement were not revealed in detail.

Theme 3: Technology (including expertise) related issues.

Issues	Remarks (early scenario)
<ul style="list-style-type: none"> • Staff expectation of the new system • The need to increase expertise knowledge among staff • System development team taking lead in implementing the new system. • Involvement of all functional departments in defining the requirement of the new system. • Pressure to deliver system on time • System developed in-house – adequacy of expertise • Ability to understand customers' needs and expectations such as ease of use and security. • Involvement of external expertise – consultant, suppliers • Selection criteria used in choosing agency/main contractor. • Level of trust given to agency – autonomy, mandate • Strategic relationship with agency/contractor. • Members of technical project team • Lack of power of project team • Strength of knowledge of project team • Changes in structure of IT division over years – transformed into techno-business division or subsidiary. • Problems associated with legacy systems – rigidity of existing database system 	<ul style="list-style-type: none"> • Most banks develop the system in house by customising the package supplied to them. • Staff training is the most important effort to increase expertise. On the job training is commonly carried out with the help of suppliers. • Banks prefer to have their own expertise but some degree of dependency on external expertise is unavoidable. • Probe into identifying the name of external consultant's firm charting IT plan for the bank was unsuccessful except for one bank. • Most banks claimed to develop system in house and use internal consultant (perceivably to avoid major changes). Only one bank openly disclosed the use of external consultant and willingly accepts major reengineering of system and people suggested by the consultant firm. • All banks set up project or working team for their new IT system implementation but with varying degree of control (autonomy) ranging from just technical or support in nature to strategic position or influence. • Some banks rely on external expertise to set up project management office and to train internal staff to manage project implementation. Others set up project working team comprising both vendor staffs and internal staffs. • Concern for proper project management was raised but very little was mentioned about the actual process of monitoring or specific project management method used. • Some banks transform technology unit (e.g. IT division) into outsourcing company to serve the banks technology requirements.

6.2 Thematic Analysis and Themes Development

As mentioned in the preceding chapters, the aim of the current research is to understand the organizational process that affects the implementation of IT systems in Malaysian banks.

The preliminary data analysis provided an insight into the possible emerging themes. As the second field trip yielded more data the thematic analysis began to strengthen the shape of the themes proposed at the preliminary stage. The analysis progressed using the thematic analysis technique suggested by Miles and Huberman (1994) known as Data Reduction Process.

According to Miles and Huberman (1994) Data Reduction Process is the process of selecting, focusing, simplifying, abstracting, and transforming terms that appear in interview transcripts and written up field notes. This is important at this stage in order to produce a list of intelligible terms of issues in a manageable form that could be analysed in addressing the research questions. This is done by analysing the primary set of data along with all other relevant data sources in meticulous detail with the aim to produce a categorization of themes.

The following illustration is an excerpt based on data reduction process for one of the case bank to indicate how the analysis is performed in selecting issues that result in the development of the category of themes derived from the raw data:

<i>Selected Issues</i>	<i>Meaning (Interpretation)</i>	<i>Proposed themes</i>
IT unit was formed under the control of Retail Banking Division (RBD).	Limited scope, inadequate autonomy	Poorly designed or defined organization structure .
Quick deployment of a simple system to serve RBD needs but later the job scope increases to serving the overall needs.	Short sighted plan, lack of knowledge in understanding overall needs.	Technology, organization structure
IT unit headed by a senior manager reporting to general manager of RBD.	IT head reports only to division head.	Lack of authority in strategy formulation, poorly defined structure . IT head had little influence in top level decisions.
System implemented on limited scope by RBD.	Majority of operations were still manually done.	Lack of proper top level strategy to guide implementation.
Computerized Financing System (CFS) only caters for	RBD was left on its own to initiate automation.	Lack of organization wide strategy .

deposit systems.		
More independent systems were gradually installed, some were in-house developed e.g. Ledger system; control unit account system, etc.	Separate systems gradually turned to islands of systems and were not connected to each other.	Lack of coordinated implementations due to the absence of broad IT strategy .
Some branches implement newer system known as Integrated Computerised Banking System (ICBA).	Lack of coordination in implementation of new system. Branches using older system had problems in converting data to new system.	Absence of implementation strategy .
Unclear segregation of jobs in IT unit.	Everyone seemed to be involved in all works ranging from development, installation, production as well as support and maintenance.	Poorly designed structure in IT unit.
Customers' demand for better automated systems increased.	Risk of losing unhappy customers.	Adoption of technology was driven by customers demand rather than offered or pushed to them by the bank.
Adoption of distributed stand alone system running on local files and proprietary operating system (Olivetti MOS).	Non-networked system, unable to share data	Inadequate technology
Distributed Automated Teller Machine (ATM) technology deployed due to cost consideration.	ATM system lacked on-line feature. Cost was the main concern for this technology. Top management was quite conservative in approach.	Top management not well exposed to viable technology and not well guided to formulate long term IT strategy .

Table 18: Illustration – Data Reduction Process

The above procedure illustrates how data reduction process was performed. The aim of data reduction process is basically for the analyst to selectively singling out data for description to arrive at an initial categorization which may be shaped by pre-established study questions. The words appeared in bold in the proposed theme column were used to highlight the words that reflect the themes. However, it must be said that while performing this activity, the analyst should remain open to inducing new meanings from the data available.

Based on above illustration, the subject of data analysis is primarily obtained from in depth interviews which essentially provide explanation to some of the emerging

issues. While other sources such as project reports and presentation materials provides essential information such as specific names and features of the technology.

Based on the analysis of in depth interview transcripts, other relevant documents as well as guiding framework established from analysing the literature, three major themes have been identified and believed to have significant impact in the implementation of IT systems in Malaysian banks. These major themes are believed to have significantly affected the IT implementations in each bank. The proposed major themes are: 1) Strategy 2) Structure 3) Technology.

The following section presents a set of tables that summarise the Data Reduction Process for each of the case bank based on the IT implementation projects that were undertaken.

6.2.1 Data Reduction Process – CASE 01

<p>Case 01: MIS Upgrade Project</p> <p><i>Selected Issues</i></p>	<p><i>Meaning (interpretation)</i></p>	<p><i>Proposed themes</i></p>
<p>This bank was incorporated in 1983 amidst a strong request from the public for the banking industry to serve a growing niche of a specific market. Due to the growing demand the bank significantly expanded its branch network in just a short span of few years. The main business then was focused on retail banking. In general the top management showed a conservative attitude towards IT. Attempts by the staff and the former Senior Manager in the IT department in putting forward innovative ideas were not easily accepted.</p>	<p>As the bank expands its customer base, it became increasingly difficult to cope with the manual system. There was increasing need for automation but the management was showing conservative attitude. Despite that the final say about IT decision still rest almost entirely on the management. There seems to be a lack of organizational commitment towards IT which make acceptance towards innovative ideas concerning IT difficult.</p>	<p>There was no clear and long term IT strategy. The conservative approach of the top management became an obstacle in setting up long term direction for new technology deployment.</p>
<p>Due to urgent need of automation, an IT unit was formed under the control of Retail Banking Division (RBD). This division took its own initiative by quickly deploying a relatively simple system to serve the needs of RBD, later however, the job scope began to creep and it end up serving the overall needs of the bank and not just RDB alone. The adopted technology was based on a distributed stand alone system running on local files and proprietary operating system (Olivetti MOS). The bank's branches were all running on a distributed system.</p>	<p>Increasing needs had forced the RBD to form a simple IT structure. This structure was however seen as having a very limited scope with inadequate autonomy. The absence of a long term IT strategy resulted in a short term solution to be adopted. There was also lack of knowledge in understanding overall IT needs for the entire organisation.</p>	<p>The IT structure was also poorly designed or defined and was only meant to meet short term needs. The setup of the IT structure was also limited and was meant to serve a specific scope. However, the absence of clear IT direction resulted in its scope to creep continuously. The deployed technology was also meant to provide a short term solution</p>
<p>The system was originally implemented to serve a limited scope of the RBD. The Computerized Financing System (CFS) only caters for deposit systems which was the main business focus for RBD.</p>	<p>Without clear IT direction, RBD was left on its own to initiate the automation exercise. The distributed non-networked system that was deployed was unable to share data. With the exception of the retail banking operation, other operations were still manually done.</p>	<p>There was inadequate technology expertise and lack of proper top level strategy to guide the implementation.</p>

<p>Case 01: MIS Upgrade Project</p> <p><i>Selected Issues</i></p>	<p><i>Meaning (interpretation)</i></p>	<p><i>Proposed themes</i></p>
<p>IT unit was headed by a senior manager reporting to general manager of RBD in the headquarter office. There was also a problem of unclear segregation of jobs in IT unit. Due to the lack of control, some branches began to implement newer system known as Integrated Computerised Banking System (ICBA).</p>	<p>IT head reports only to division head and there was a lack of coordination in implementation of new system. Everyone seemed to be involved in all works ranging from development, installation, production as well as support and maintenance. Branches using older system had problems in converting data to new system.</p>	<p>Lack of organization wide strategy. Absence of implementation strategy. Lack of authority in strategy formulation, poorly defined structure and IT leadership had little influence in top level decisions.</p>
<p>Customers began to increasingly demand for better automated systems including Automated Teller Machine (ATM). There was a significant risk of losing unhappy customers. A Distributed ATM technology was deployed due to cost consideration.</p>	<p>The chosen technology for the ATM system was lacking on on-line feature. Cost was the main concern for the choice of this technology. Top management was viewed as taking conservative approach. Investment in the technology was seen as merely a management reaction to customer demand.</p>	<p>Adoption of technology was absolutely driven by customers demand rather than offered or pushed to them by the bank.</p>
<p>More independent systems were gradually installed, some were in-house developed e.g. Ledger system; control unit account system, etc. At one time, the bank had thirty branches with each one maintaining its own system.</p>	<p>Separate systems gradually turned to islands of systems and were not connected to each other. The situation suggests that the IT unit in the head office was unable to execute central monitoring on the branch's systems. There was a problem of a lack of coordinated implementations due to absence of broad IT strategy.</p>	<p>Inadequate structure in the IT unit resulted in the lack of system control. Top management not well exposed to viable technology and not well guided to formulate long term IT strategy.</p>
<p>The bottom-line staff began to pressure the management to provide them with the required technology. An external consultant was fully engaged by the management to formulate IT strategy for the bank. However, some middle managers and bottom line staffs viewed the consultant's Information Systems Strategic Planning (ISSP) as superficial and lacking in details.</p>	<p>Internal IT staffs were totally ignored and not consulted in the process of formulating IT strategy. IT staffs felt that more detailed recommendations were needed. Even with the help from the consultants, the top management still failed to formulate clear and concrete strategic IT directions.</p>	<p>Top management did not consult internal staffs to benefit from their technology knowledge and expertise to formulate IT direction (strategies).</p>
<p>The staffs in the IT unit strongly felt that they could</p>	<p>There was suspicion that a member of top management</p>	<p>Personal interest may have come in the way in deciding</p>

<p>Case 01: MIS Upgrade Project</p> <p><i>Selected Issues</i></p>	<p><i>Meaning (interpretation)</i></p>	<p><i>Proposed themes</i></p>
<p>contribute significantly and were ready to give their opinions but the top management insisted on working fully with the external consultant. This had resulted in some members of the middle and lower managements to become suspicious of decisions made by the top management.</p>	<p>might have connection and interest in the appointed consultant firm.</p>	<p>what was best for the organization, indicating abuse of position in the upper structure.</p>
<p>Centralised Online System was recommended by the consultant but the existing IT staffs felt the plan lacked detail and they had limited strength to execute the plan.</p>	<p>The IT staffs had to convince the top management to engage another external consultant to work out the detail plan. As a result the setting up of a Project Management Office (PMO) was proposed.</p>	<p>This suggests that top management had realised the mistake. The setting up of PMO was seen as a move to set up a proper structure.</p>
<p>The new consultant firm executed a management program to educate the management on how to formulate IT strategy, understand the scope of the project, and also help in executing the strategy. The project was named 'MIS Upgrade Project' and the expected result was the delivery of the 'Total Integrated Banking System' (TIBS).</p>	<p>The new consultant was able to produce a detailed ISP (IS Strategic Plan) and educate the management on how to prepare the whole organization to deal with expected changes.</p>	<p>The PMO serve as a coordination centre to coordinate the strategy aspects of the project implementation.</p>
<p>The teams working in the PMO comprise of IT staffs, expert users (representatives of each user departments or functional units), selected vendors and the consultant.</p>	<p>The PMO signifies collaboration of inter-functional units and a combination of experts from within and outside the organization.</p>	<p>An important measure taken by the bank and viewed as incorporating the proper strategy, structure and technology (including expertise).</p>

6.2.2 Data Reduction Process – CASE 02

<p>CASE 02: Electronic Banking Centres (Automated Branch).</p> <p><i>Selected Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>The bank started its operation in 1975 with the primary purpose of serving the labour community and its setup was initiated by the labour union. It was later acquired by a government bank and was repositioned as its commercial arm. An important re-organisation took place in early 80s at the beginning of the computerization era. The new leadership was assigned to the bank (CEO of the bank) that was regarded as a visionary leader. The bank had 23 branches and was considered small at that time.</p>	<p>An important leadership element to lead the organization in a changing environment. New shareholder and a new management team were in place. Implying that strategy and structure were aptly adopted.</p>	<p>A suitable person to provide leadership at top of the structure and was able to demonstrate mastery in formulating strategy to adopt new technology.</p>
<p>A major computerization effort took place in 1995 and was completed in 1997. In the same period, the idea to introduce electronic banking centers (EBC) started. EBC or automated branch was targeted at tapping a market niche serving technology savvy generation that runs at a lower cost compared to running a brick and mortar branch.</p>	<p>All branches were connected to the Centralized Online information system. The first target for the new service was students. The EBC was expected to be located at a number of university campuses.</p>	<p>Suggesting an appropriate technology infrastructure was already in place. The EBC was seen as a feasible strategy that help the bank to grow.</p>
<p>E-Commerce Division was created to take charge of implementing and running the EBC operations. The General Manager of the Corporate Services Division was appointed to Head the E-Commerce Division. The bank also formed a subsidiary entity to act as an outsourcing company to provide technology requirements. The strong team of IT expertise that were involved since early stage of the bank's computerisation were transferred (relocated) to this</p>	<p>This newly created division is given full support in terms of resources and autonomy to make important decisions in running the EBC project. The leader was regarded as having good exposure to technology and enjoyed direct access to the authority at the upper structure. In addition the E-Banking application systems were primarily developed by the bank's IT staff working in the outsourcing company – the other side of</p>	<p>The project was positioned at an appropriate structure within the organization. Full support from people in the upper structure and able to significantly influence or dominate the strategy formulation. There was also adequate internal technology expertise.</p>

CASE 02: Electronic Banking Centres (Automated Branch). <i>Selected Issues / Data collection</i>	<i>Meaning(interpretation) / Resulting effects</i>	<i>Category/Code/Proposed themes</i>
outsourcing company/subsidiary.	the same coin.	
<p>To cope with the expanding IT system, the bank invested in middleware system based on Viewlocity AMTRIX technology that integrates all the banks existing applications prior to developing EBC application. Vendor was selected based on robust selection criteria. The vendor selected was based on a proven track record and the participation was arranged based on a smart partnership.</p>	<p>A planned development that build the system infrastructure, allowing advanced applications to be developed in the future. The bank had learned to be more vigilant in dealing with external vendors. It had the experience in the past working with a vendor that could not deliver its promises.</p>	<p>Strategy that is driven by a clear IT direction made possible by competent leadership. Sufficient knowledge and expertise is required to select and deal with vendor.</p>
<p>EBCs were introduced in stages at the bank's existing branches. In 1998 the bank set up 3 EBC at its branches and gradually over all its 23 branches in five years time. However, after 3 years it was found that customer take-up was excruciatingly slow.</p>	<p>Gradual implementation strategy allowed well-timed feedback. Despite carefully planned, something was critically wrong with the implementation strategy.</p>	<p>A strategy seemed practical but did not work.</p>
<p>The new E-banking services ownership was not with the branches. The task of selling E-banking services was left with the branch. However the branch staffs did not buy the concept and they shunned the move. Customers continue to use counter services. Although the central IT (unit) and the management were highly optimistic with new technologies but bottom-line (branch) staff could not see any benefit or contribution from the new technologies.</p>	<p>The branch staff did not see E-banking as complementary to what they we doing and came to regard E-banking as competing with their services. Without formal attachment to the structure, the branch staffs could easily disassociate themselves from the responsibility to push the E-banking services. Bottom-line staffs did not feel the ownership of the new e-banking application and did not push it out to the customers. Inter-functional collaboration at the bottom level was not clearly defined.</p>	<p>Absence of proper organisation setup (structure) at the service level and without the adequate control the bottom-line staffs had the power (influence) to ignore a certain decision taken by the bank. Sense of ownership and responsibility were absent to the bottom-line staff because they were not formally attached to the structure.</p>
<p>Once the EBC development was completed, the IT staffs involved in the E-Banking application</p>	<p>When the job was over they (IT staffs) were not given new role to help sell the E-banking services. The</p>	<p>Without proper organisation setup (structure), new roles could not be created. It is evident that new</p>

<p>CASE 02: Electronic Banking Centres (Automated Branch).</p> <p><i>Selected Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>development remained in the IT unit, perhaps idle. Corrective measure was taken by setting up a new subsidiary as a spin-off unit which has its own profit-centre and was mandated to run its own marketing and sales force and have its own set of customers. The idle IT staffs were given new roles with new incentive structures to market and sell the E-banking services.</p>	<p>creation of the fully mandated spin-off unit clears-off the confusion in the old structure. The new structure and incentives had increase the sense of ownership of the new e-banking services and made the new team a dedicated work force.</p>	<p>technology is not only about technical expertise but must also consider social implications. It is importance to clearly define the structure that incorporates concerns over socio-technical issues to successfully implement new technology.</p>

6.2.3 Data Reduction Process – CASE 03

CASE 03: System Upgrade and Integration Project <i>Selected Issues / Data collection</i>	<i>Meaning(interpretation) / Resulting effects</i>	<i>Category/Code/Proposed themes</i>
<p>The computerized banking system built in the 1980s by automating manual processes could no longer cope with the demand for a more efficient system. Since the beginning of its incorporation, the bank has been highly committed in maintaining excellent customer service.</p>	<p>New technology adoption was driven by the motive to meet the bank's main strategy focused on its customers. Maintaining customer satisfaction and excellent service had earned the bank a number of yearly awards in consecutive terms as the country's best local bank.</p>	<p>Being customer-oriented bank had always been the focus of its long term strategy.</p>
<p>The reasons for changing technology were; obsolete technology, applications could not be expanded, slow system response, and applications could not be integrated.</p>	<p>There were clear motives for investing into new technology.</p>	<p>Obsolete technology was undoubtedly cited as the reason for change.</p>
<p>This bank had maintained a sound organization setup for IT since its first computerization project in the 1980s.</p>	<p>The bank had been maintaining a strong team of staffs in the IT division (ITD). These staffs were also regularly trained at its purpose built training centre.</p>	<p>The bank's IT strategy was to maintain a team of competent experts in house.</p>
<p>All of the bank's IT resources and staffs were housed at its purpose built IT center (ITC). Even though the ITC was running on its own resources, its operation is closely monitored by the bank's top management.</p>	<p>The primary operation of the IT centre was to provide support to the bank's overall IT needs.</p>	<p>Despite its sophisticated physical and structural setup, the IT centre was not mandated to dictate the IT requirements of the bank.</p>
<p>In a major IT system implementation, the ITC coordinates the roles of two main divisions namely the IT Divisions (ITD) and Banking Operations Division (BOD).</p>	<p>In this setup, ITD represents the expertise of the technical (technology) areas whereas the BOD represents experts from the business areas.</p>	<p>The structure of the ITC facilitates the inter-functional collaboration of both the business and technology sides.</p>
<p>The CEO is a highly experienced banker, having performed all sort of works in the bank at all levels</p>	<p>The bank is headed by a leadership that understands the business focus of the bank and how to meet customer</p>	<p>The top management seems to very certain in terms of how the technology should be exploited while</p>

CASE 03: System Upgrade and Integration Project <i>Selected Issues / Data collection</i>	<i>Meaning(interpretation) / Resulting effects</i>	<i>Category/Code/Proposed themes</i>
from clerical position to high level decision making position.	expectations.	remaining focused at the bank's core businesses.
In 1996 the bank decided to upgrade its IT system formed a team to undertake the task. The top management was almost certain to invest on a working system sourced from abroad to be customised to meet local requirements.	The management sought to minimized risk by choosing a proven system that could be customised to meet local requirements by internal experts that were available.	Top management directly involved in choosing a solution, in a manner that demonstrates competence in technology decisions.
Even though internal expertise was available, development of the system from scratch was not an option. The time cost (man hours) involved could not be justified. Hence a customisable package was adopted.	While new technologies may offers extra features, the management only justified the requirements based on clear needs.	Such decision was made to ensure the technology investment was fully utilised and not wasted on unused features.
Together with the top management representatives, the project team identified a number of potential packages from several vendors and made several site visits.	Top level management were directly involved in reviewing and short listing potential solutions. Such involvements expedited the decision making and simplify the financial justification process.	A less formal structure could assist in effectively exchanging ideas to meet strategy expectations.
To reduce uncertainties caused by introducing new technology, the top management hired an experienced expatriate to take the leading role in the ITC.	An external technology expert was brought in to complement the existing internal expertise in areas the bank was yet to be familiar with.	By clearly identifying the existing level of expertise the top management was able to chart a specific strategy by bringing in expertise from outside.
The Banking and Operation Division (BOD) were led by expert users representing users from the business side. All user requirements were raised in thick volumes of documentation known as the user requirement definitions (URD).	Detail user requirements (User Requirement Definitions, URD) could be produced with the effective leadership led by experienced experts from the user side (expert users).	A structure that provides strong representation of the user side so that the implementation of new technology not only offers technical benefits but also considers social and people issues.

CASE 03: System Upgrade and Integration Project <i>Selected Issues / Data collection</i>	<i>Meaning(interpretation) / Resulting effects</i>	<i>Category/Code/Proposed themes</i>
The BOD led the user sides from various user departments along with the IT team to test the application packages that had been customised and integrated.	The BOD was instrumental in coordinating the different user roles during the development and testing stage.	A structure that allows inter-functional collaboration would help increase the chance of success in the implementation.
For mundane IT requirements, the structure of the IT unit was such that user representatives would raise system modification request (SMR) to a working group committee (WGC) who would review and approve the request. Top level management was not involved in such a process.	The WGC a decentralised setup that effectively accomplish minor requirements by coordinating the business and technical resources.	This is a middle level structure which is mandated to decide and approve small scale IT requirements.

6.2.4 Data Reduction Process – CASE 04

<p>CASE 04: System Migration to ALLTEL System through an outsourcing subsidiary</p> <p><i>Selected Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>This bank first started its computerization in the early 1980s based on Olivetti's distributed system technology. In 1996 it embarked on a project to install a centralized online computing technology using the SAFE system that runs on IBM mainframe computers. The bank's data had since been converted to SAFE format. In 1987 there was a major system upgrade to the SAFE II system. A purpose-built Data Centre was built to house the IT division which runs a number of departments to provide the IT requirements and support to the bank's nationwide networks of approximately 200 branches.</p>	<p>This bank was established by the government and had strong financial support. The bank could afford to install the expensive SAFE system on IBM hardware and was used for more than 13 years with a number of major upgrades. Its sophisticated data centre housed its IT structure and technology equipment. The IT structure runs a number of departments which include; software development, system analyst, programmer, system planning, database administrator, and communication.</p>	<p>Backed with strong financial support by the government, the bank was able to invest in expensive technology as early as in the 1980s. It could also afford to build a specific purpose data centre which housed a sophisticated IT structure.</p>
<p>During this period, the IT division had developed a number of banking applications to provide the technology that were needed for a number of new products and services. As the number of applications grew the bank began to experience the classic 'islands of automation' problem, the increasing cost of system ownership, and the dwindling capability to optimize its technology resources.</p>	<p>As a large scale bank with huge financial allocation for technology the bank had the privilege to buy expensive systems and experiment with the new technologies. It also had a multiple teams of IT experts with each one specializing in different technologies.</p>	<p>With the high availability of financial resources the bank was believed to have been lavishly spending on multiple technologies without a clear IT strategic direction.</p>
<p>The economic situation in the mid 1990s compelled the bank to rationalize its overall operating costs. The poor business performance, massive organization structure, high operating cost, high technology maintenance cost were contributing to the worsening financial situation. Despite the availability of integrated banking</p>	<p>The changing economic situation and poor business performance had posed a burden for the bank to maintain the huge size of its in-house expertise and technology systems.</p>	<p>Financial constraint had become a disadvantage for the bank to maintain its existing IT structure and in-house technology expertise.</p>

<p>CASE 04: System Migration to ALLTEL System through an outsourcing subsidiary</p> <p><i>Selected Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>technology, the bank did not responding adequately to adopt the technology.</p>		
<p>At the end of 1999, the bank was merged with a new entity. The consolidation process involved migration of the SAFE II system over to the newer ALLTEL system used by its merger partner. The migration project was outsourced to a newly incorporated subsidiary company linked to the parent entity of the merger partner. The subsidiary company in turn acted as an agent and appointed another outsourcing company to provide expertise based on what was known as 'smart partnership'. The bank also engaged an overseas consulting group to help led the reorganisation exercise of the merged entities.</p>	<p>The SAFE II system had to be surrender in order to take advantage of the more superior ALLTEL system. The consolidation process had also contributed in a significant number of redundancies among the IT staffs. The aim at reducing operational cost through outsourcing had caused the IT staffs to be idle.</p>	<p>The new bank management had to take on a tough strategy and took advantage of the merger exercise to reorganize the ailing IT structure inherited from its previous entity.</p>
<p>The outsourcing arrangement was the largest ever outsourcing contract in Malaysia and the first ever such agreement in the country's banking industry. Under the long term arrangement the banks comprehensively leveraged its IT functions to the two joint outsourcing partners. Almost all areas of IT functions and IS management would be outsourced. This unusual arrangement had raised some worrying concerns and controversies in the industry.</p>	<p>The outsourcing agreement was part of a long term agreement to outsource the banks IT functions as well as non-core functions. The outsourcing arrangement was carried out in three phases. Phase I include areas of payment processing, cheque processing, call centre, and IT infrastructure services. Phase II include ATM management, cash management, branch accounting, IT application management. Phase III include trade processing corporate services, administration services, and consumer finance. The outsourcing partner would be responsible for mainframe, midrange, network, desktop, server function, and IT security. In short, almost all areas of the bank's IS management have been outsourced.</p>	<p>In an attempt to make a rapid transformation, the bank could be seen adopting strategies deemed too aggressive in restructuring its IT capabilities. It is also perceived as highly risking its technology dependency by totally outsourcing all areas of it's IT functions and IS management.</p>

<p>CASE 04: System Migration to ALLTEL System through an outsourcing subsidiary</p> <p><i>Selected Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>One of the key issues in the IT outsourcing arrangement is the issue of massive redundancy among its IT staffs which the bank fully anticipated. The redundancy problem was addressed by the bank with a planned migration and transition. The idle IT staffs with identified skills and competencies would be offered to joint either one of the outsourcing partners company. Decision to accept or decline is entirely up to the staffs. The remaining staffs would be absorbed into other areas in the bank and would be given new roles. The majority of the affected staffs however were not happy with the arrangement and had taken their protest to the streets. The protests were soon turned into an ugly trade disputes with the involvement of the National Union of Bank Employees (NUBE).</p>	<p>The aggressive strategy adopted in the outsourcing arrangement had caused the affected staff to perceive that they were victimised by the bank management. Despite a proposal for planned transition and migration the affected staffs remained unhappy and took actions to demonstrate the state of their emotions.</p>	<p>Management would use their prerogative to adopt tough and aggressive strategy shaped by their underpinning philosophy to achieve quick result. Whether or not to consider the social implication of their technology decisions would all depend on their understanding of what successful implementation means to them.</p>

6.2.5 Data Reduction Process – CASE 05

<p>CASE 05: Implementation of a Full Electronic Banking Operation</p> <p><i>Selected Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>The bank history started as stock broking firm that turned itself into a full-fledge bank. As a new bank that was formed in 1990s, the bank had to compete with the larger banks and needed a strong strategy to be based on technology to capture a significant market share.</p>	<p>The bank’s leadership was very certain that setting up strategies based on technology would be the only way to compete with other banks.</p>	<p>A strategy that was deliberately built on IT as serving the backbone of the business.</p>
<p>The founder of the bank was a highly entrepreneurial person and has excellent understanding of the financial services sector.</p>	<p>Maintaining up-to-date knowledge of the sector and possessing the right attitude had led the founder to venture into banking business. He frequently travelled to the US to attend conferences on the new economy and to keep abreast with the new development in technology innovation in the US banking industry.</p>	<p>The right knowledge and analysis are required in formulating effective strategy.</p>
<p>Since its inception, the bank had a clear vision i.e. to be the integrated provider of choice for retail financial services through product and delivery innovation.</p>	<p>By focusing on delivery innovation the bank differentiate itself from its competitors by offering alternatives to the conventional (branch) banking with the use of technology. The technology would be pushed to reach out the customers.</p>	<p>The alternative delivery channel (e-banking) was identified as the area where technology innovation would be applied.</p>
<p>Technology plays a central role in the development and enhancement of the bank’s product.</p>	<p>Realising that the modern lifestyle trends demand convenience and timely information, the banks harnessed the advances in IT and telecommunication to develop highly differentiated alternative delivery channels to complement its traditional branch network.</p>	<p>The bank has utilised technology to innovatively develop its banking services and make it more accessible.</p>
<p>A computer systems company was set up as a subsidiary entity to the bank to provide consultancy and</p>	<p>Setting up a technology arm was seen as a viable solution. Operating using its own resources and staffs</p>	<p>This strategy allows the subsidiary company to fully focus its operation related to technology and relieved</p>

<p>CASE 05: Implementation of a Full Electronic Banking Operation</p> <p><i>Selected Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>systems integration to the bank. The relationship between the two entities was primarily based on an outsourcing arrangement.</p>	<p>the subsidiary was fully mandated and dedicated in providing the services that was required.</p>	<p>the bank so that it can focus on its core business. This can also be seen as a practical and complementing structural setup.</p>
<p>The bank's online banking system is fully integrated with its sister company which is a full-service stock broking house that offer a comprehensive range of products and services to local and international clients and retail customers. It has its own research unit specialises in detailed financial and economic research.</p>	<p>This integration allowed the existing customer base from the stock broking operations to be bridged over to its online banking services. This saved the bank the difficulty to build its customer base from scratch. This revolutionary online banking and investing services also offer its customers with convenience in banking and share investing.</p>	<p>Guided by a firm strategy the bank utilised technology to take advantage of already a potential customer base by offering online banking services.</p>
<p>After completing the development and integration of the online banking system infrastructure, the technology arm (subsidiary company) was absorbed into the bank's new IT structure to retain the expertise and giving them new roles. The IT staffs would be directly involved in selling and providing customer support for the e-banking products and services. They are also given the task to innovate new systems to cater for new products and services.</p>	<p>By absorbing the expertise the bank retained its strong team of expertise and was assigned new roles under the new and flat IT structure. The IT staffs were given front-line roles and empowered to make decision. They were trained and given motivation to build relationships with customers.</p>	<p>The new IT structure enables the bank to maintain a highly trained and motivated expertise by empowering them with techno-business skills.</p>

6.2.6 Data Reduction Process – CASE 06

<p>CASE 06: Direct Banking - Electronic Banking System Implementation.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>The bank has been in the market since , and was seen as practising a conservative approach in banking. It controls a moderate size of the market share. IT was perceived by some of its former staffs that the top management board was dominated by conservative members.</p>	<p>Due to its conservative approach the bank was not seen as an aggressive player in the market during the early 1990s. The bank continues to serve its loyal customers whom the majority were from the corporate sectors and individuals from the business community.</p>	<p>The bank was seen as pursuing it business based on strongly conservative strategy.</p>
<p>Due to increased competition, the bank took a turn in the mid 1990s and began to adopt a more aggressive strategy. Amidst the conservative environment, one of the board members began to preach about IT and took a great effort to influence the bank’s management to seriously consider the use of technology to achieve its strategic goals.</p>	<p>One of the board members had to take the role of a champion to convince the rest to consider IT as an enabling tool.</p>	<p>Someone had to assume the role of a champion to push the technology agenda to be included in the top level strategy.</p>
<p>The bank had to spend a huge sum of money and got help from vendors and consultants to determine its IT requirements, and to develop and implement its integrated banking system. Integrated banking system was new in the market then and vendors were aggressively looking for early adopters.</p>	<p>Despite encouraging support for technology, the bank lacked in-house IT expertise and had to fully rely on consultants and vendors advice. Nevertheless the bank was the first to use integrated banking system technology.</p>	<p>External expertise was entrusted to give advice on technology issues and setting its IT direction.</p>
<p>After witnessing the business growing as a result of using technology, in 1995 the bank’s management came up with the idea to introduce electronic banking services. However the internal structure was not yet in</p>	<p>While there was positive change in its approach towards technology, the bank’s management was still acting conservatively in responding to changes in the internal structure that was required to run the IT</p>	<p>Inadequate IT structure to cater for the new technology.</p>

<p>CASE 06: Direct Banking - Electronic Banking System Implementation.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>place to cater for this new service.</p>	<p>operations.</p>	
<p>An electronic banking project team was set up by the bank and an Australian expatriate was hired to lead the project team. The person was originally hired to provide project management consultancy.</p>	<p>External expertise had to be brought in to help managed the electronic banking project.</p>	<p>Lack of proper structure and technical expertise in technology.</p>
<p>Though originally hired for advice on project management aspects, the person (expatriate) was also very well versed in IT and was later absorbed by the bank. An electronic banking department was then set up and headed by that person.</p>	<p>Due to the lack of experience for a new structural requirement, the bank had to rely on external expertise to advice on the setup of new structure to cater for electronic banking services.</p>	<p>A modified IT structure was finally in place.</p>
<p>Due to the restriction from the central authority policies the expatriate's work permit could not be extended and was obliged to leave the country. One of the project team leaders had to be appointed to manage the project. Despite struggling with an inadequate expertise the project was nevertheless completed and launched.</p>	<p>The bank's internal team was only partially trained and prepared to continue with the project. Its dependence on external expertise had caused the project team some difficulties when the hired expatriate had to leave.</p>	<p>Despite an improved structure the project team had to struggle with inadequate expertise.</p>
<p>It took quite a long period of time for the top management to fully realised the need for a more comprehensive structure to cater for the IT needs that continued to grow. At one time the IT staffs were unhappy with the top management and left the bank in huge numbers.</p>	<p>Despite some success in new IT system implementations the conservative approach of the top management had caused the bank to inadequately respond to the demand for a more comprehensive IT structure.</p>	<p>The conservative strategy lacked dynamism and inadequate to respond to technology requirements and to make changes in the structure.</p>
<p>The top management finally restructure the organization and an IT Division was created to meet the expectation of the growing IT needs.</p>	<p>The bank had to learn the lesson in a hard way. The new division was given strategic role to steer the IT direction for the bank. The long term plans include a</p>	<p>A clear technology strategy and comprehensive structure were finally in place.</p>

CASE 06: Direct Banking - Electronic Banking System Implementation. <i>Issues / Data collection</i>	<i>Meaning(interpretation) / Resulting effects</i>	<i>Category/Code/Proposed themes</i>
	strategy to retain internal expertise.	

6.2.7 Data Reduction Process – CASE 07

<p>CASE 07: Implementation of a Computerised Online Central Host System.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>This bank came into its current existence after having changed owners through three previous take-overs. The bank went through hostile episodes of more than 30 years since it was formed in 1905 as a mortgage and remittance company serving a small community of traders. Up until 1970s there was almost no computerisation introduced and everything was manually processed.</p>	<p>Operations without the help of automation were described as ‘a sorry state’. Manual interest calculation every end of the month was a ‘horrible’ situation. No one was allowed to take leave so that the task of manually calculating interest for every customer account can be completed.</p>	<p>The absence of technology posed limitation to manual capability.</p>
<p>There had previously been two stages of computerization since the early 1980s. The first was the computerization of its 35 branches based on the Nixdorf Systems which a stand alone technology. This system automated the saving and current account system only. The rest were still manually processed.</p>	<p>With stand alone system there was no way to link the branches. Multiple customer accounts at different branches were one of the main problems. The system was unable to check redundant account opened by a customer at other branches.</p>	<p>Mere automation was inadequate and there was a real need for a better strategy to exploit new technology.</p>
<p>The fact that the banks urgently need to implement a Host (Centralised) Computerization had led the bank’s management to resort assistance from the purportedly well known vendor and consultant, IBM for advice and solution. External expertise was sought after because of the lack of internal expertise in the bank. There had been direct negotiation between the top management and the vendors.</p>	<p>The technology was based on Silverlake Retail Banking System (RBS) installed on midrange IBM AS 400 hardware, all branches were linked in a network and new services were added including ATM and Credit card systems. The core system was also integrated with other applications including RBS, fixed deposits, loan systems, trade finance, remittances and general ledger (GL).</p>	<p>Dependency on external technology expertise because of lack in-house expertise.</p>
<p>While the new system was successfully put in place, the use of the systems was not as smooth as expected. It</p>	<p>The project team asserted that they only complied with a minimal process change which was inadequate. There</p>	<p>The social implication of the new technology implementation was not given adequate deliberation</p>

<p>CASE 07: Implementation of a Computerised Online Central Host System.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>was claimed that the workflow used was still based on the old and manual working procedures. The workflow was not 'reengineered' because of the short timeframe that was allocated for the completion of the project.</p>	<p>was considerable amount of complains and the system users were not very happy using the new system.</p>	<p>during the new system development process.</p>
<p>The new system was nevertheless completed and installed. However the abrupt change over process from the old system to the new one encountered a substantial resistance from the user side.</p>	<p>Although it was claimed that the users did expect the change over process would take time and they anticipated tedious would be involved but they seemed not ready to show commitment. Some users were obviously not fully ready to expect new problems with the new system.</p>	<p>The implementation strategy obviously did not adequately address or anticipate the potential people issues.</p>
<p>Users' acceptance took longer to happen. Users seemed to think that there were more work and situations to face with the new system despite some routines would be made easier using the new technology. This perception was aggravated during the 'chaotic' data conversion process. Thus the users experience with the new system had not been very good.</p>	<p>Users were not made clear of the potential temporary setbacks and potential benefits of the new system. As a result they could not weigh the benefits over temporary problems they were experiencing. Users were not adequately prepared and guided to go through the process changes that were taking place. A change management program would perhaps enable some structural changes while preparing the user through the change process.</p>	<p>The implementation strategy was more focused on technical capability and ignored the social component.</p>
<p>Even though user group representatives from the business side were appointed to be part of the project team, they were position directly under the jurisdiction of the IT structure. These representatives felt that they did not have the bargaining power to influence the decisions.</p>	<p>The user representatives were seconded and work full time in the project. In specifying the user requirements they solicit information from the user but never reports to the heads of the business sections. In other words the project was very much IT driven.</p>	<p>The structure of the project was seen as biased towards the technology group.</p>
<p>There was also a problem of shortage of man power for</p>	<p>The purpose of recruiting the staffs from the use side</p>	<p>Structure that was based on ad hoc setup caused</p>

<p>CASE 07: Implementation of a Computerised Online Central Host System.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>the project. Additional staffs were pooled from the business side. These staffs were recruited to be part of the user group in the project. There was a plan to set up a department for these recruited staffs after the completion of the project. Eventually they never go back to their respective business operation.</p>	<p>was to enable this user group to evolve from the user side to become the project team that would provide support and services. This was supposed to help the 'buy-in' process among the user for the new system.</p>	<p>confusing roles and could not function in the long run. There is a need for a long term human resource strategy.</p>
<p>After the completion of the project the IT team had grew stronger and the bank was able to maintain a strong team of internal expertise. The project assigned at least three staffs for each system application to work along with the vendors' team so that there would be knowledge transfer. Some of the trained staffs however left to opt for offers with better perks.</p>	<p>Despite the bank being able to grow its own expertise retaining them was not easy because the career and incentive structure was not attractive.</p>	<p>There is need for structural changes to cater for the need to maintain in-house technology expertise.</p>

6.2.8 Data Reduction Process – CASE 08

<p>CASE 08: Implementation of a full Graphical User Interface (GUI) Computing System Environment.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>This bank was formed and started its operation in 1999 as a split entity detached from its parent entity. Its operation is targeted to serving a specific niche of the market. Emerging as a new entity the bank has a network of 40 branches inherited from its parent bank. It also inherited about 1100 personnel and approximately 650,000 customers.</p>	<p>The new entity provided an opportunity for the new management to embark on a transformation programme to set new strategies and restructure the whole organization based on the existing resources and technology infrastructure.</p>	<p>Though the bank was new, the technology infrastructure was already in place, albeit inadequate.</p>
<p>The members of the new management team were highly motivated and experienced people in the banking business. The bank staffs were inspired by the renewed enthusiasm of the top management and were adapting themselves with the new environment.</p>	<p>As a new bank, the organisational culture was still in its infancy stage and conflicts have not yet set in. The management actively instil new group dynamics through regular meetings and motivations.</p>	<p>The highly adaptive environment allows the staff to be receptive of the new structure.</p>
<p>The top management were very much involved in setting the new IT direction for the bank. Among them were people who had vast experience in IT implementation. The top management proposal to adopt Windows environment was viewed as a step towards harnessing the internet capabilities.</p>	<p>The top management were actively involved in setting the strategic IT goals and pushing the organization towards adopting new technology.</p>	<p>The IT inclined individuals in the management were taking the role of championing technology issues. They were also instrumental in setting long term IT strategy.</p>
<p>At one time an external consultant firm was engaged to study the IT requirements and to guide the bank's in setting its future IT direction. The result and recommendation of the study were viewed with scepticism and was not well received by the bank</p>	<p>Most of the middle managers were of the view that the study conducted by the consultant was not helping the bank to learn new insights in setting the future IT direction. Some of the recommendations had already</p>	<p>This incidence could be construed as a case where the managers were not ready to rely on external expertise to determine their technology requirements.</p>

<p>CASE 08: Implementation of a full Graphical User Interface (GUI) Computing System Environment.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>managers.</p>	<p>been considered prior to the study.</p>	
<p>In the course of building an improved IT infrastructure within the organisation, the bank specifically chose to consult a vendor who recommended deploying Windows 2000 to take advantage of greater Internet integration, higher security and reliability, interoperability with other platforms and scalability.</p>	<p>The management was highly decisive in terms of the required technology and the vendor was engaged to give specific advice on the already decided technology. The strategy to adopt industry standard operating system that could reduce foreseeable future integration problems.</p>	<p>Competence in technology aspects allowed the management to be highly certain in determining the implementation strategy.</p>
<p>The bank had ambitious plan to deliver innovative service customers, by developing wide range of IT applications. Its direction is to embrace Internet technologies, such as e-commerce application and Internet banking.</p>	<p>The bank management realized the importance of preparing the bank to acquire an IT infrastructure that allows it to take advantage of the anticipated business opportunities.</p>	<p>An indication of a clear long terms IT strategy.</p>
<p>Despite being innovative at the front end technology; the bank was limited in terms of being innovative at its back end operations. The bank had to rely on the courtesy of its former parent entity by ‘piggy riding’ on the latter for its current back end system which is based on a mainframe technology. Despite having planned to acquire its own back end technology capability the bank was being constrained by its financial circumstances. One of the viable options in the immediate future is to outsource its back-end operations. Its internal IT strength is currently focused on the front end systems and also on its delivery channels.</p>	<p>The bank’s management was able to identify the strength and the weakness in terms of positioning its IT capabilities. Despite relatively small in size of its IT staffs, the IT structure is quite flexible in that the staffs could easily collaborate with the business side to understand their needs. The flexible structure facilitates knowledge management and encourages innovative collaboration between the technical and business sides.</p>	<p>Highly liberal and forward thinking management produce a conducive environment for a flexible structure guided by robust strategy that promote innovative use of technology.</p>

6.2.9 Data Reduction Process – CASE 09

<p>CASE 09: Integrated Multiple Loan Systems Conversion Project.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>The project was part of a wide range system integration program that integrate all applications onto the bank's global IT infrastructure based on ALLTEL system running on IBM ES9000 mainframe. Previously the bank's multiple loan systems were running on stand alone system.</p>	<p>The bank had invested in the ALLTEL banking system as early as the 1990 and was one of the early adopters of integrated banking system technology. The system was able to integrate multiple application platforms.</p>	<p>The investment into integrated banking technology was based on a long term strategy that incorporates capability for future technology expansion.</p>
<p>However, converting the stand alone Retail Branch Delivery (RBD) Loan System to the mainframe platform would require enormous amount of customisation and was regarded as a less feasible approach. The bank adopted a midrange technology based on Silverlake Advance Loan System with the capability to be integrated with the mainframe technology. The multiple loan systems conversion project involved converting stand alone technology to the AS400 midrange technology which could be integrated to the ALLTEL System on the ES9000 mainframe.</p>	<p>Overly customising the ALLTEL System to enable integration with the stand alone system may affect the overall system's performance. The Silverlake AS400 system was chosen as a medium because it provides high integration with mainframe technology. This intermediate technology offered a more cost effective solution with minimum customisation.</p>	<p>A well informed strategy enabled a cost effective and minimum risk solution to be selected.</p>
<p>The bank was backed by a strong corporate level IT support group that provides support to all of its subsidiaries. The top level IT structure is responsible to formulate corporate level IT strategy that guide the</p>	<p>With a strong team of IT experts who have wide experience, the bank was able to precisely determine the scope and resources required for a particular project. For example in the Loan System conversion project, the</p>	<p>This project demonstrated how well-equipped expertise could precisely determine how the project should be structured and what technology would be required.</p>

<p>CASE 09: Integrated Multiple Loan Systems Conversion Project.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>direction for all its subsidiaries. The group also had a wide range of experiences in major IT implementations. The bank's IT team liaise with the top level group for advice and technical expertise.</p>	<p>bank's project team was able to determine whether the project should be driven by the IT side or the business side, also how much involvement was required from each side.</p>	
<p>The project started with the appointment of executive sponsors from the respective business areas by the Managing Director (MD). Appointed sponsors at the executive level including the MD would form the steering committee. This committee would officially identify and appoint the project director to lead the project team.</p>	<p>The role of the steering committee is to oversee the project and resolve issues raised by the project teams. The role of the project team was focused on three major areas of the project – technical, business and operations. On top of that internal audits and security units would also be part of the project team.</p>	<p>By determining the system ownership (appointment of executive sponsor), the top level IT structure ensure high sense of ownership that could strengthen the commitment in ensuring project success.</p>
<p>The bank had instituted an internal Program Management Office that would help coordinate and guide project team in aspects of project management.</p>	<p>This office is part of the group level IT structure that will guide project teams in areas where standards and quality are required. This would ensure the running of projects will conform to standards and best practices.</p>	<p>A robust IT structure that helped to increase implementation success through ensuring quality deliverables at each project phase.</p>
<p>The corporate level maintains highly competent expertise at various levels of the group IT structure. This would ensure that the organisation would not have to depend on external expertise for its requirement. For example the procurement of major application system would also include the acquisition of their source-codes. This would ensure the bank to have control over the applications and totally dependent on vendors. At the same time it also adopts cost effect strategy in maintaining the internal expertise.</p>	<p>For major applications the bank keeps special teams of experts who are competent to perform customisation to suit the bank's requirement. When it is not economical to maintain internal expertise to develop the system, the expertise will be outsourced.</p>	<p>The bank adopts a clear strategy to adapt to different needs and situations in minimising the risk of its technology requirements.</p>

6.2.10 Data Reduction Process – CASE 10

CASE 10: System Conversion from SAFE to Silverlake Integrated Banking System. <i>Issues / Data collection</i>	<i>Meaning(interpretation) / Resulting effects</i>	<i>Category/Code/Proposed themes</i>
<p>The history of this bank started in 1960s as a small bank serving a relatively small business community in the east Malaysian state of Sarawak. The use of computing technology was almost nonexistent. It was taken over in 1992 by an entity that has root in the automobile industry. Computerization was later introduced based on a midrange system based on IBM AS400 technology. The platform hosted Silverlake banking application system.</p>	<p>As a relatively new bank, the invested in a new technology with highly integration feature to allow future expansion.</p>	<p>As a new bank with expertise in its infancy stage, the strategy was to rely on a proven technology that supported by credible vendor.</p>
<p>At the end of 2002, the bank was merged with another banking entity. The merger partner had already used computerised banking system based on IBM mainframe technology running SAFE system.</p>	<p>Despite using relatively older technology, the merger partner was supported by its own team of expert. However, the technology offered limited room for expansion.</p>	<p>Due to the fact that the existing technology was approaching obsolescence, new strategy was needed to prepare the existing expertise to cope with new requirements.</p>
<p>During the consolidation process, the merged entities needed to rationalise two different IT structures. The bank's IT structure was housed in the MIS department headed by an AGM reporting to the Chief Operating Officer (COO) of Management Services Division (MSD). On the other hand, the IT structure of its merger counterpart was a division headed by a GM which was equivalent of COO of the bank. The merged IT structure was based on the bank's existing structure.</p>	<p>The IT structure of the bank's merger counterpart was more comprehensive and more powerful compared to the existing structure. The consolidation of the two different structure meant that the IT structure of the merger's counterpart would be demoted to adapt to the existing structure. There was considerable level of resentment among the affected IT staffs. Some had left for obvious reasons.</p>	<p>The changing setup of the IT structure had resulted the bank to lose some expertise. The strategy was adopted as a measure to reduce the overall operating cost for technology.</p>

<p>CASE 10: System Conversion from SAFE to Silverlake Integrated Banking System.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>On a routine basis the AGM of MIS department reports to the COO of MSD, a different reporting structure is used for major project such as the integration project. The AGM would sit together with other COOs in the IT steering committee and reports directly to the Board of Directors.</p>	<p>The system migration project was a large scale project that would affect the whole organisation. It was obvious that the IT authority should be empowered to be involved in major decision process concerning technology. The AGM of the IT department was appointed to be part of the high level IT steering committee.</p>	<p>Structure adjustment was made by empowering IT leadership with major decision making process concerning technology.</p>
<p>The bank's IT expertise was specialised on midrange technology and its merger counterpart specialised in mainframe technology. None of the expertise was familiar with both technologies. External expertise was required and IBM was engaged to provide consultancy services. The proposed solution was to bring over the SAFE system to the current Silverlake Integrated Banking System (SIBS).</p>	<p>Two sets of expertise each specialising on different technology environment. IBM was tasked with the responsibility to propose the best strategy to bring the two different together. In this case external expertise was sought to fulfil the gap in the internal expertise.</p>	<p>The proposed solution involves adopting a strategy that is cost effective by investing in midrange technology which requires lower maintenance cost but offering high integration and expansion capabilities.</p>
<p>The project organisation was comprised of two major working group – IT group and user group. The IT section was headed by the IT Coordinator and was responsible to deliver technology requirements. Whereas the user section was headed by Business Coordinator and was responsible to specify user requirements.</p>	<p>The user working group derived its member from among expert users representing major business areas including finance, marketing, human resource and various business delivery areas. This working group was arranged in matrix structure where members of each sub team report both to the IT and Business Coordinators.</p>	<p>The project structure ensures that technology expectation of the users would be precisely understood by the IT expertise that will deliver the solution.</p>
<p>At the completion of the project the teams were dissolved and reabsorbed into their respective areas. A new application that automates reconciliation transactions based on SmartStream's Corona System was developed and integrated to the existing SIBS. The</p>	<p>By investing in STP capable system the bank demonstrated that it is keeping pace with the changing technology in the industry where banks would soon strive towards achieving STP. By investing in proven system considered as the de facto standard in the next</p>	<p>Investment in STP could be seen as part of a long term strategy that might provide competitive advantage in the new era of future banking technology.</p>

CASE 10: System Conversion from SAFE to Silverlake Integrated Banking System. <i>Issues / Data collection</i>	<i>Meaning(interpretation) / Resulting effects</i>	<i>Category/Code/Proposed themes</i>
SmartStream's Corona System offers the bank the capability to expand its current system into the new era of banking technology known as 'Straight Through Processing' (STP). The bank aspires to be one of the leading banks in the country by focusing on banking efficiency.	era of banking technology (STP); the banks is seen as adopting the right strategy.	

6.2.11 Data Reduction Process – CASE 11

<p>CASE 11: RHB System Migration from SAFE to Integrated Banking System (IBS) on mainframe-based technology.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>The bank history started in 1960 serving the development and commercial needs of the community. Computerisation was minimal or almost nonexistent until the 1990s. During the 1990s several acquisitions and mergers took place. The merged banking entities were each running on almost similar technology – IBM mainframe technology running SAFE banking system.</p>	<p>Having changed hands for a number of times, the bank was exposed to a variety of new technology environments. Fortunately the various technology platforms shared similar characteristics that made it possible to them to be integrated.</p>	<p>The mergers and acquisitions have introduced the bank with changing technology, structure and expertise.</p>
<p>To cope with the complicated tasks of integrating the multiple IT systems from the merged entities, in 1995 a five-year program was launched to re-configure the entire bank’s information system on a common platform. During this process, the bank changed hand again to the current owner in 1996. Two more acquisitions took place in 1997 and 1998 respectively. The bank continued to integrate the IT systems of the newly merged entities. The various IT structures were also re-organised and consolidated.</p>	<p>The huge size of IT experts coming from the various merged banking entities were re-organised into a consolidated IT structure. The staffs were grouped into major areas based on their expertise. They were relocated to various centres of the banking group IT facilities – Data Centre, Network Support Centre, System Development Centre, Backup (Storage) Centre and Central Recovery Centre (CRC).</p>	<p>With the right expertise, the bank management was capable of formulating viable strategy to resolve a highly complicated IT structure.</p>
<p>Apart from the SAFE system as the core banking application, the merged banking entities also brought over multiple other applications. This situation had made the integration task highly complicated. The SAFE system also suffered from a major drawback of not being able to integrate with other multiple</p>	<p>Despite its popularity, SAFE system was designed primarily to provide centralised computing facility that automated the manual processes. However, it featured limited capability to integrate with applications built on other platforms.</p>	<p>Certain technologies were designed to solve specific problem of the time. As time and requirements change they become obsolete. Organisations need to adopt strategies that enable them to respond to the changing times.</p>

<p>CASE 11: RHB System Migration from SAFE to Integrated Banking System (IBS) on mainframe-based technology.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>applications platforms.</p>		
<p>Due to the limitation of the SAFE system, in 1997 the bank began a plan to replace SAFE with a better system. The plan was implemented in 1998 and Integrated Banking System (IBS) was chosen. IBS was an integrated banking system that interfaces with other applications. Along with the changing of system, the IBM mainframe was also replaced with a more powerful Fujitsu mainframe.</p>	<p>With the SAFE system, users would have to keep logging in and out of the system in order to access information in other applications. IBS replaced SAFE system and provide interface for other applications by using single log on. The integrated applications include IMPACS – for current account, ST – saving and deposits account, ALS Advanced Loan System, BDS Branch Delivery System, CIS – Customer Information System. During the migration process the IBM computing platform was also replaced.</p>	<p>Adequate expertise coupled with a dynamic strategy, the bank was able to identify precisely the condition and status of a technology and take advantage of an opportunity (for example acquiring new mainframe).</p>
<p>Since migration to IBS affected the entire organisation, the project was carefully planned by executing feasibility study and gathering expert opinions. The bank had strategically decided that the project should be driven by the business side to determine how the technology should be exploited. The strength of the IT structure is providing the expertise required.</p>	<p>The merger exercise had provided the bank with a strong force of IT expertise. Driven by the motives to achieve business objectives, the strong team of IT expertise was able to deliver the technology that was required to meet the business targets. The full integration was achieved in three years compared to five years as planned.</p>	<p>With a clear business focus, the IT strategy and structure were aligned towards achieving the business objectives. The business motives drive the expertise to determine what technology to adopt and how it should be exploited.</p>
<p>One of the most important aspects of the migration project was the ‘Bank-wide Transformation’ program. This program was instituted to create a common culture by redefining and realigning the business focus. The program also prepares the human resource community with renewed core values, mission and vision as the bank goes through the changing times.</p>	<p>The merged banking entities may bring along conflicting cultures. The migration project offered an opportunity for the management to implement a holistic transformation approach where each and every part of the business must change in unison with renewed motivation.</p>	<p>This project demonstrated how the management was able to adopt comprehensive strategies that address both the <u>social and technological</u> implications of a major IT implementation.</p>

6.2.12 Data Reduction Process – CASE 12

<p>CASE 12: Implementation of a Regionalized Application System.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>This bank has been in the Malaysian banking industry for over a century. Its equity is fully owned and hold in a foreign office. Due to the regulation of the central authority the bank was locally incorporated in 1993 and local members of the Board of Directors were appointed. Being locally incorporated, some of the revenues were locally retained to support local developments. All heads of the seven divisions are local appointees. In this bank, Direct Banking subdivision is responsible to look after branches, automated tellers, phone banking, and direct sales units each one headed by a senior manager.</p>	<p>Despite covering diverse geographical area, the bank is linked in a highly connected structure. The uniform structure at the global level allows the bank to streamline any new decision or technology implementation in a standardised manner. Highly connected using network technology, geographical distance is not a problem. The organisational structure is highly centralised but the business operations are highly decentralised according to regions and countries.</p>	<p>Guided by clear strategy, the bank was able to implement a uniform global structure.</p>
<p>In banks IT structure is hosted by Multi Business Platform which looks after three regional hub centres, two in Asia Pacific regions and the other in India. In other words the hub centres support the IT requirement for their respective regions. All of the banking applications are standardised throughout the branches, countries and regions.</p>	<p>The aim of the Multi Business Platforms is to consolidate and standardise all IT of the bank offices and branches operations throughout the world. Highly specialised technology and expertise deliver the services through the worldwide communication network.</p>	<p>Although the size of the users is huge and scattered, standardisation allow remote monitoring to be done from the regional hub centres using communication technology. The standardisation also creates a uniform IT structure for the whole group.</p>
<p>The CEO of each country reports directly to the Group Executive Director (GED) based in foreign land. Each of the senior manager will be directly responsible to the GED of the division in the foreign land, this arrangement include IT division. Since applications are highly standardised, any development of new</p>	<p>Highly standardised applications will ensure minimum customisation of the core system. Thus the performance of the core system will not be affected by customisation. Standardisation also ensures cost effectiveness in maintaining the technology for the whole group. This is because un-standardised or</p>	<p>Strategy that standardised structure and technology and focused at attaining highest level of efficiency.</p>

<p>CASE 12: Implementation of a Regionalized Application System.</p> <p><i>Issues / Data collection</i></p>	<p><i>Meaning(interpretation) / Resulting effects</i></p>	<p><i>Category/Code/Proposed themes</i></p>
<p>applications will be implemented in the whole group worldwide. However due to some specific local requirements, some applications may be developed and maintain by the local head quarter office. Other than that, all IT requirements developed and maintained at the group level according to their respective regional hub centre.</p>	<p>multiple application platforms require a lot of different expertise that could increase maintenance cost.</p>	
<p>Request for Specific Applications based on local requirements will be developed by the development team at the respective hub centre. Highly trained technical expertise would be positioned in each country to coordinate local implementation and locally oversee new requirement. The technical rep will forward local requirements for approval at the group level. Once approved the rep will specify the new requirements to the development team at the regional hub centre who will develop the system. Once completed, the system will be locally implemented and supervised by the technical rep.</p>	<p>The bank has a very structured procedure in developing specific system to meet local requirements. The IT structure is highly centralised and the technology used is highly standardised.</p>	<p>The structure ensures that specific requirement is delivered without affecting the core technology.</p>
<p>The leadership of the bank is described as highly responsive to technology requirements. The bank's global strategy is to runs business operations at the highest level of efficiency possible. With only 35 branches all over the country the banks profit rate is the second highest in the country. The current level of technology is always ahead of the industry.</p>	<p>The global structure of the bank allows each region to undertake specialised operations. As such corporate planning is regionalised at the foreign land. Business operations are regionalised at Asia Pacific and African regions and Multi Business Platform (main IT hub) in the sub continent. The leadership can focus at making better plans for the whole group.</p>	<p>The competent leadership ensures clear strategy direct technology requirements.</p>

6.1 Summary of the Data Reduction Process

The data reduction process performed on each of the case study data in the preceding section has been able to select and bring down the scope of broad issues that were raised. These emerging issues were then interpreted and categorized into themes that the current research has proposed. The issues that were categorized into themes – strategy, structure, and technology - were presented within a concise commentary.

It would be difficult to produce a broad picture accurately based on cross-case analysis by comparing the result of the data reduction process for each case side by side. This is due to the contextual nature of each of the IT implementation undertaken by the case banks. Some of the cases data were based on historical accounts but there were also some cases with accounts based on ongoing events. The scope and magnitude of the projects were also different and the background of each of the cases was unique. Even if the IT implementation undertaken by the case banks may share similar characteristics, they were still highly contextual. Therefore, it would be difficult to produce an accurate result by making cross case comparison of the emerging issues.

However, in order to produce a broad picture out of the preceding analysis it would be sensible to make some forms of comparison. This comparison can be made by evaluating the nature of the issues that have been categorized in themes. It would be plausible to make the comparison based on the overall assessment of each of the themes as they appear in each of the case. This overall assessment can be done by assigning qualitative rating for each theme in each of the case bank. For the purpose of this comparison, two qualitative rating are proposed – strong (S) and weak (W). The table below presents a summary of the comparison.

THEMES	CASE01	CASE02	CASE03	CASE04	CASE05	CASE06	CASE07	CASE08	CASE09	CASE10	CASE11	CASE12
STRATEGY	W	S	S	W	S	S	W	S	S	S	S	S
STRUCTURE	W	W	S	W	S	W	W	S	S	S	S	S
TECHNOLOGY	W	S	S	S	S	W	W	W	S	W	S	S
End Result	H	L	L	H	L	H	H	L	L	L	L	L

Note: S = strong, W = weak; H = highly problematic, L = less problematic

Table 19: Summary - overall analysis of the Data Reduction Process.

In addition to the two qualitative ratings used in the above table, two qualitative labels are proposed and used to assess the effect of interactions among the three themes for each of the case. These interactions are indicated as the end result as shown in the above table. It is the assumption of the current research that in each of the case study bank, there would be problems that exist in the way of implementing the IT system. Some problems were inherent in each of the project that was undertaken. The challenge of striving towards achieving effective strategy, robust structure and reliable technology is to minimize the risks that are involved in successfully carrying out the implementation. Instead of using 'success' and 'failure' to assess the end result of each IT implementation of the case banks – which is hard to justify – the current research choose to focus on assessing the problem. For this purpose, the two qualitative labels that would be used to assess the end result are – highly problematic

(H), and least problematic (L). If two or more of the themes in each IT implementation are rated as 'weak' (W) the end result would be labeled as highly problematic. In contrast if two or more of the themes are rated as 'strong' (S) the end result would be labeled as less problematic. The result of this analysis is further discussed in the next chapter.

6.3 Conclusion

This chapter has presented the analysis process performed by the current research. It explained how thematic data analysis approach was used to arrive at the proposed themes which the current research attempts to understand within the context of the IT system implementations in Malaysian banks. The analysis adopted Miles & Huberman's (1994) Data Reduction Process to select from the large pool of data broad issues that were interpreted, simplified and reduced into a set of themes for each of the twelve case study banks. The product of the Data Reduction Process were presented in twelve different set of tables each one reflecting the result for each of the case bank based on their specific IT system implementation.

The overall results were summarized into a table that shows a comparison which reflects the general rating of each of the case based on qualitative judgment. The summary provides an indication in terms of how the strengths or weaknesses of a particular theme, in its interactions with the other, would facilitate or impede the implementation process. Nevertheless it must be mentioned at this juncture that the analyses which yield the result were not perfectly unbiased. While the analysis had been carefully performed with the aim to produce a reflection of the reality, it is

inevitably impossible to totally eliminate the researcher's own interpretation and qualitative judgment that goes into producing the results.

More detail discussions on the outcome of the analysis will be presented in the chapter that follows.

Chapter Seven

FINDINGS

7.0 Introduction

The previous chapter presented the analysis of the data that the current research had gathered. Three important themes emerged in the analysis and found to have impact on the IT system implementations in the Malaysian banking industry. Based on the background from which the themes emerged, it is therefore plausible to suggest that the three themes are factors that would affect the IT implementation process. The concise commentaries that accompany the themes in their analysis also provide some insights into the three factors and how they interact with each other in shaping the nature of the implementation process.

The preceding chapter was also written with the objective to find out which factors influence the IT system implementation process based on a number of broad issues that were raised from each of the case study bank. Despite that the analysis process per se offers limited explanation to enable the reader to fully understand how the three factors affect the implementation process.

The aim of this chapter is to provide a more detailed discussion that could offer further understanding in terms of how the three factors affect the implementation process. This is done by presenting a thorough discussion on the three factors that have been identified. In doing this, the chapter presents some evidences that could support the suggestion that the three themes or factors indeed affect the implementation process. These evidences were extracted directly from the interview

transcripts of the case study banks. They are presented in the form of spoken words that are quoted in verbatim. These quotations are categorized into three major groups according to their implied meaning in relation to the proposed themes.

This chapter proceeds by offering more discussions in an attempt to synthesise the themes along with theoretical propositions and frameworks that were discussed in the literature review chapters in the first half of this dissertation. The literature review sections have offered a ground to understand the nature of the three factors. It is hoped that the discussion on the findings of the current research presented in this chapter could further extend the learning process from what have been understood in the literature.

7.1 Factors Affecting IT System Implementations

Based on the theoretical framework that was developed through the process of reviewing the literatures, it was found that organization strategy, structure, and technology are among the factors that affect the process of an implementation. The literature review process, as presented in the earlier parts of this dissertation covers three broad literature areas namely organizational and managerial components of innovation, implementation as part of the innovation process and financial services as the sector in which the innovation activity took place.

The following few paragraphs recap the relationships among the three main areas covered by the literature review process. In the second chapter of this thesis, it had been established that the link between innovation and implementation is that; innovation being a process of generating new elements such as ideas or technology

(Utterback, 1974), or even adoption of new device, system, policy, program, process, product or services (Damanpour, 1991), whereas implementation is part of the innovation that put the new elements into good use (Van de Van, 1986). In the field of financial services, one of the most dominant areas of innovation is in the area of information technology, or IT innovation, which has enabled financial institutions like banks to offer new products and services (Essinger 1999, Novo-Peteiro, 2000). Like most economies in the world, Malaysian banking industry is not unique when it comes to IT innovation.

Despite that, implementation of new technology in the banking industry is one of the most problematic areas of IT innovation. In fact there is evidence to suggest the tremendous pressure on the banking institutions to restructure themselves at the current level of technology and competition (Whaling, 1996). Similar scenario is being experienced by the Malaysian banking organizations where introduction of new product and services become the main driving for adopting new technology.

Purchasing and maintaining IT system normally involves high level of capital investment that seldom yield result in the short run (Fairchild, 2003), and is increasingly becoming a competitive burden in the banking industry (Brady & Targett, 1995). This phenomenon is no different in the Malaysian banking industry, as most of the implementations undertaken by the case study banks involved multi million dollars investment.

Given this scenario, there is a genuine need for these organizations to formulate appropriate strategic motives prior to adopting the new technology (Body & Buchanan 1983; Earl 1987; Scarborough 1992; Noon 1994, Kuruppuarachchi, et. al., 2002). As demonstrated in the current case studies, banks with clear strategic motives

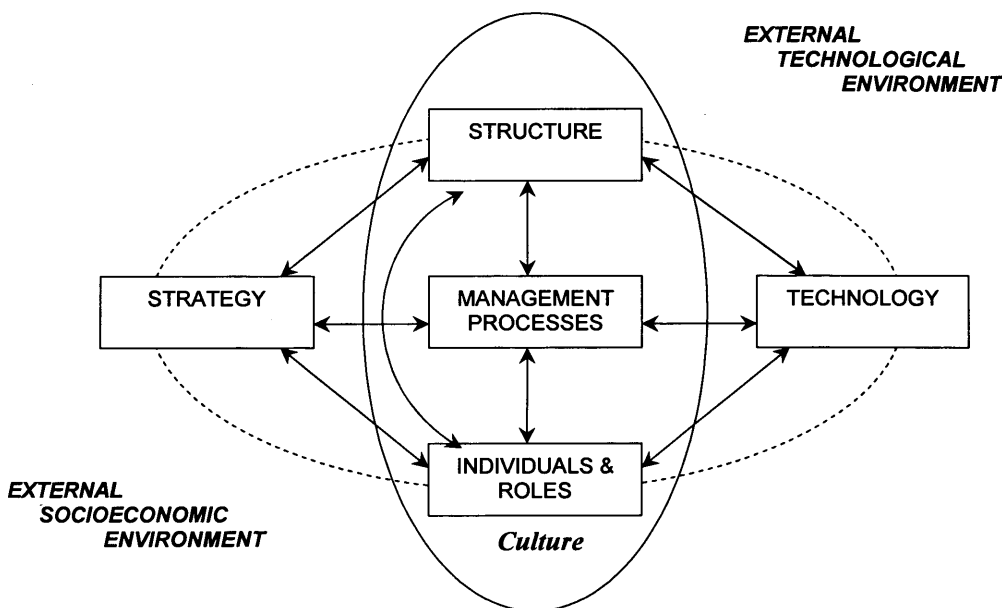
(CASE 03, CASE 05, CASE 09, & CASE 11) were more able to plan the adoption of new technology effectively and also were more capable in dealing with the potential problems posed by the introduction of the new technology. On the contrary, one particular case (CASE 04) gives an excellent illustration of how adoption of new technology may be driven by less strategic or other motives. Investing in new technology because financial resources were available and that the new technology features could be tried and experimented might not represent the best interest of the organization. Not only that it could prove costly to maintain in the long run but also might add complexity into future implementations plans as apparently occurred in CASE 04.

There is also a need to assess the strategic scope, because changing technology or adopting new technology might require adaptation or change process (Kurupparachchi, et. al., 2002). CASE 01 provides a classic example of how the absence of strategic scope led to the inability of the new technology and the human resource to cope with the actual demand expected by the organization. CASE 01 was experiencing a phenomenon known as ‘scope creep’ (Schwalbe, 2001) a typical problem found in many failed IT projects.

CASE 01 also illustrated how additional introduction of additional new technologies would not guarantee that inefficiency can be overcome significantly or the organization performance can be improved. There is a limit to ‘technical fixes’ (Currie & Kerrin, 2004) in changing existing practices and routines, and as Scarbrough & Lannon (1988) put it, change process should not simply be interpreted as a matter of adapting to the impact of technology. Technological change within organizations involves a complex set of interactions between the management

process, organization structure, and technology. Thus introduction of new technology should be incorporated within a wider change programme, with changes to people management and other organizational change issues (McAdam & Galloway, 2005). Much of the implementation problems in CASE 01, also in CASE 07, were largely due to the lack of considerations in addressing these issues.

The prominent Massachusetts Institute of Technology (MIT)'s 'Management in the 1990s Research Program' (Scott Morton, 1991) identified five major forces that influence an organizational change process. These forces, as have been discussed in chapter 3, include – strategy, structure, technology, individual roles, and management processes.



The MIT90s framework. Source: Scott Morton (1991)

Based on the Scott Morton's MIT90s framework, it becomes clear at this point that implementations of new technology undertaken by banking institutions from time to time (e.g. migration or conversion to a new technology platform, upgrading application systems, introducing new delivery channels – electronic banking) are part

of a long term transformation process. These implementations would be shaped by the nature or the conditions of the forces as shown by the above framework.

Based on these arguments, it can be summarised that there are factors that affect implementation process. In the context of IT implementation in Malaysian banking institutions strategy, structure, and technology are among such factors. These factors also emerged as the proposed themes based on the data analysis of the Malaysian banking institutions.

7.2 Evidence from the Current Research

The following accounts are sets of selected remarks and comments quoted in verbatim based on what was said by the informants interviewed in the current research. These selected quotations were extracted from the interview transcripts as a reflection of the actual experiences faced by the case study banks in relation to the three proposed themes – strategy, structure, and technology - that emerged from the data analysis process as the current research has proposed. The quotations are presented as evidence to support the assertion that the proposed themes are factors that affect the IT system implementation in Malaysian banks. These factors affect the IT implementations in a way that would either facilitate or impede the implementation process.

7.2.1 Evidence of Effective Strategy:

CASE 03: “In general the top management gives direction by telling the targets. For example, ‘next year we want ... so much deposits’. This is communicated down and product development department would work the plan out by getting feedback from branches, watch out competitor’s steps or actions, and also do surveys. They then develop products or services and work out with other (departments) like marketing

department to meet the target set by the top management”. (*Manager, Bank System Control Department*)

CASE 05: “I am not convinced that big is better. In this age where information is the key, and while the cost of technology is rapidly declining, and therefore scale economies are becoming less important”. (*Chief Executive Officer*)

“As we move forward, the goal to empower decision-making to the front-line staff and, in building relationships with our customers, having trained, dedicated and highly motivated staff will be the most important thing to our success”. (*Chief Executive Officer*)

“As a new entrant to the local banking industry in 1994, when the bank was incorporated, we needed differentiating products and services to make inroads into the market to increase customer base, deposits and assets and to create image of awareness. This has been achieved, to a large extent, via the use of technology in setting up alternative delivery channel. Alternative delivery channels lessen the need for an extensive branch network and additional human resource input, saves cost as these delivery channels are generally self-service in nature”. (*Chief Executive Officer*)

CASE 08: “As a new bank, we opt for the latest technology, where we place emphasis on embracing IT. This is because we realize that technology can boost our operations and customer service, hence creating more business opportunities for us”. (*Head of IT Department*)

On the timely decision and system’s cost of ownership:

“It is cost effective for us to deploy Windows 2000 now; where other organizations have had to acquire new hardware and software for this exercise. Savings in manpower resources, minimal training and lower upgrade costs translate to an overall lower total cost of ownership for our IT system”. (*Project Manager, Office Automation Section*)

CASE 10: “SmartStream’s Corona solution will form a key component in our quest to achieve Straight Through Processing. (Our bank) has always prided itself on excellent customer service through continuously reviewing and improving our operations. Our strategy is to propel (our bank) to be a premier banking group in the country and partnerships with recognized market leaders, such as SmartStream play a role in achieving this goal”. (*Deputy Chief Executive Officer, Management Services*)

CASE 11: “All (our) applications are quite stable now, and their implementation went on as planned. On top of that, they (the management) are introducing electronic banking which we don’t have previously. So they are incorporating this into our main business application. Sometimes, when we talk about IT, it is not all about technical things,

because now electronic banking; E-banking is not just purely IT. It is focused and involves both IT and business. E-banking is not just like SAFE; you got to know what are the business elements, for example, Internet banking, how to sell that to your customers. So it has to be incorporated with the IT and then launch (as a) business”. (*Acting Manager, Electronic Banking Department*)

“At this moment we are going through a transformation process because of changing times. (We are) redefining and realigning the business focus; mainly in terms of the changing times, and (to identify) where our core values are, and where our mission and what is our vision”. (*Acting Manager, Electronic Banking Department*)

7.2.2 Evidence of Inadequate Strategy:

CASE 01: “It was not easy to convince them (top management). They don’t see what you see. It’s difficult for them to understand. So until our customers more or less threaten when they say if you don’t do this and this, we are not going to do business with the bank... One thing was that they (the top management) were very cost conscious. And you know, the payback for IT investment usually takes a long time”. (*Former staff, Retail Banking Division*)

CASE 02: “You can’t roll out e-banking simply as an alternative to your brick-and-mortar offering. We’ve tried that and it doesn’t work. (Our) E-banking ownership was not with the branches, so no one attempted to market the new service. The branches ended up ignoring the e-banking component altogether and continued to focus on counter services”. (*Head of E-Commerce Division*)

“The branches didn’t see it as complementary to what they were doing at all. They came to regard e-banking as competing with their services. It was seen as man-versus-machine battle”. (*General Manager of Corporate Services Division*)

CASE 07: “The problem is basically this; this project was not driven by the business side. It was started as a need that the management saw that we need to computerize centrally; and IT drives this project. And IT unit realizes that to do this project, they need dedicated staffs from the user side. That is where they decided to form the user group taken from all the business operation sites. We were sort of seconded for about two years, parked under IT and were part of the project structure”. (*Manager, Information Services Division*)

On change management program:

“No..., after the conversion, with all the chaos and resistance, there was no management program by the bank to motivate people to use the new system and refocus on going forward. We just tell them... this is it, this is the new system. Whatever you are not happy with, if they are ‘bulk’ kind of problem we will review it and will enhance the system. I think we did the ‘hard sell’, you know they (users) may not understand why we were doing this, and they may have to just accept the system”.
(*Manager, Information Services Division*)

7.2.3 Evidence of adequate/effective Organization Structure:

CASE 03: “In terms of communications between top management and other levels, there are usually dialogues conducted to work out certain decisions or before launching certain products. There is also ‘managers conference’ held every year or before certain product launching. The CEO is a techno-business minded person and highly entrepreneurial and usually decisions are pushed down from the top”. (*Senior Manager Bank System Control Division*)

CASE 06: “Things work differently in (this bank). The (steering) committee was established to make decision and strategy. She (head of e-banking department) is in this committee. But she normally directly informs ‘Datuk’ (the CEO), she’s quite powerful, she just go directly... multi reporting to Datuk, always update on the ongoing project. It is very structured; everything (will be) updated to Datuk and then Datuk will update the Board”. (*Manager, Human Resource Manager*)

7.2.4 Evidence of Inadequate Organization Structure:

CASE 01: “We are all jumbled up, sorry to say. We do development, we do technical support, we do troubleshooting, and we do everything. So I was the system developer at that time, I also provide support at branches, I also did conversion, and everyone was like that. Everyone was doing from A to Z basically at that time”. (*A former IT staff at the Retail Banking Division*)

CASE 07: “The difficulty that I went through this project was; you see... they put me into this project to lead and support the users. But user groups for this project was parked (positioned) under IT as required by the project organization. We were a bunch of people who were pooled from the business side. We do not have the bargain”.

“We were the ones who sat down and specify (the requirements); off course on the dot (instantaneously) we go back to the users to clarify. But the bargain wasn’t there. We were supposed to be the representatives of the user side. But we do not report to the business heads in the bank. The bargain wasn’t there from the beginning”.
(*Former User Group Representative*)

CASE 10: “IT expertise should be a mix of new recruits and experience people. Recruits of experienced people should not be too many; just for the sake to assume leadership role. If they are too many they will be prone to conflict since each came from different cultures from the previous organization. It would be difficult to harmonise. There should be more positions and recruits for people in the development side..., people with (technical) knowledge but will be guided or led by the experienced staffs”. (*Assistant General Manager, MIS Department*)

7.2.5 Evidence of adequate Technology/Expertise:

CASE 02: “Given the number of customer delivery channels we have, if we did not invest in middleware, (the bank’s) IT maintenance costs would be at least four times”. (*Former General Manager of the bank’s IT shop*)

On vendor selection:

“Vendor will promise you everything. But most of them here in Asia, though they have the necessary skills, may be relying on expertise that is outside of the region. These consultants will always be tied up or busy, so expect hiccups when it comes to integration. We had that experience from one of our vendors in the past. They said a lot of things but in real environment, their system did not work as promised and we struggled through the implementation. So when you finally choose a vendor, ask how much successful sites they have and also how good their local support personnel are”. (*General Manager of the bank’s IT shop*)

“We had just wanted to use (the middleware) as a message routing (facility) and transaction software to integrate the various banking applications we had. However my guys are quite innovative. When they explored the software further during evaluation and training, they found tools within it to build a simple device handler. So they expanded the software to include functionalities to enable it to handle hardware for use in Electronic Banking Centres”. (*Chief Information Officer, CIO*)

CASE 03: “(Our bank) is fully committed to IT, and it maintains a close relationship between the state-of-the-art computing facilities and the introduction of new products and services. With the sophisticated

infrastructure already in place, many permutations of the new products can be introduced instantly". (*IT Consultant and Director of IT Centre*)

On technology strategy:

"We are purposely not taking the lead (in technology). You see, the majority of our people (customers) ...their mentality... we are 20 years behind in terms of technology. So if you actually lead the track into such area, you might find... that it's not taking on, your investment may be ineffective. Among the competitors... they say..., we have this..., we have that. There is no point in actually going into all these in a big bang. That's why we move on bit by bit. Yes people want (new technology) but those who want is not the majority; they're not yet a group that is sufficient enough to keep you going. In (our bank) we don't have that notions... being innovative..., being creative..., being in the forefront etc. You see, we are on customer service, the conception of (our bank's) customer service is man to man, person to person, not customer to machine..., that is our conception now and it is still there". (*Senior Assistant Manager, Bank System Control Division*).

CASE 04: "Admittedly we were late coming into this (electronic banking) market, into that type of product. The oldest guy (bank) has been here for around 23 or 24 years into this market with a product of that nature... foreign bank..., it is a foreign bank..., twenty something years. The first local bank that went in, came in about twelve or thirteen years ago. We (our bank) came in only about one and a half or two years ago. So you can see the time frame. Then what happen was; between our coming in, and the first local bank came at this point, when we came in we were right here, there were a couple of other banks..., one or two medium size that already came in already". (*Head of Organisation and Method Department*)

"One of the things that our bank has always practice is; we are not very enthusiastic of being the first in (this)..., first in (that). If we are a very good second, we are very happy..., you know what I mean. So for most of our products, we were not the first..., but we are very good when we come in later". (*Head of Electronic Banking Department*)

CASE 05: "We have also earned a reputation as an innovative financial institution that uses IT as an enabling tool. The use of IT has allowed us to introduce many delivery channels beyond the conventional brick-and-mortar bank branches. Our innovative use of IT has also allowed us to offer a truly seamless banking service. Our customers, unlike those at other banks no longer have to rely on their domicile branch, but can instead perform almost all their banking transactions via any of our branches or kiosks". (*Chief Executive Officer*)

On technology leadership:

"We are quite happy that people emulate what we introduced. It shows that what we introduced have become industry standard. In just five

years we have spearheaded all these (a number of unique online banking services). We are quite pleased with the development that we've made. In a nutshell that is our progression. Like our CEO always say; unlike other bank where as a child you learn to crawl and then you learn to walk and then you learn to run. For us, when we were born, we had to quickly learn to run". (*Senior Executive, Group Communication*)

CASE 06: "The (e-banking) idea came from the Chief Executive Director (CED). She is very IT inclined person, so that's why. In fact (our bank) is one of the first to invest in IT. For example, when the first integrated banking system was implemented, we are the first one to use it. Some banks want to just wait and see first, but I don't think this is our motto; I can say that we (are) always aspired by IT. Not only now but we (have) done (this for) quite sometimes. We purchased a lot of new IT systems, we believe in all these". (*Manager, Human Resource Division*)

CASE 08: "Being a young establishment, (our bank) is actively riding on the wave of technology, by investing in new equipment, and adopting the latest IT strategies. We want to take advantage of our new hardware to adopt Windows 2000 technology. As it stands, 80 per cent of our hardware consists of new equipment with the latest specifications, such as Intel Pentium III". (*Head of IT*)

On reason why the technology was adopted:

"We require a system we can rely on, that's powerful enough to support complex solutions, and flexible enough to scale upwards as we grow; Windows 2000 assures us that we have a network operating system that will support an IT framework, comprising PCs, laptops and servers that will take us into the future". (*Head of IT*)

CASE 09: "Definitely! We are able to do it, because you know, you are the bank; you have to know your system. When we bought the application, we bought also the source code from the vendor. So whatever design, we have to customize it based on our design. This is as far as the ALLTEL system is concerned as deployed by (our bank). Within the (project) technical unit, it's broken into two teams; one is application development and the other is system team. The application development team will do coding or customization once we've bought the software. System team is the one that will convert the system onto ALLTEL on ES9000". (*Manager, Business System Development*)

On maintaining internal expertise:

"Sometimes it can be difficult to maintain your expertise in house. At the same time you don't want to be fully dependent on vendor's expertise. So when it is not economical to maintain internal expertise to develop the system, (our bank) can go for outsourcing. To solve

shortage of technical staff, there're two approaches; one is to engage contract workers, the other is to outsource it. So it comes down to dollars and cents again". (*Manager, Business System Development*)

7.2.6 Evidence of Inadequate Technology/Expertise:

CASE 01: "Meanwhile we also developed other small systems for the head office like ledger system, control unit account system and other small systems. Yes, they are all separate systems, island of systems. We do not have on-line facilities during that time. We developed all sort of small systems. Everything was (developed) in house. They run on personal systems – PC systems. We used a lot of PCs. (For example) ledger, control unit or central account, forex transactions. So as you can see, they are all separate systems. Not connected to each other, each one running on its own". (*A former IT staff at the Retail Banking Division*)

"Fifty per cent of the problem would be solved by having an online system. Currently information from other branches could not be obtained easily". (*An executive at the Finance Division*)

The vulnerability of in-house developed system:

CASE 04: "The danger with in-house development is that; through my experience with SAFE, when people move, you would have problems on how to maintain the system. The challenge was in terms of ensuring the continuity of the support. What happen in (this bank) was; they were then running on SAFE, they had to call an ex-(the bank) staff that had already resign and hired him on a contract basis to provide the support. Nowadays people no longer develop in-house, because they just pluck it off from the shelf. There are many proven products and systems. So just buy it over the counter". (*Former, IT Implementation Head*)

Relying on external expertise:

CASE 06: "We started (e-banking project) in 1997. What happened was that we got a candidate from Australia, she was an expatriate, and she got (possessed qualities) what we wanted, so we took her in, originally for operation and project management. But I think they (the top management) later found out that she has a very good background in IT. We let her join in and then we establish the (e-banking) department". (*Manager, Human Resource Division*)

"She (the expatriate) is in the senior management level. She is the one heading the e-banking department. But now she left already. She is very tremendous... when she left; we have some difficulties with the

plans. She is the mastermind... but when she left, somehow we have to run the business. But she got all the down line prepared. The subordinate has the skill that she left... she is now the manager.”
(*Manager, Human Resource Division*)

CASE 07: “Ideally, people talk that when you want to move to a new system, or in this case from stand alone to online, you need to re engineer. If you don’t; what you are doing is... you are going to satisfy your requirement based on a workflow that is very manual based. In our case we need to complete the project within the timeframe which is quite short. Ideally things should be reengineered before you convert the system. In our case it was not done, for a simple reason... only minimum reengineering. (This is) not to say that we totally ignored; its minimal, we made some minimal process changes; we complied with minimal process change. We said (planned) that we’ll do reengineering after that. Of course, you know with other things, you never end up really re-engineer”. (*Manager, Information System Division*)

On people issue:

“We cut over and until now we are still using the system. Off course there have been some version updates. But users and end-users (were) always resisting; because what happen was previously you were quite happy with the (stand alone) system, and you don’t have to worry about things such as the network. Now with the host-computerisation, if there’s a break in the communication systems, what does it means? It means it’s lost (inaccessible). Previously with the stand alone system there’s no network problem to worry about; it’s you and your own world”. (*Manager, Information System Division*)

On understanding users’ expectation:

“The package was an American package. It requires about 40% customization to meet the local requirements. When we discuss (with the vendor) whether what I want is what you need; we didn’t have anyone in that meeting that knows both. For example, I am a user and I want something, but because you don’t understand what I am trying to think, in terms of what the people in my operation side want, you were not able to design. And I do not understand your system. But if somebody could be listening to both of us, knows what I want, that would be fine; but there wasn’t such person. What it meant was that we could have overly customized the system, or we could have impacted the system performance by wanting the system to do what we want”.
(*Manager, Information System Division*)

CASE 11: “I can recall an instance of one of our failed project or basically flawed decision. For example, in migrating from SNA (System Network Architecture) to IP (Internet Protocol) based network technology, a wrong decision was made on vendor selection; Motorola...! A more

accurate decision would have been with a bigger player who stays longer in the market. So now Motorola is no longer supporting new versions of the technology”. (*Assistant Manager, IT Technical Service*)

7.3 Further Discussion on Analysis Results

This section presents a detail discussion on the analysis results of the case studies. The discussion is aimed at highlighting how the case study banks deal with the three themes – strategy, structure, and technology – in the implementation of their IT systems.

In the analysis stage, a summary of overall analysis was produced at the end of the data reduction process, which briefly suggests how the interactions of the three factors or themes would affect the end result of the implementation. In each of the case bank, the nature of each factor is qualitatively described as either weak or strong. If two or more of the factors are rated weak then the whole implementation would be qualitatively labeled as highly problematic. On the other hand if two or more of the factors are rated strong then the overall implementation of the case bank would be labeled as less problematic. The reason why the term success or failure was not a preferable choice in assigning the qualitative label had been explained in the analysis chapter. The assessment instead, chose to focus on the ‘degree of problem’ associated with a particular implementation in assigning the qualitative label. This is because problem is assumed to exist and was inherent in each of the IT system implementation. The interactions of the factors identified are evaluated in terms of whether they will facilitate or impede the implementation process by escalating or lessening the degree of problems, but will not totally eliminate the problems.

Having recognized the character of the interactions among the factors and their resulting outcome as explained above, it seems timely at the point to discuss further

on the factors within the confined scope of IT system implementations in Malaysian banks.

7.3.1 The 'Strategy' Factor

As mentioned earlier, one of the factors that shape the implementation process of an IT system implementation in Malaysian banks is strategy. It has been argued by Fincham et. al. (1994), that the process of getting complex technology to work goes beyond technical development and installation per se. Implementation in this sense involves organization, its goal, and strategies, and is the process through which technology is concretely deployed. Against the backdrop of this argument it was found that at least three out of four cases that are labeled highly problematic were suffering from inadequate strategy (CASE 01, CASE 04, and CASE 07). Inadequacy here refers to the absence or lack of a broad plan that shape major decisions in the course of deploying and implementing new technology.

The nature of absence or lacks of adequate strategy implied in the analysis are summarized in the following list.

- Lack of top level strategy to guide implementation
- Lack of organization wide strategy
- Absence of implementation strategy
- Lack of authority in strategy formulation
- Top management not well exposed to viable technology to formulate long term IT strategy
- A strategy seemed practical but did not work
- Unclear strategic direction to steer technology deployment and make changes in structure
- Underpinning management philosophy – conservative, mechanistic (less people friendly / ignore the issue of people)
- Need for a better strategy - existing strategy inadequate e.g. mere automation
- Adopted strategy did not adequately address or anticipate the potential people issue
- Adopted strategy bias towards technical capability and ignored the social component

Figure 12: Summary of inadequate strategies

The above summary suggests that there are a number a reasons why strategy was absence or inadequate. These reasons include lack of holistic view of the organization, unable to forecast future needs, lack of knowledge or exposure, and failure to understand the impact of technology. Even though it has been argued that treating the strategy as a question for a top management alone is an understatement (Scarborough & Lannon, 1988), the task of charting strategy still rest primarily on the part of the top management. The style and characteristic of the top management would have direct influence on the strategy.

One of the reasons why these banks were unable to chart long terms strategy for IT deployment could possibly be attributed to the conservative approach of the top management. In at least two particular cases (CASE 04 and CASE 07) the management demonstrated what was known as the Commander Model (Bourgeois & Brodwin, 1984) in its implementation strategy where the responsibility to formulate the strategy was focused on the management. In other words, it is left largely or even totally to the prerogative of the management to decide what it perceived to be the right and optimum strategy and would decisively implement the strategy regardless if others would think otherwise.

On the other hand, strategy also plays a great role in facilitating the implementation process. All of the eight case study banks that are labeled less problematic were showing that appropriate or adequate strategy is in place in their IT implementations (CASE 02, CASE 03, CASE 05, CASE 08, CASE 09 CASE 10, CASE 11, and CASE 12). The nature of appropriate or adequate strategies implied in the analyses is summarized in figure 13.

- Highly competent members of the management team
- Formulated strategy – feasible, well-thought
- Project champion highly influence strategy formulation
- Strategy driven by clear IT direction
- Top management – sufficient knowledge, well exposed, accurate analysis
- Highly focused – customer oriented long term strategy
- Availability of strategy in maintaining in-house expertise
- Top management highly certain how to exploit technology
- Decisions guided by broad and firm strategy
- IT inclined individuals in the management instrumental in setting long term IT strategy
- Strategy that incorporates capability for future technology expansion
- Clear strategy based cost effective technology
- IT strategy aligned towards achieving business objectives

Figure 13: Summary of adequate strategies

The above summary seems to suggest that the quality and the strength of the strategy may be shaped not only by the role of the top management alone but also other elements such as individuals, competence, styles, knowledge, holistic view, and futuristic thinking.

It is interesting to note that one of the distinct elements that may influence the level of adequacy of the strategy is the individual role particularly in the management team. Although the role of individual was not identified as one of the main themes in the analysis of the current research, it nevertheless has direct relationship in shaping the character of the strategy since the management team is comprised of individuals. The MIT90's Framework (Scott Morton, 1991) in fact, highlights the element of individual role as one of the forces that influence the organizational transformation.

In relation to this, one of the important individual roles that the management teams assume is in providing the leadership role. The strategy implementation models developed by Bourgeois & Broadwin (1984) discussed in Chapter 3, was in fact develop based on the individual role of the CEO. Some of the models are found to be

applicable in providing an explanation on the nature of leadership in some of the case banks. For example, some of the less problematic IT implementations in the Malaysian banking industry were attributed to the preferred leadership models in their strategy implementation. The Bourgeois & Broadwin's Cultural Model is evident in CASE 08 and CASE 11, where the management would attempt to involve the whole organization in the implementation. The measures taken include instilling new group dynamics through regular meetings and motivations, and running a bank-wide transformation program to create a common culture. As a matter of fact, in one of the highly problematic IT implementations (CASE 06), despite suffering from inadequate structure and technology, it was the leadership role that initiated the change process by championing a sound strategy – this corresponds to Bourgeois & Broadwin's Crescive Model. Albeit perceived as practicing conservative approach, the management of CASE 06 bank nevertheless allowed someone to come forward to champion a sound strategy.

More importantly, leadership has been identified as one of the nine core IS capabilities (Feeny & Willcocks, 1998) that could facilitate or impede the IT implementation process by virtue of its role in setting goals and direction, as well as in instilling values and culture. In short, based on the above arguments there is evidence to suggest that in the Malaysian banking industry, individuals play great role in setting sound strategy that could facilitate an IT implementation process.

7.3.2 The 'Structure' Factor

The second factor that affects an IT implementation process in the Malaysian banking industry is the structure factor. As summarized in the overall analysis, five out of the

twelve case study banks were suffering from inadequate organization structure. Out of those five cases, four of the IT implementations are labeled highly problematic (CASE 01, CASE 04, CASE 06, and CASE 07). In some of these cases, the implementation problems are partly attributed to inadequate organizational setup. These highly problematic cases of IT implementations provide evidence that there exist “Symptoms of Structural Deficiency” (Daft, 1998 p.232) among banks in the Malaysian banking industry. The symptoms include:

- Decision making is delayed or lacking in quality.
- The organization does not respond innovatively to a changing environment.
- Too much conflict is evident.

Highly problematic IT implementations as demonstrated in these cases (particularly CASE 01, CASE 04, and CASE 07) may be linked to the organization’s structural dimension (Daft, 1998.) Moreover McAdam & Galloway (2005) have argued that there is a need for organizations to give much more consideration on organizational issues some of which concern characteristics that may be shaped by the structural dimension. These include communications, cultures, processes and roles. Addressing these structural issues may assist the organization to influence individual change readiness (Madsen et. al., 2005). Otherwise the IT implementations may be seen biased towards the technical end and lacking social consideration. This may lead to the new changes being rejected or to a certain extent existing practices and routines may become harden (Currie & Kerrin, 2004) instead of being adapted in acceptance of the new changes. Management conservatism was manifested in the mechanistic and centralized nature of the organization structure in these highly problematic case banks (CASE 01, CASE 04, CASE 06, and CASE 07). In addition to that, these types of structural characteristics have been found by other study (Taylor & McAdam, 2004)

to have negative impact on innovation. The recent finding is consistent with the evidence that emerged from the current research.

Apart from the above symptoms, other characteristics of structural deficiency or inadequacy implied in the analysis of the current research are summarized in the following figure 14:

- Poorly design or defined organizational structure
- Abuse of position in the upper structure
- Absence of proper organizational setup at the service level
- Bottom line staff had the power (influence) to ignore decisions
- Sense of system ownership and responsibility were absent in the bottom line staffs
- New roles could not be created
- Financial constraint – existing structure too big and costly
- Ailing IT structure inherited from previous entity.
- Rapid transformation – unhappy staffs perceived restructuring too aggressive
- Inadequate structure to support new technology
- Project structure biased towards technology group
- Structure based on ad hoc setup caused confusing roles

Figure 14: Summary of structural deficiencies

In addition, it has been argued that successful application of IT will require changes in management and organizational structure (Scott Morton, 1991). In at least two of the cases (CASE 01 and CASE 07), the top management realized that technology decisions had to be made in the light of changing circumstances. Unfortunately, even when there were clear motives to make decision stemming out of necessity, no proper structure was in place to properly and effectively carry out the decision. Based on this argument, the above summary seems to suggest that part of the reasons why some IT implementations in Malaysian banks are labeled highly problematic is because these banking organizations were unable to make appropriate changes in the management and organizational structure prior to implementing the technology.

In analysing the issue of structure in the literature review section of this dissertation, the issue of power was also raised. A number of perspectives on power were analysed and discussed which include; the relation between structural dimension and the distribution of power (Hage, 1980; Pfeffer, 1992; Bryson & Bromiley, 1993); power and political activities (Leflaive, 1996); and expert power and control (Reed, 1996, Coopey et. al., 1998). However, not enough evidence was gathered in this research to provide a thorough perspective on this issue within the context of IT implementations in the Malaysian banking industry. This could be attributed to the difficulty of getting the informants to talk about this presumably sensitive issue. However, from the analysis, there are some evidences to suggest that power has a role to play in the implementation process. At least in CASE 01 bank, there was evidence of abuse of power in the vendor selection process. In CASE 02, the bottom line staff perceived new delivery channel (e-banking) as competing with their counter services. Finally in CASE 04 bank - affected staffs and the union took their protest to the street leading to an ugly trade dispute. These are instances which suggest that power could have a role to play in facilitating or impeding the implementation process.

As has been identified by Fincham et. al. (1994) the role of organizational structure have a great influence on the management of both expertise and innovation. The current study has found that seven out of eight IT implementations labeled as less problematic, seven were having the benefit of a strong or adequate structure (CASE 03, CASE 05, CASE 08, CASE 09, CASE 10, CASE 11, and CASE 12). The following is a list of characteristics which imply strong or adequate structure based on the analysis of IT implementations in the current research.

- A suitable person (leader) to sit at the top of the structure
- Project was positioned at an appropriate structure (within the organization)

- Full support from people in the upper structure (top management)
- Structure that facilitates inter-functional collaboration between business and technology sides
- A less formal structure assist exchange of ideas to produce sound strategy
- A structure that provides strong representation of the user side
- Structure that motivates expertise by empowering them with techno-business skills
- Highly adaptive environment allows staff to be receptive of the new structure
- Liberal and forward thinking management resulted in flexible structure
- Well-equipped expertise could precisely determine how the project should be structured
- Structure that ensure high sense of ownership that would strengthen commitment
- Robust structure help ensures quality deliverables at each project phase

Figure 15: Summary of characteristics implying strong or adequate structure

One of the interesting points to note is that the current study has found that in an attempt to avoid tussling of resources, banks have setup up their own technology arm in the form of subsidiary companies acting as agents that serve to fulfill their IT requirements. These subsidiary companies basically provide outsourcing services. A number of banks have shown success with a structural arrangement that is linked to the subsidiary entities. This is evident in a number of cases such as CASE 02 and CASE 05 banks. However, while these subsidiaries have shown that such a setup allow them the full autonomy to make technology decisions and were mandated to implement the decisions, they might lose sight on some potential post-implementation issues. Their view and focus are limited at fulfilling the technology requirements of the banking entities and do not transcend issues and concerns that may be faced by the banks in the aftermath.

For example, on the issue of ownership of the development and implementation of the IT system as had been taken by an outsourcing subsidiary. Particularly in the case of CASE 02 bank, the electronic banking component that had been successfully developed and implemented by the bank's subsidiary company failed to attract customers because the branch staff where the system was placed perceived that they

did not own the system and were not responsible to market and sell the services. The customer take up was described as 'excruciatingly slow' even three years since the service was first introduced. The branch staffs eschewed the electronic banking component installed at their branch and continue with the counter services.

On the contrary, a number of banks have adopted the outsourcing arrangement as a strategy to address the issue of technology expertise required by the banks. There has been evidence of successful implementation based on outsourcing strategy such as (CASE 02, CASE 04, CASE 05, and CASE 12). One of the reasons banks outsource their IT needs is to free their human resources so that their focus would be directed towards core business operations.

Normally banks that opted for this strategy would outsource the non-core component of their IT functions such as the routine back office IT maintenance. Some banks as evident in the case of CASES 02 and CASE 05 banks also outsourced their system development. However, to avoid risking the dependency on the outsourcing companies for the IT expertise the banks would maintain their existing IT structure. In cases where system development areas were outsourced (CASE 02, CASE 04, and CASE 05) the outsourcing arrangement would be such that the outsourcing entity is wholly owned by these bank. The expertise from the outsourcing company would work side by side with the internal expertise in the bank to ensure knowledge transfer. It is also possible that at the completion of the system, the expertise from the outsourcing company is absorbed in by the bank (CASE 05). These measures were taken to ensure that the bank could retain sufficient amount of expertise to provide support for its long term need.

However, it was found in one particular case, CASE 04; the bank adopted a highly unusual outsourcing arrangement. Despite a wholly owned subsidiary of the bank, the outsourcing subsidiary acted as an agent and appointed another outsourcing company to provide the required expertise. In what was seemed as a strange outsourcing arrangement, the entire IT functions and IS management of the bank were fully outsourced to the joint outsourcing partners. What was more bizarre and difficult to understand is the fact that the idle IT staff made redundant in huge numbers as a result of the outsourcing arrangement were given the liberty to accept or decline an offer to join either of the outsourcing partners if such an offer was made. Those remained in the bank were to be absorbed into other areas and given new roles.

In other words, the banks seemed to relinquish its internal IT expertise and structure. There have been skeptic views on the strategy to fully rely on the expertise of the outsourcing companies in terms of its long term implication.

It is argued that banks need to understand that they can outsource the delivery of strategy but not the strategy itself (Basuki, 2002), for example CASE 12 bank. This is because by outsourcing the strategy itself (CASE 04), it is feared that the organizations could lose control and unable to set their own IT direction. In the case of CASE 04 bank, after a series of the unfolding controversial events and concern over the lack of control, the management overcame the fear by forming a new unit known as Service Management Group (SMG) (Basuki, 2002). This formation happened after the period of field study conducted by the current research was over. It is believed that SMG was not only responsible for the negotiation and development of the terms and conditions of service for the bank, but also sets the strategic IT direction in the bank.

7.3.3 The 'Technology' Factor

It has been argued that the advancement of technology particularly in IT have brought considerable improvement in cost, reliability, compactness, operating speed, accuracy and energy consumption (Child & Loveridge, 1990). However, the current application of technology may not manifest or reflect its full potential as predicted (Scarbrough, 1992; Earl, 1996a).

This discontinuity between potential and actual application become a source of inducement for innovation. Essinger (1999) asserts that inducements in most cases of new application of technology are driven by customer demand. This view is evident in at least of one of the case studied in the current research, CASE 01, where the motive for investing into new technology was driven by the fear of loosing customers.

The overall analysis of the case study banks in the current research has found that three out of four banks whose IT implementation are labeled highly problematic were putting up with inadequate technology (CASE 01, CASE 06, and CASE 07). The nature of absence or lack of adequate technology implied the in the analysis of the current research are summarized in the following list.

- Absence or unclear IT direction
- Existing technology platform unable to integrate with other applications
- Top management not well exposed to viable technology
- Technology knowledge and experience of internal expertise not consulted by top management
- Perceptions that technology is about technical expertise only
- Obsolete technology – current technology lacked emerging features
- Unreliable consultant or vendor
- Lavishly spending on multiple technologies without a clear IT direction
- High risk of technology dependency by totally outsourcing all areas of IT functions
- Social implications of new technology not adequately considered

- | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none">• Dependency of external technology expertise – lacked in-house expertise• Unable to maintain adequate internal technology expertise |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Figure 16: Summary of characteristics implying inadequate technology and expertise

The above summary suggests that within the context of IT implementation in the banking industry, technology adequacy is not simply the features of the technology. Adequacy in this context refers to the adequacy in selection, exploitation, features, expertise, cost effectiveness, and knowledge.

Merely investing in the features of the technology does not promise that the benefits of the features would be fully realized. Earl (1996b) argues that in the course of strategically exploiting IT, organizations may have to redesign their business process with the aim to improve their business performance. In the current research, it has been found that two of the case banks (CASE 01 and CASE 07) were having problems in the IT implementations because their existing business processes were based on manual system and were not redesign to suit the requirements of the computerized business process. Realizing the magnitude of the problem, one of the banks (CASE 01) however, carried out an organization wide management program at the later part of the implementation process after conducting a post-implementation review with an external consultant. The program involved redesigning the business process and restructuring the human resources to suit the new system. The other case bank (CASE 07) though planned such a move, never end up executing the plan. This could be due to the difficulty of reengineering based on BRP approach which has been found to contribute to increased complexity especially when dealing with legacy information systems (Currie & Weerakkody, 2003).

The above findings seem to correspond with the finding from a recent survey on business process re-engineering in Malaysian banks (Khong & Richardson, 2003) where it was found that the re-engineered IS can make the enterprise more receptive and prepared to anticipate the adversities. The study findings also seem to provide explanation why CASE 01 and CASE 07 were problematic in that the IT implementation was not constantly aligned with the re-engineering process almost wholly in CASE 07 and party in CASE 01.

One particular case bank (CASE 11) whose IT implementation is labeled as less problematic had anticipated the impact of the new technology and launched a bank-wide transformation program at the outset of the implementation process. This enables the bank to absorb the social impact of the new technology and provide favorable environment for adaptation to the new technology.

The following is a list of characteristics that imply technology adequacy based on the analysis of the current research.

- An appropriate technology infrastructure was already in place
- Technology investment fully utilized and not wasted on unused features
- E-banking was identified as an area of technology innovation
- Technology exploited to take advantage of potential customer base
- Internal expertise able to precisely determine technology requirements
- Management competent in technology aspects
- Robust strategy promotes innovative use of technology
- Technology features capability for future expansion
- Selected technology has proven track record and supported by credible vendor
- Affordable technology with lower maintenance cost
- Technology offering high integration and scalability
- Invested technology provide competitive advantage in the era of future banking technology

Figure 17: Summary of implied technology adequacy

One of the points concerning technology that the current research has found is that Malaysian banks have differing perspectives in determining what the adequate or effective use of technology is and how technology exploitation should be. For example in the case of CASE 03 bank, the evidence suggests that utilization of technology should grow gradually and investment into new technology would be made, as and when, the need arises but the main infrastructure should allow for this expansion. On the other hand, the evidence in the case of CASE 05 bank suggest a different view, where offering innovative banking services that fully rely on technology requires huge amount of upfront investment. The demand for the innovative banking services would be created after the services are made available.

On the issue of technology leadership, the current research has found that there are different philosophies that drive the motives of the Malaysian banks in adopting new technology. The larger and longer staying banks seem to be quite contented with the size of their market share. These banks continue to focus on satisfying their customers by providing what they perceived as excellent customer service so that their customers would not change to other banks. The philosophy that drive their investment into new technology is seen as conservative in that they expand their IT capabilities gradually as only when the need arises. This is evident in the case of CASE 03, CASE 04, CASE 06 and CASE 09 banks. As a matter of fact, in the case of CASE 04 bank, it was clear that the bank did not want to be seen as the technology leader but would not hesitate to emulate what the leader was doing. The bank perceived that keeping the rank and the reputation as being the leader in the industry would place itself in a position of being the center of attention in the industry and would be incredibly challenging to sustain. This is the philosophy that explains why

CASE 04 bank would be satisfied to be seen as 'a very good number two' (ranked second) and continue to follow what the leader would do.

In contrast, the smaller banks were driven by the philosophy that would considerably influence the banks to be more aggressive in its approach. For example in the case of CASE 02 and CASE 05 banks, where it was clear right from their inception, that the banks wanted to be innovative and in the forefront in using technology to achieve its strategic goals. In a statement published in the company's annual report CASE 05 bank, the CEO firmly underlined this philosophy by saying:

“We believe in what we do and we want to do what we believe. We have the right strategies, we have the right business model, we have the dream and vision, we have the right people, the right motivation and drive, the right structure and we are prepared to fight for what we believe in”.²⁰

With regard to the technology platform, the findings of this current research has discovered that there is evidence to suggest that a number of Malaysian banks have been found to adopt banking technology that does not rely on the computing power of huge machines such as the mainframe. This evident has been found in a number of cases (CASE 01, CASE 07, CASE 09, and CASE 10). This finding also implies that there is a changing trend in the industry where banks are slowly moving away from mainframe-based system. Most of the banks that still maintain a mainframe-based system usually had their system developed more than ten years ago during the computerization era which was signified by the urgent need to automate manual calculations and processes (Steiner & Teixeira, 1990; Essinger 1999). Mainframe-based systems were chosen despite the expensive investment (Steiner & Teixeira, 1990) because they were the only solution offered in the market at that time. Most of

²⁰ 1999 Annual Report, p 15.

the mainframe-based systems used by Malaysian banks were mainly IBM systems while a few banks used Tandem, Fujitsu, or other mainframe systems.

The main problem with most of these mainframe systems was that they were running on proprietary systems. Proprietary system offered limited integration capability with other application systems. However, the issue of integration did not arise at the time when Malaysian banks invested into these expensive technologies because the primary aim was to automate their manual processes. Due to this specific aim, the issue of integration was given little attention as long as the automation motive was satisfied. The automation technology significantly improved their performance compared to the manual system.

In their pursuit for automation, most of the Malaysian banks (CASE 04, CASE 08, CASE 10, and CASE 11) that invested in the mainframe technology used the popular SAFE banking system to run on the IBM mainframes compared to other banking systems such as M&I (CASE 02 and CASE 03) and BDS systems (CASE 09).

The current research has found that the problem with these proprietary systems was their low capability to integrate with other systems as banks began to expand their automation by developing multiple applications running on multiple platforms. The systems were also inflexible to be modified or customized to cater for changes that would support the creation of new products and services. As the issue of inflexibility and integration becomes important and require urgent attention; banks began to upgrade their banking software to enable integration and customization.

Except in the of CASE 04, there was no evidence to suggest other case banks that have used mainframe (CASE 02, CASE 03, CASE 08, CASE 09, CASE 10, CASE 11), typically associated with legacy information systems have experienced obtrusive

problems in changing to a new business process as a result of changing technologies. These are cases with less problematic implementations. Although it was argued that BPR approach would not particularly work well in modeling new business process for legacy information systems (Currie & Weerakkody, 2003), these case banks seemed to have been able to make the necessary changes relatively well. Perhaps rapid change (typical in BPR approach) was not the underlying philosophy used in making changes to the business process in these banks. Technology per se seemed not to be the main reason why implementation was highly problematic in CASE 04. The problem might be attributed to the complexity of the sheer size of the IT organization which might have led to confusing role and was made worse during the consolidation process with its merger counterpart.

The popular ALLTEL system from the USA, BANCS FINWARE from Australia and Integrated Banking System (IBS) were among the popular systems that began to take the place of the old SAFE system in the way the current research have found. Mainframe based systems however, are still costly to maintain. As computing technology continue to offer more power at a reducing price; banks started to acquire smaller computing platform. It is found that IBM AS400 midrange system is increasingly popular among Malaysian banks. It has also been found that the Silverlake Retail Banking System that runs on this machine continues to be the preferred system among Malaysian banks.

The reason for this trend could perhaps be explained by the fact that IBM being one of the most popular vendors in the Malaysian banking industry, is also at the same time providing services as a consultant and system integrator to Malaysian banks. Therefore, it would not be peculiar to assume that AS400 midrange technology and

Silverlake system will be the likely solution that IBM would recommend. This finding is consistent with the argument that response in adopting new technology may be influenced by supplier (Scarbrough, 1992). However there is a drawback with this approach. Scarbrough argued that one of the dangers of treating new technology as a matter of 'which package to buy' would be losing sight of the importance of organizational knowledge and architectures within specific implementations of IT. At least in the case of Silverlake system, some users in a number of banks (CASE 01 and CASE 07) that implement the system had voiced their dissatisfaction with the presumably lower than expected level of 'user-friendliness' of the system.

Straight Through Processing (STP) is the latest banking technology in the market that offer highest level of efficiency in running their operations and banks are striving to achieve this level of efficiency. The current research has found at least one bank (CASE 10 bank) has planned a strategy to adopt this technology.

7.4 Conclusion

In general the discussion presented in this chapter shows that a significant amount of findings in the current research positively correspond with some of the established theoretical perspectives and framework as discussed in the literature review section of this dissertation.

The discussion in this chapter as regard to the IT implementation in Malaysian banks has focused on evaluating the degree of problems and their causes. In the final analysis, the IT implementation cases were qualitatively labelled as either highly problematic or less problematic. Although the focus of the evaluation was on the

degree of problem associated with each of the implementation, their implied causes as summarised in the discussion seem to correspond with the factors perceived as critical success factors (CFS) in a number of studies. These studies include Selvin & Pinto (1987) and Miller (1997). It could be implied that the nature of the three factors – strategy, structure, and technology – seem to positively correspond with the findings of those studies. Therefore it would be plausible to suggest that the less problematic cases of IT implementation in Malaysian banking industry were indeed successful implementations.

In summary, this chapter has presented a thorough discussion on the factors that affect the IT implementation process in the Malaysian banking industry. The discussion has drawn evidences based on the current research that provide important perspectives and learning points on the nature of the three factors – strategy, structure and technology - that have emerged from the data analysis. The nature and the interaction of these factors and how they affect the IT implementation in Malaysian have been further understood by linking the evidences found in the current research with the established theoretical perspectives and frameworks.

The following chapter summarised the conclusions and the limitations of the current research. It also offers some perspectives and suggestions for further research.

Chapter 8

CONCLUSIONS

This closing chapter is structured into four main sections namely the discussion on the contribution to knowledge, the conclusions drawn from the current research, limitation of the current research, and some perspectives and recommendation for further research.

8.0 Summary of Research Conclusions

In answering the originating questions posed at the beginning of this research concerning factors affecting the IT implementations in the Malaysian banking industry, the current research has found evidences to suggest that the following factors have significant influence in the process of shaping the IT implementation in Malaysian banks.

- **Strategy** – The quality and strength of a strategy could significantly affect the implementation process. The management has a prime role in shaping sound strategies that facilitates the implementation process. In the context of Malaysian banking industry some of these strategy characteristics would possibly minimize implementation problems:
 - Strategy with holistic view of the organization,
 - Ability to forecast future needs,

- Adequate knowledge,
- Ability to understand and assess the overall impact of technology.
- The research also highlighted that the role of leadership is instrumental in shaping effective strategy.

In general the case study findings demonstrated that it is important for the top management to be involved in technology decisions. In order to make the right decisions concerning technology the top management would have to understand the impact of new technology towards their business. According to Ramesh Nair, a senior consultant in Arthur Anderson Malaysia, the general attitudes of the management in the local banks have started to move along towards supporting this trend. He said:

“About ten years ago, the CEO of the banks did not really pay attention on technology, but today more CEOs like to get involved in the technology, they are a lot more involved, they have understood better the technology and they have much more appreciation of technology than ten years ago, but I think it is the point of ‘what sort of technology’ to be looked at? What are the value-added technologies, rather than the core banking technology”.²¹

- **Structure** – It has been found that strong and adequate structure is one of the pre-requisite towards achieving less problematic implementations. To fulfill this pre-requisite, Malaysian banking institutions need to have robust structure with the following characteristics:
 - Structure that is adaptive to technological changes
 - Structure that encourages inter-functional collaboration
 - Structure that facilitates the flow of ideas and knowledge
 - Structure that is conducive for expertise development

²¹ Interview transcript.

- Structure that provides sufficient bargaining power and control
- Structure with appropriate level of formality.

In general the case study found that while a small number of the banks have started to give better mandate to their new structure of the IT unit, the rest generally have yet to lend credence to their existing structure of the IT unit. This view is also supported by one of the local consultant at the Arthur Anderson firm, who commented:

“Normally a lot of banks position their IT unit in the core centre, so they get treated very badly. Everybody is trying to squeeze the resources of the IT unit. But we are also beginning to see more and more of the IT unit treated as a business unit, so there is a very clear service level agreement, very clear what the centre need to do, very clear (in terms of) what minimum level of performance to be provided. So it operates as a business unit”.²²

Having robust structure would also suggests that the organizations encourage innovative activity by adequately empowering and facilitating interaction among the organizational players at various levels of hierarchy. The result would produce a culture of cohesion and less unambiguous individual roles which could minimize potential implementation problems.

- **Technology** – The technology factor is not just features. Malaysian banks would have to strive towards achieving enabling technology to minimize implementation problem. In the context of the current research, enabling technology is technology that offers:
 - Features that could satisfy current and future needs
 - Reduce overall cost of ownership
 - Allows integration and customization
 - Allows innovative creation of product and services

²² Interview transcript

- Enhances knowledge and learning process
- Works with existing expertise.

With regard to innovativeness, in general, Malaysian banks are still lagging behind their foreign counterparts even though there is similarity in the way the factors shape new technology implementation. The Malaysian banks are seen as always trying to catch up with what the foreign banks are offerings. In the particular case of internet banking for instance, the central authority had to resort the regulatory measures to ensure a level playing field so that the domestic commercial banks would be able to capture a sizeable market share by the time the competition is opened. The foreign banks were only allowed to offer internet banking services eighteen months after the local banks were given the green light.

In other words, without the help form the authority; Malaysian domestic banks would lose in their competition with the locally incorporated foreign banks partly due to their tardiness in terms of taking the lead in technology innovation. According to Nair who have helped numerous Malaysian banks in the deployment of electronic banking technology:

“I think if you look at the (learning) curve, we (local banking industry) are usually a bit behind the curve, we always have to catch-up, even in Malaysia. The foreign bank set up a huge banking organization but their number of branches was limited. In the past the local banks have been quite protected, it’s OK because the local banks can grow while the industry was being protected by regulating the operations of the foreign banks”.²³

In summary these are the factors that affect the IT implementations in Malaysian banks. Nonetheless, each of these identified factors should not be treated in isolation because they interact with each other and collective shape the implementation

²³ Interview transcript

process. The roles that these factors play is not only limited to the implementation process but to a larger extent they are the forces that shape the organizational transformation process in the long run.

It can be concluded that the findings of the case studies seemed to correspond with the findings of earlier researches. Among the models and frameworks used to evaluate the findings of the current research include Bourgeois & Broadwin (1984), Strategic Management of Technology – Guidelines (Scarborough & Lannon, 1988), the MIT90s framework (Scott Morton, 1991), Realizers & Enablers (Miller 1997), and Nine Core IS Capabilities (Feeny & Willcocks, 1998). This suggests the theoretical perspectives and frameworks available in the literature with regard to the factors of strategy, structure and technology in IT implementations are highly applicable in the context of the Malaysian banking industry.

On a final note, it is hoped that the findings of this research would contribute to our understanding of the issues and factors that shape the implementation of IT innovation in financial service industry in Malaysia. The findings are expected to help relevant individuals in the financial services industry to understand the issues surrounding innovation management in general and IT implementation in Malaysian banking industry in particular, by contributing knowledge and evidence based on a systematic process of inquiry. This research will also be useful to researchers in terms of contributing valuable evidence for comparative and cumulative innovation research. It could also possibly offer the authorities in developing countries such as Malaysia in playing their role to influence the adoption of technological innovation. It can also be particularly useful to interested groups, which may include technology and

management professionals as well as the government in understanding IT system implementations in Malaysia.

8.1 Contribution to Knowledge

Firstly, the most important contribution the current research has produced is that it has provided a significant perspective on the nature of innovation activities in Malaysian organizations. In particular it reveals how the role of three factors influence and affect innovation activities within organizations. As financial services sector is one of the sectors that invest heavily on IT innovations, there is a need therefore, for the sector players (financial institutions) to appropriately manage these innovations. This research provides some insights into the position and character of the three identified factors and how their perceived adequacy can affect the implementations of IT innovations in these institutions.

Secondly the current research has provided a perspective for Malaysian organizations to recognize IT innovations as an important part of organizational innovations. This perspective reaffirms findings found by numerous other researches – (Barett, 1995; Brady & Targett, 1995; Jacoby, 1995; Fincham et. al., 1994; Scarbrough, 1992; Steiner & Teixeira, 1990) and more recent ones (Bartoli & Hermel, 2004; Taylor & McAdam, 2004). Given this perspective, there is a considerable need for organizations to recognize that as with other technological innovations, IT innovation should not only concern about technical issues but should also include people as well as process issues. This research has added to the debate on such perspectives based on evidences drawn from the context of Malaysian organizations which operate within the environment of a developing economy.

The third contribution relates to the issue of paucity of critical literature on the adoption and implementation of innovations within organizations which until now remains a major concern (Taylor & McAdam, 2004). As a contribution towards addressing the current paucity in this area, the findings of the current research are believed to have provided some perspectives on implementation issues of organizational innovation based on the Malaysian experience. Whilst the said contribution which was drawn from specific context i.e. Malaysian organizations, in no remarkable way would significantly solve this problem, it certainly adds to the existing perspective of the current body of literature.

Fourthly, from the managerial point of view, this research draws the attention of the Malaysian management practitioners towards realizing the point that IT innovation may not bring about the expected level of desired outcome if its implementation is isolated from the organization strategic and managerial framework. This research has contributed yet more evidences drawn from the Malaysian context which confirm trends in other countries such as France (Bartoli & Hermel, 2004), of the perverse side effects of IT innovations when they are not integrated within the strategic and managerial framework.

Fifthly the current research contributed evidences from specific context that would reaffirm contemporary evidence drawn from recent studies on innovation which suggests that much organizational change has a significant IT-based component (Bartoli & Hermel, 2004; Scarbrough 2003; Hislop et. al., 2000). The evidence drawn from the current research confirms this suggestion and it contributes Malaysian organization experiences to the current literature debate on this issue. In particular the findings add perspective drawn from a specific sector (banking industry) operating

within a developing economy (Malaysia), to the existing literature as regard to how IT component (implementation) affects organization change as argued by contemporary literatures on innovation.

Finally, but not the least, the current research have responded to the call for a proper conceptualization and contextualization as part of the attempt to address the debate on the inconsistent and inconclusive nature of innovation research. In setting up the scope of the current research, the framework of inquiry developed by Whipp & Clark (1986) has been highly instrumental. Several dimensions in that framework are directly significant to the current research. While the nature of actual investigation may not exactly share the same depth, the framework of inquiry has nevertheless been very useful in setting up important perspectives at the outset of this research.

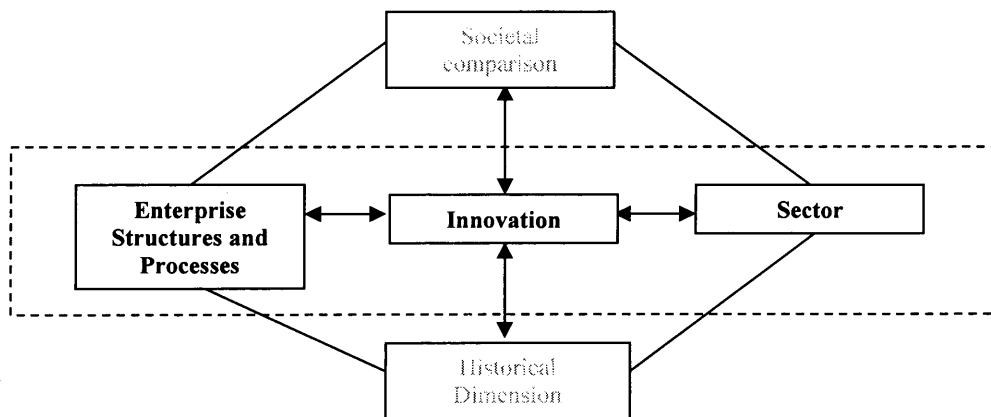


Figure 18: Focus area of Whipp & Clark's (1986) framework of inquiry used in the current research.

Whipp & Clark's framework of inquiry is a multiple dimensions framework that provides linkages among those dimensions. The framework was successfully used to carry out comprehensive investigation and to explain the multiple dimensions of innovation as it occurred in the automobile industry in the UK.

Three of those dimensions were used in setting up the scope of the current research – enterprise structures and processes dimension; innovation dimension; and sector dimension (see figure 19).

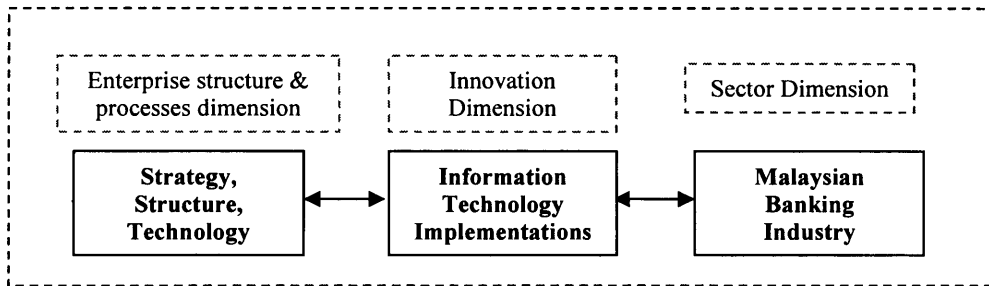


Figure 19: The component of dimensions used in the framework of inquiry in the current research.

In the current research the enterprise structure and process dimension is represented by the factors that affect the implementation process. In the context of the current research, ‘implementation’ of IT innovation has been the central focus of the innovation activity which represents the innovation dimension in the framework of inquiry. Wolfe (1994) has emphasized that the ability to understand a particular innovation depends on how the researcher grasp the complex, context-sensitive nature of the phenomena itself. Indeed Wolfe’s assertion was very real in relation to this research. Implementation has been typically treated by many authors as an activity following strategy formulation or as a distinct stage in the innovation process model (Ettlie, 1980; Tornatzky, et. al., 1983; Bourgeois & Brodwin, 1984; Meyer & Goes, 1988). In the context of the current research ‘implementation’ as an outcome of the innovation process has been conceptualized not as a distinct stage or corresponds to a linear sequence but appears in many stages and should be treated as a question of total organizational involvement.

The perspective of implementation has to be broadened as it encompasses multiple dimensions of the innovation process which are affected by organization structure (including structure of the IT organizations), management processes (strategic planning, implementation, decision making, politics, power struggle, organization learning, knowledge management, institutionalism etc.), and technology attributes (including expertise). Understanding these context-sensitive natures of the phenomenon becomes crucial in carrying out the process of inquiry on managing IT innovation in Malaysian banking organizations. Without this understanding, it would have been difficult to arrive at the existing findings and conclusions in current research. Furthermore, the interactions of the sub-dimensions (strategy, structure, and technology) make the phenomenon even more complex. In this research, interactions of the identified factors within this dimension have been further evaluated in terms of whether they would facilitate or impede the implementation process (innovation dimension) by escalating or lessening the degree of the implementation problems.

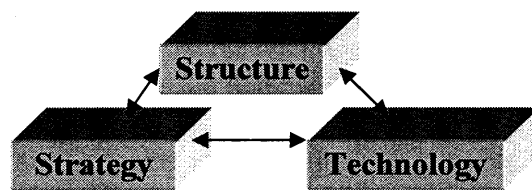


Figure 20: Interactions among the three identified themes

The choice of banking industry is meant to represent the sectoral dimension of the inquiry. Being one of the important industries with the biggest spending on IT, the Malaysian banking industry provides a scope that made 'IT implementation' which represents the innovation dimension even more significant. The learning points are meant specifically for Malaysian organizations within the banking industry but are

also possible to be extended to other organization given similar characteristics and context.

8.2 Limitation of the Research

It is believed that the current research had yielded some important insights into the nature of issues surrounding the IT system implementation in the Malaysian banking industry. However, it must be mentioned that some of the learning points that the current research have managed to raise and conclude should not be taken out from their context. Since the current research is based on a purely qualitative case study design using in depth interviews as the primary data gathering technique, the comprehension of the current research findings should be contextually drawn based on their respective cases.

It must also be noted that it would be hardly possible to straightforwardly compare the findings of the cases due to the disparity of the IT system being implemented by each of the case study bank. There are no two banks in the study that share exactly the same characteristic or similar type of projects which were implemented within the same scope, magnitude and context. Each of the IT system implementation being studied in the current research was unique to each particular case bank. While some of the IT system implementation projects may share a number of similar attributes, their contexts are still different and unique to their environment. The researcher was not in the position to determine the scale of the IT system implementation or to choose any specific IT project to be studied. The choice of scale, scope or specific IT system implementation project was left entirely to the banks to decide and disclose. In other

words, the researcher was left at the mercy of the informants in the banks to reveal and share their stories and other information.

Nevertheless some of the 'learning points' that were derived from issues or experiences were not unique to a particular case but were also found to be shared by a number of cases. It is believed that the strength of the current research is that it covers almost the entire domestic banking industry. In other words the research deals with nearly the whole population and not just a sample of the population. On this ground, it may be plausible to contextually generalize and interpret some of the learning point as representing the nature of IT system implementation of the local Malaysian banking industry.

8.3 Recommendation for Future Research

The current research can be treated as a part of an early initiative to uncover the nature of technology innovation and implementations so that more can be understood within the context of Malaysia as one of the developing nations. Even though in the West, research into this area have produced numerous findings, theories and frameworks and perhaps have achieved high level of maturity, such is not the case in the developing countries like Malaysia.

Despite that, there is still a vacuum when it comes to finding a set of generalisable theories in innovation research. Despite the sheer number of research and findings innovation and implementation research are still fragmented. This suggests that there are still gaps in the research that need to be fulfilled and understood. Wolfe (1994) emphasized that the ability to understand a particular innovation depends on how the

researcher grasp the complex, context-sensitive nature of the phenomena itself. To accomplish this, Wolfe suggests that researchers must clearly address:

- which of the various streams of innovation research is relevant to a research question,
- the stage(s) of the innovation process upon which a study focuses,
- the types of organizations included in the study,
- how a study's outcome variable (e.g. adoption, innovation, implementation) is conceptualized, and
- the attributes of the innovation(s) being investigated.

Addressing these issues would help researcher to establish the research in a proper context right from the start.

In this context of the above argument, the current research has presented evidences and findings that new technology implementations in the Malaysian banking industry is affected by the important factors namely strategy, structure and technology. However, in the course of analysing the research data, there were also other elements that appeared in the analysis but were deemed weak because of the lack of evidence to promote them into emerging themes. Such issues include leadership role and the role of expert power which both of them were addressed in the literature review sections. Perhaps with the gathering of more relevant data in future researches, these issues may develop into themes that deserve special attention and analysis.

With regard to the three themes identifies by the current research – strategy, structure, and technology – there are still much more about these factors to be understood especially in terms of the nature of their interactions. Though it was the intention of the current research to produce a model that could describe the nature and interaction

of the identified factors, more data is required to precisely establish robust linkages among elements that shape or make up the factors. The limitation of case study approach adopted by the current research is that it lacked depth in the analysis. This shortcoming was compensated by the sheer number of cases selected for the current research. While the research was able to provide general perspective on the nature of IT implementations in Malaysian banking industry, deeper and thorough investigation is still required to produce a robust model for the Malaysian context. Thus, it is recommended that future research be undertaken by indulging the investigation deeper into the context. This may be achieved by in-depth case study analysis which pays absolutely great attention to details.

It is also suggested that the findings of the current research also should be confirmed by findings from other researches within the same context as set out in the current research – Malaysian banking industry. The case study approach adopted in the current research can also be viewed as somewhat exploratory in nature. At this point of time, perhaps the finding of this research is the only research product available dealing with the current context. It takes further research to test the strength of the current research findings. Thus quantitative research approach may be a feasible extension to quantify the reality as proclaimed by the current research.

Although the literature review works in the current research suggest a broad range of issues, not all of them were able to be addressed by the current research. A number of issues raised by the literature which include culture, leadership role, specific type of structures, project management; the influence of power, institutional factor, and strategic information system models were among the issues that were not adequately addressed by the current research. It is simply beyond the capacity of the current

researcher to address all of the broad set of issues within the single scope of the current research.

Finally the findings of the current research is the result of an exploratory investigation to some extent, the evidence were collected as they emerge in the way of the investigation process. Any emerging issue can be potentially developed into research findings. The boundary of the research scope was not clearly set. The degree of relevance of the issues was shaped by the researcher's qualitative judgment. Any issue can be interpreted as relevant issue and the same other wise. Thus it depends fully on the researcher's quality and subjectivity of the judgment. To reduce this subjectivity, the future research could perhaps adopt some specialized techniques that allow them to build sufficient level of background knowledge of the research subject such as Delphi Technique, focused group or other feasible techniques. Using these techniques, the researcher may be able to solicit expert opinions in determining the relevant issues that are highly plausible to be investigated. Once a list of plausible issues has been established the investigation process can begin. This could indirectly increase the research quality and credibility in the future.

In conclusion, the above discussion highlighted some issues of concern in the current research which include limitations and some considerations for future research in this area. It is hoped that future research in this area and context would address the concerns and recommendations that have been raised by the current research.

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APPENDICES

Appendix A – Interview Questions

Organizational strategy and structure related questions:

1. As a start can you give some comments on the changing trends on delivery system/service (e.g. branch, ATM) in the banking industry?
2. How about customer's interest in this service, so far? What is your level of optimism about the current customer take-up?
3. [Strategic - Technology policy] Do you see that this new delivery technology have the potential to create new market?
4. What is your perception about the culture in the accounting/financial belief that technical development (IT) had to be cost-justified before they could be supported?
5. Do you think the IT implementation projects in the banking industry are easily cost-justifiable? What is your view of justifying the project by normal return-on-investment techniques?
6. Could you describe the role of 'corporate executive' (or equivalent position) in strategic activities (such as strategic IT implementations). E.g. : optimal use of resources (priority setting and migrating skills around the division); overall responsibility for technology policy
7. Do you think that delivery channel/service using electronic banking will compete with branch-based delivery services? (E.g. by aiming at business sector rather than private customers). Does the project (telebank/EB) have the potential to reduce the important of branch network in terms of full banking service offerings?
8. In your observation, is it common that a top level group (steering committee/working group) being set up to investigate the concept of the electronic banking (EB) implementations? Is it usual that a market research being carried out?

9. How important do you think is technological leadership among banks in the Malaysian banking industry?
10. Is competitive pressure a common impetus for the development electronic banking project?
11. Do you think the background of reorganization (acquisition, merger, transformation etc) become the impetus in the development of electronic banking implementation. Have you seen any cases where the political relationship in terms of historical context (previous owners of now merged business) that have impacted the development of this system.
12. Do you see that the implementations of electronic banking projects open an opportunity for recruitment in IT division among the banks?
13. In your observation, how do banks commonly structure/compartamentalise the new electronic banking implementation within their whole/existing information system? How does this give impact on the division of labour and responsibilities between the software agency and the bank in the development process?
14. In providing external expertise (consultant, independent system auditor, supplier, and software agency) how much autonomy is given to you by the bank?
15. Does control from the bank goes beyond project-management level?
16. Were there any problems about splitting work between agency and in-house developers?
17. Can you describe the common nature of functional divisions in the banking industry? Do you see strong cultural pattern exist among the divisions? Are there any bureaucratic problems within the common structure? Do you see any need for a change?
18. In the light of the new system implementation (electronic banking era), what is your view about the readiness of the organization towards any need for restructuring? Would you think any attempt to restructure will cause dramatic disturbances in the structure and in departmental/division cultures?

19. [Technology - culture] With the new system (EB) to be in place, is there a need of changing (technical) an account-based manner of holding information to a customer-based one?
20. Since the new system requires some degree of database restructuring to allow more “customer oriented” database, is there also any need to retain the staff to be more customer-oriented to sell the new service?
21. Could you trace some of the possible sources that could have been the impetus for this system/service? (marketing reasons, competition, sustaining the business, etc)
22. Who is/are the common (change) champion in the banks in getting the project (system) under way? Was the lead taken by the more powerful department (e.g.: marketing/sales people take the driving seat for this project)?
23. [Technology - Structure] Does the work of different departments ‘overlap’ in the design of the system, if so was there an interdepartmental steering group being set up?
24. How clear the role of the departmental steering group was to the project analysts? (e.g.: consultants, project working group). Is the role of the interdepartmental steering group is to give the ‘go-ahead’ on the resource use, while managers were main decision takers?
25. [Culture] In order to get commitment and support of staff (so that they would hold themselves accountable for the project’s success) was there any effort undertaken (e.g.: training, calling in management consultant) as a preparation for the project. (take off)
26. During the development of the system, is it common that the bank’s top management exert political pressures (e.g. when there is apparent lack of progress on the project) that could create a major credibility problem for the IS/system development?

Technology related questions:

27. What was the usual expectation of the people in the bank during initial implementation phase of the new system (electronic banking) implementation about what system will do? Are their perception / expectation beyond what the system can do?
28. Was there any attempt to armour/equip the technical team/expertise with knowledge/ awareness of the market?
29. Was there any instances where the System Development challenge (taking lead) in initiating (providing impetus) during initial phase of the project.
30. Who usually define the system? (purpose of the system). What is the role of the system Development in defining the system? (is it just the technical bit e.g. technical concept).
31. How much commitment in terms of development time is required by this project? Does System Development/(the organization) have the experience to deal with the level of sophistication in this project. What are the major challenges?
32. Does existing expertise need to be supplemented?
33. Was detail requirement analysis conducted with clients (potential clients)? What are the distinctive features they require ? (what about business analysis)
34. [If system wholly develop in-house] What was/is the development tools (programming language/database structure etc.) commonly used in developing this system?
35. [If system wholly develop in-house] What do you think of the level of professional skills in the system development? Is there any distinctive features reflected in your current/(previous) system that portrays this (e.g. high level of professional skills)?
36. Was pilot test of the system usually conducted among selected customers/clients?
37. What is the clients' current attitude towards security? What is your (system development) main concern about security?

38. In terms of time-scale in response to competition, how quickly the new system needs to be in place? Thus, is in-house technical expertise sufficient? Does external skills (supplier) required?
39. [Technology - out sources] What are the main reasons for banks to choose the agency (supplier) to develop the new system? How much trust were put into the agency to come up with technical capability?
40. [Technology] Who are involved in the actual development (technical) work? (i.e. – project team members).
41. Could you give a brief account on how the IT division (computing operation division, etc) have grown over the years? Has there been a shift in the IT division from a merely technical 'system department' to a type of 'techno-business' operations function?
42. Do you think 'lack of power' in banks IT division in defining and legitimizing their inputs into the product/service division is an issue/problem?
43. [Technology] Does the nature of current (or the then) database structure impede the development of the new system? How can they (database structures) be changed? How was the changes implemented (e.g. gradually by first change how they hold information of 'new' customers, and then gradually replace 'certain key files by more customer-oriented files')?
44. How firm is the specific knowledge about the project among the staff who come on to the project team?
45. Do you think anyone in the development team has come on to the project championing certain type of methodology (e.g. IS manager etc., championing BSP etc.)? Do you see any problem arising from this situation?

Appendix B - Case Briefing: CASE 01 BANK

Case Background

CASE01 in Brief

CASE01 was incorporated in 1st March 1983 amidst the strong request from the public and constant request from the banking and finance industry. It began fully operational in June 1983 and become the first financial institution to offer Islamic financial products. The bank headquarter is based in the Capital City, Kuala Lumpur, which also houses its first banking outlet. It soon opened branches in two state capitals in the eastern coast of the country. The Bank's initial corporate plan was to establish at least one branch in each of the fourteen states in Malaysia within its first years of its operation. After that it would continue to establish about 5 to 6 branches throughout the country every year. The bank had grown steadily since then and after a decade it had successfully set up 44 branches (Annual Report 1993). The number of branches rose up to 82 which include 24 mini branches in the year 2000. This showed how the bank had relentlessly worked to lay a foundation for its operation.

Although its aim of establishment is to cater for the banking needs of the Muslims in accordance with their religious teachings, its market is not limited only to the Muslims. According to its Managing Director, CASE01 currently is not only serving Muslims customers, in fact more than 50 % (fifty per cent) of its trade financing customers are the non-Muslims (Utusan Malaysia 30/07/01, Economy section).

CASE01 IT Systems: Historical Perspective

Due to high technology cost, the Bank could only implement a basic IT system affordable to the Bank when it first started its operation. An IT unit was formed under the control of the Retail Banking Division whose prime activity is to garner as much depositors as possible. The IT unit quickly deployed a relatively simple technology to computerize counter systems, which include saving and current accounts. A stand alone system was purchased and installed at the Bank's headquarter. There was neither any on-line nor networking facility in place. The rationale was that the Bank was new and that it could not afford to invest into expensive systems.

The first system installed was a stand alone system running on a local file. There was no mainframe or large host computer installed. The only host computer was a minicomputer running on an Olivetti system known as MOS. Through an interview with a former software developer attached to the Retail Banking Division, it was learned that the Bank was the first to use the Olivetti system in the country. Until then, only the deposit system was automated. The other system – financing - was still manually processed.

With the opening of new branches in two states in the eastern coast, the need for financing system to be automated had increased. A vendor (PanGlobal), different from the first one was engaged to develop the financing system. A relatively simple

system was delivered known as Computerized Financing System (CFS). The system was fully developed in-house, however still running on a stand alone platform.

Due to the limitation of the Olivetti system (MOS), a newer system was installed to further enhance the automation of the depositors' transactions. The new system known as Integrated Computerised Banking Application (ICBA) was a PC based system installed at newly open branches. However some of the older branches remain with the MOS system due to the complexity in migrating to the new system.

The Structure of the IT Support Function

The IT support function was provided by the IT department which was created under the Retail Banking Division. The department was headed by a senior manager who report to the general manager of the division. The IT department was made of 11 staff whose job covered from system development, installation, production, as well as support and maintenance. There was no IT staff at the branch and IT support was fully provided by these staff at the main branch.

The creation of the IT department under the Retail Banking Division did not limit its responsibility only to that division but covered other divisions such as Financing Division and other areas where IT support was needed. That was the scenario until 1995. Even tough there exist some sort of structure within the IT department but it was not very clear. There was no clear segregation of jobs. There were no sections that divide the areas of specialization such as development, technical, production and network. Everyone seemed to be involved in all areas.

Demand for a better performance IT systems

As the number of depositors increased and more branches were opened, the need for a better performance IT systems became inevitable. One of the urgent needs was to provide ATM facilities to the customers. All major financial institutions in the country provide their customers with ATM facilities in order to allow them to make withdrawals and deposits that extend beyond the banking hours.

An innovative effort was put forward by the late general manager of the Retail Division to introduce ATM technology to the bank customers. Despite the lack of financial strength, there was an enormous demand for the bank to look for an affordable solution.

The Smart Card ATM system was rolled out in 1991 at the main branch. The capability of the card to store transaction information replaced the need for a pass book. The system worked based on an off-line distributed system. Where the card stored the transaction information but that does not update the balance in real-time. The card balance and the computer balance will be synchronized using batch processing that took place during the night. This solution permitted the bank to offer affordable ATM facilities to the customers without the need to install expensive on-line computer network that link all the branches.

Apart from the installation of the distributed smart card system, there were a number of relatively small information systems being developed in the same year. Though

these systems were not too difficult to develop, over a period of time this approach proved to have a potential drawback. Then there was an increasing demand from the customers for online facility.

The need for a strategic IT Plan

After realizing that the system needed to be upgraded, the bank quickly engaged a system vendor (Sapura Systems Sdn. Bhd.) whose office was located several floors above the Bank's main branch. The Bank occupies the ground floor of the same building. The vendor was given the responsibility to evaluate and make proposal as to how the Bank can improve its current system. The evaluations and recommendations would be part of the bank's ISP – Information System Strategic Planning.

The criteria used to select the system vendor were not explicitly explained by the informant. However, the reason for choosing the system vendor was not so difficult to imply when the Bank's Chairman was also found to be the Chairman of the vendor company.

Among the recommendation made was that the Bank needs a centralized online system. The Bank then had about thirty branches with each one maintaining its own system. Even though they used the same system (package) but they kept their own files. With reference to the ISP, the Bank decided to proceed with the recommendation.

Since additional expertise was needed in order to assist the planning and implementation of the project, the Bank in 1997 decided to engage Ernst & Young (E&Y). E&Y is a consultant firm deemed to have vast knowledge and experience in system integration with specialist experts in the financial services industry. The specific role of the E&Y was to provide expert guidance in project management especially in producing Request for Proposal (RFP) documents and selection of vendors who would take part in the project.

Based on the interviews with the former head of Program Management Office (PMO), approximately a total of (Malaysian Ringgit) RM 100 million was initially approved for the project. The setting up of the PMO was part of a three-step approach taken by the Bank in order to minimize risk of failure. The steps involve:

- i. Hired a system vendor to study the Bank's IT position and produce the IT Strategic Plan.
- ii. Engaged a consultant firm to assist in project management especially in producing RFPs documentation and selection of vendors.
- iii. Establish a Program Management Office to coordinate the implementation of the project.

The Program Management Office (PMO)

The PMO was set up in 1996 serving as a coordination center for the project. The purpose of its setting up was to coordinate the aspects of implementation of the

project. The Bank management had offered the job to lead the office to a former executive attached to the Bank Examination Department (currently Banking Supervision Department) of the Central Bank. It was believed that the employment was made through unpublished employee search. As soon as the job offer was accepted, the person was appointed to head the PMO.

It was learnt from the interview with him, that the ISP produced by the system vendor was approved at the end of 1995. His examination of the ISP found that the ISP was not complete and needed to be detailed. He recommended that the project needed to be more encompassing so that an advance integrated solution could be offered. Hence a more detailed ISP was produced and a major project was proposed. The project was named 'MIS Upgrade Project' (MUP) and the expected result would be the delivery of what is known as the 'Total Integrated Banking System' (TIBS).

The MIS Upgrade Project

Based on the PMO Presentation Document (May 2000), the ultimate goal of the project was:

“To develop an integrated on line user friendly system and simplify work processes within the expected budget and time frame”. (p. 7)

The project objectives include:

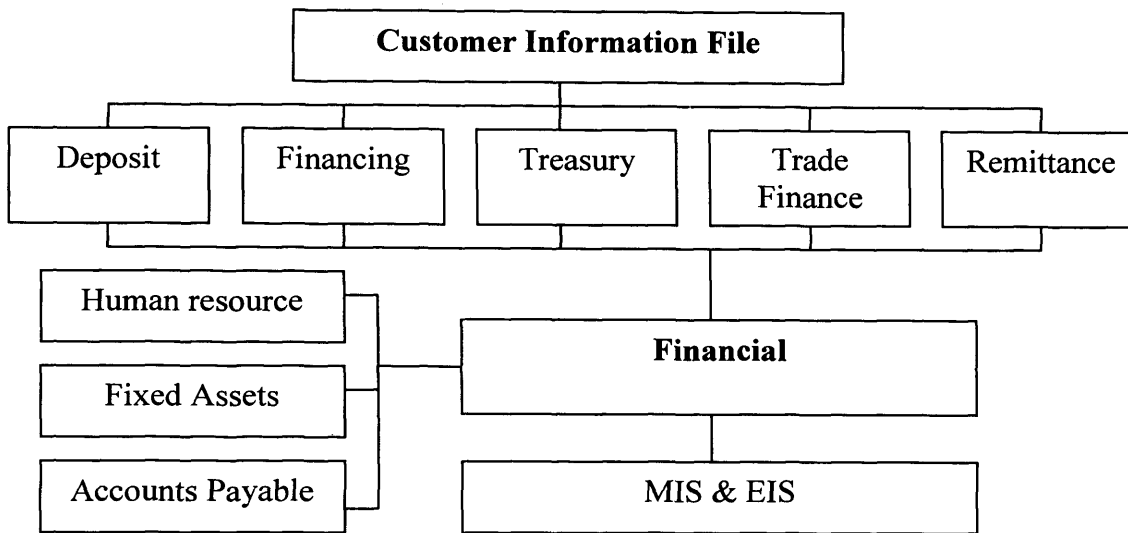
- Develop integrated systems
- Reduce back office activity
- Reduce paperwork
- Enhance existing policy wherever possible
- Develop user friendly screen
- Enhance customer services.

TIBS includes nine modules:

- 1) Deposit System
- 2) Financing System
- 3) Treasury System
- 4) Trade Finance System
- 5) Remittance System
- 6) Human Resource System
- 7) Financial (Accounting) System
- 8) Executive Information System
- 9) Electronic Banking System

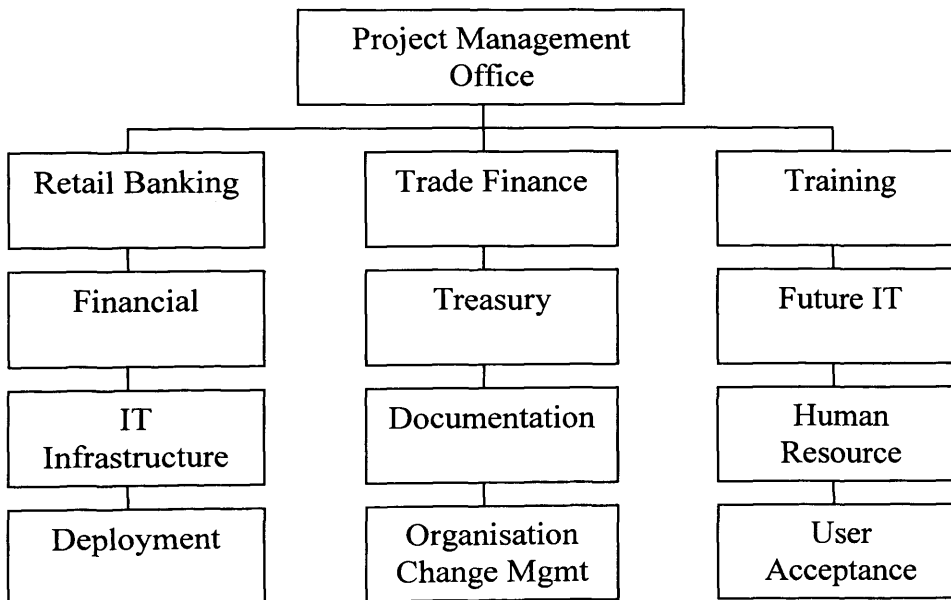
Apart from the above, the system also includes a module which would allow the Central Bank to extract reports from the Bank online. This is part of the Central Bank requirement imposed on all banking institutions in the country.

The schematic relationships of the TIBS component systems can be seen as follows:



Adapted from: CASE01 (2000), "CASE01 Project Management Office" Presentation Document, PMO (p.10).

According to the present head of PMO, there are two common approaches for MIS project i.e. by Application or Team. The Bank has adopted the Team approach. The structure of the PMO can be seen as follows.



Adapted from: CASE01 (2000), "CASE01 Project Management Office" Presentation Document, PMO (p.11).

The role of each group is summarized in the table below.

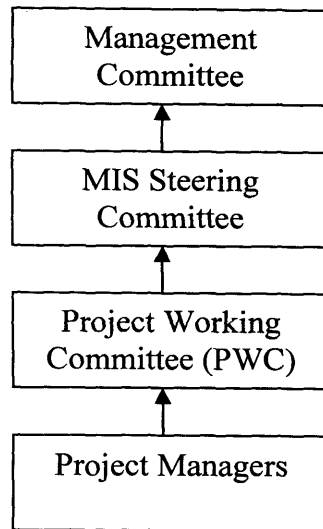
Team Groups	Specific Role
Retail Banking	Develop Customer Information File (CIF), Deposit and Financing Systems

Treasury	Develop new Treasury system
Human Resource	Develop new Human resource system
Trade Finance	Develop new Trade Finance system
Documentation	Enhance and develop new policies and manuals
Training	Provide training on the new systems and procedures
IT infrastructure	Setup the new infrastructure to accommodate new systems
Future It	Plan for the bank future needs on technology
Organisation change management	Organise awareness on Program Bank-wide for new systems and facilitate acceptance
User Acceptance	Test and ensure that the new system and processes are in compliance with the Bank needs
Financial	Develop new systems to capture and integrate all financial transactions
Deployment	Rollout the new systems throughout the bank.

Adapted from: CASE01 (2000), "CASE01 Project Management Office" Presentation Document, PMO (p.12-13).

Each of the team group was also known as expert user (EU) group. Their members include selected representatives from various divisions in the Bank. Their role was to provide inputs by giving a clear picture regarding the work processes involved at their respective work environments. On top of that they also served as a liaison between users at the respective divisions and the project developers so that the user expectations and requirements would be given due attention.

Each of the expert user (EU) group was in fact a unit of project within the overall MIS Upgrade Project (MUP). Each project was headed by a project manager. All project managers report to the PMO Manager and were members of the Project Working Committee (PWC). They had meetings on a regular basis to resolve technical issues and update on the progress of their respective projects. This meeting was chaired by the PMO Manager. The PWC reports to the MIS Steering Committee whose members were made up of the IT Manager, the Product Owners who were representatives of various Divisions. The PMO Manager sits as the secretary of this committee. MIS Steering Committee in turn reports to the Management Committee. The hierarchical relationship is summarized below:



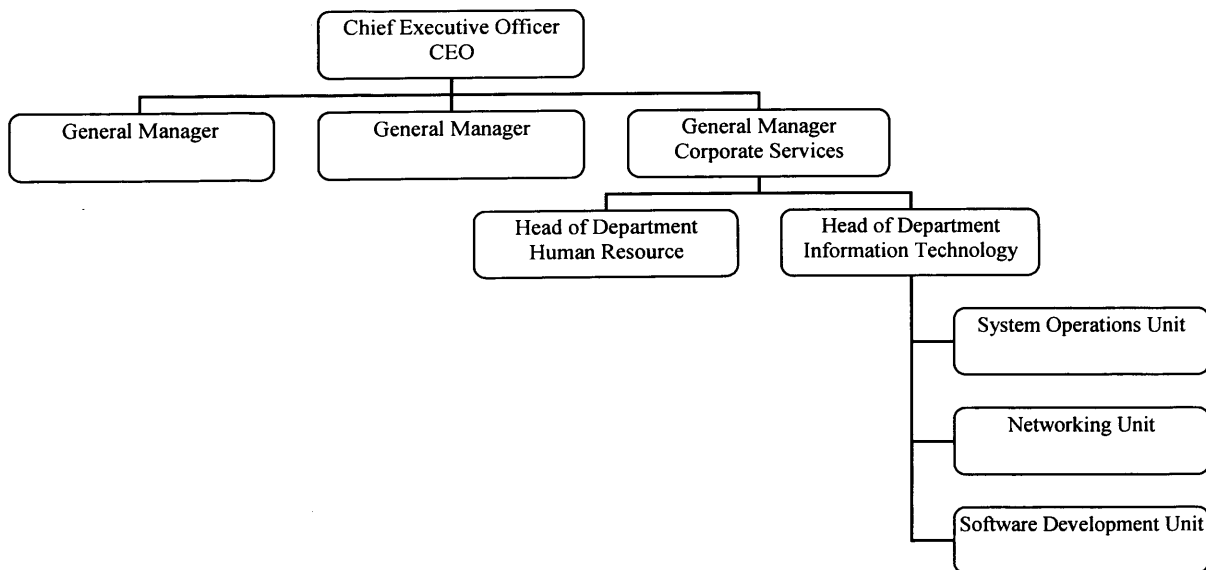
Hierarchical Structure of the MIS Upgrade Project

References

- CASE01 (2000), "CASE01 Project Management Office" Presentation Document, PMO.
- CASE01 (1997), "Organisational Change Management project", CASE01 Project Presentation.
- Extracts from Functional Requirements document, PMO (undated).
- Extracts from Post-Conversion Activities – Recommendations (undated).
- Extracts from Gap Analysis – Issue Resolution document, (Feb, 1998)
- Utusan Malaysia (30/7/01), Economy Section.

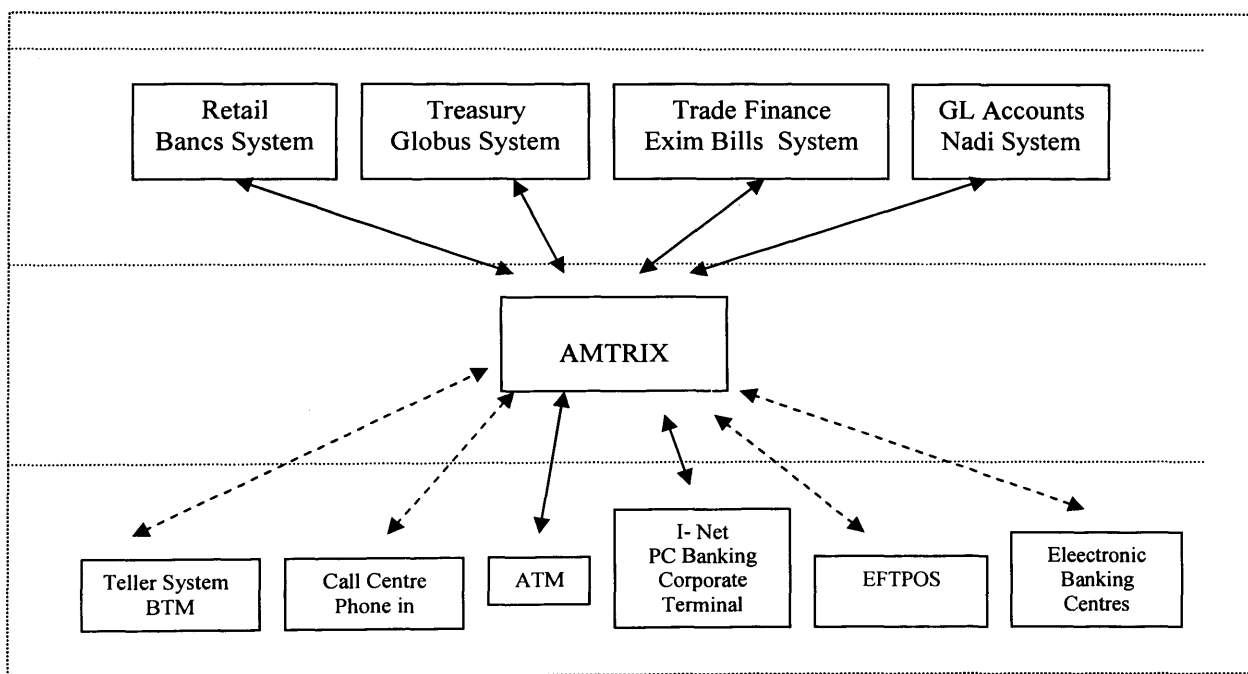
Appendix C - Case Briefing: CASE 02 BANK

CASE02 Commercial came to birth in August, 1994 following a structural reorganization in Bank Kerja, which started in 1975, when a new major shareholder that took over its management decided to give it a new name. With a new leader at the helm, the Bank's vision is to leapfrog at par with established banks directing focus on technology. The Bank believes that the advantage of technology will improve business by expanding service delivery in the form of electronic banking, internet and intranet banking. Being a relatively new and small bank with only 23 branches across the country and limited funds, the Bank felt this vision is the right approach to compete with the other more established banks as the option to increase the number of branches was too expensive to contemplate. The brief organization structure depicting the IT position in the structure is as follows:



In 1996, with an initial investment worth USD 5.2 million, the Bank started its computerization project and first sought a middleware solution to integrate the four separate and independent banking applications. These were: Bancs for retail operations; Globus for treasury; Exim Bills for trade financing; and Nadi for general ledger accounting. The middleware acquired, AMTRIX, was not only able to integrate the applications but also came with tools that could be used to handle hardware for use in Electronic Banking Centres.

The Bank's integrated banking system using a middleware solution



Adapted from MIS Asia – April 1999

Between the years 1997-1998, the Bank rolled out its e-banking services as a new delivery channel. Three Electronic Banking Centres (EBC) were installed as an alternative to brick-and-mortar branches offering full functionalities of a branch where account holders can transfer funds, make account enquiries, pay bills, request for statements and cheques books, and apply for loans. By placing EBCs in strategic

location at residential and commercial areas, the Banks hoped to provide 24-hours banking services to customers. However, the Bank later learnt that rolling out e-business without proper organizational setup and omitting to reassign existing staff proved to be an ineffective move. As the Bank's general manager puts it, "You can't roll out e-banking simply as an alternative channel to your brick-and-mortar offering. We've tried that and it doesn't work". The result was that the branches and staff did not buy into the concept and largely shunned the move (CIO Asia – December 2000). He added, "E-banking ownership was not with the branches, so no one attempted to market the offerings. The branches ended up ignoring the e-banking component altogether and continued to focus on counter services".

Although it was a good idea to roll out new technologies, take-up was slow as the Bank's branches, which were not aware of the benefits, saw the new technology component as competitors and did not push it out to the customers. To rectify this error, the Bank created a spin-off division, CASE02 IT Subsidiary (BITS) with separate staff, IT systems, funding, and profit and loss statements. With its own incentive structures and profit centres, the new division was given a mandate to run its own marketing and sales force for its own customers and has a role to convert customers to e-banking. The new division started its services with ATM machines, cheques deposit and cash deposit machines and later expanded to call centre services, phone and web-based banking. The new division also built its own e-bank physical branch – filled with electronic devices.

Two sets of customers now emerged; conventional customers - that still use the counter services and e-banking customers - that used electronic banking services. The

bank also observed that the creation of the spin-off division with a flat structure has helped in speedy decision making and execution of new plans.

CASE02 Commercial has since merged with AFN Bank as part of the Bank Negara's regulation for the national financial consolidation.

Appendix D - Case Briefing: CASE 03 BANK

IT Implementation : Historical Perspective

IT applications in CASE03 Bank comprised Treasury System, Finance system, Trade systems, Credit system and Deposit system. Since 1948, IBM and NCR have been the two leading systems in banking in the US (Teixera and Steiner). Following the US trend, CASE03 Bank chose NCR for its first IT implementation to run the several applications which were not fully integrated. Applications were built by modifying and customizing basic US based packages bought off-the-shelf using internal expertise. These modifications and customizations were done to suit the Bank's business needs which were dissimilar to US based banking practices. As the Bank's customer base increased, pressure on existing applications caused slowing response time.

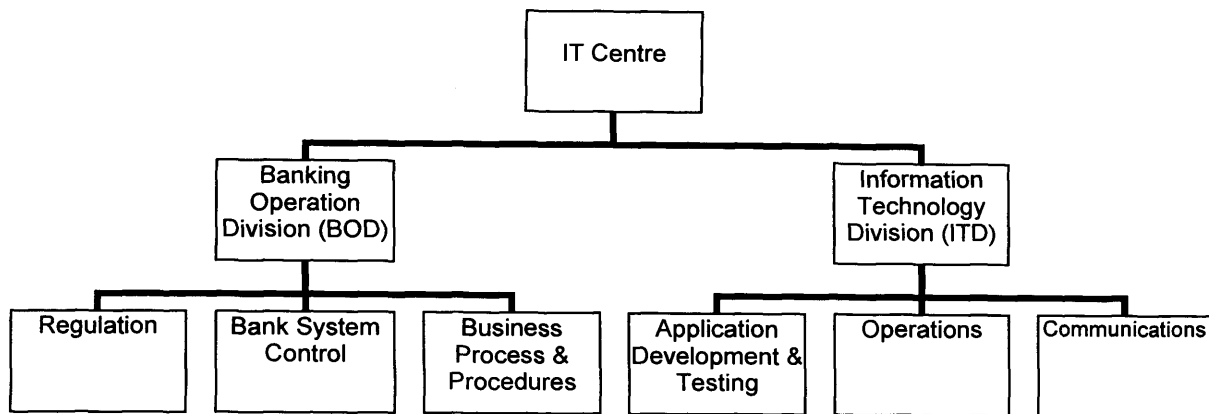
Two reasons were cited for the bank to improve its computerization:

1. To improve on the service performance by increasing efficiency.
2. To increase efficiency of the back office operations

For this reason and partly also because the technology used was outdated and no longer expandable, the Bank decided to embark on a fully integrated system project involving the acquisition of new technology. As the market was not able to provide fully integrated packages that suit the Bank's business requirements and in-house development would mean enormous effort and high expenditure with no guarantee of

success, a decision was then made to acquire off-the-shelf packages that were modifiable to incorporate full integration.

For this purpose, the Bank appointed an Australian technical expert, J. H., to head the project. In order to ensure the project implementation was successful, it was closely monitored by the Bank's IT Committee. The committee was chaired by the Electronic Data Processing (EDP) Executive Director (ED) with members from the Finance, Treasury, Human Resource and IT department. A user expert group known as Working Group Committee was set up to work alongside the IT department in analyzing, acquiring, testing and delivering the relevant packages. User departments produced User Requirement Definition documents containing detailed flows of existing business processes and new requirements for proposed applications. These documents were analysed by the Working Group Committee who were responsible in finding the suitable package that closely fits the requirements from the market. This process involves analyzing, going overseas, getting quotations, looking at specifications, visiting vendors and inviting vendors to visit the Bank. Two approaches were considered for this exercise; 1) to evaluate, test, develop and launch the package to the user; or 2) to appoint a consultant that will research for the best solution.



The Bank's top management was very much involved in evaluating and appointing vendors. Each with at least 20-30 years in banking experience, the management made sure that the Bank's business needs are catered by the vendor while Mr. J.H. and his technical team evaluate the technical requirements. Several packages that closely fit the Bank's business requirement were chosen.

With a total expenditure close to Ringgit Malaysia 100 million, the Bank acquired M&I for Loan and Deposit functions, BDS for Front End application, KAPITI for Trade Finance, Integral for Human Resource, Walker for Finance, OCM 24 for Unicard and Corona for back-end processing. Hard negotiations took place to ensure the vendor agrees to system modification to incorporate variations peculiar to each user's requirement. Pressured by the Bank's demand, the vendor agreed to the modification with quarterly updates. By October 1995, a technical team was formed to work with the vendor before system cut-over. The team was given hands-on training to learn how the applications work and to study the gaps analysis between what the system can do and what the business needs require. During the modification process, the Working Group ensures the integrated system functions according to the User Requirement Definition. Where appropriate, certain business process were

improved and fine-tuned. As a result, the Bank was able to offer better products to the customer like the introduction of daily interest rates. By making sure that only fully tested and well-proven packages were chosen for the Bank, the Bank was able to launch a fully integrated banking system within the same year.

Banks Success factors:

- High Commitment from top management with lots of experience
- Choosing fully tested and well proven packages
- Bargaining power
- Public customer service – man to man not machine to man

Appendix E - Case Briefing: CASE 04 BANK

On the outset, the CASE04 Bank's informant was very reluctant to reveal any information regarding the Bank's IT planning and implementation. The researcher had to probe very delicately to glean valuable information.

Corporate Profile

CASE04 is a merged entity between BB Bank and BC Bank. The merger was part of the Malaysian government strategy through Bank Negara Malaysia (BNM) to strengthen Malaysian banking industry following the 1997 financial crisis. BNM had directed local banks to merge and only 10 anchor banks should be formed. BB-BC was the first merger completed in this process on the 1st October 1999. Forming the second largest bank with 300 branches nationwide, CASE04 also has branches in Singapore, Hong Kong, Tokyo and London. It also has the distinction of having the largest ATM network throughout the country. The new Bank was organized into three key functions: 1) Sales and Service, 2) Policy and Control, and 3) Processing (Operations and IT). By 31 December 2001, the Bank's loan assets stood at RM 41.3 billion while shareholder funds was RM 4.1 billion (Muzaffar Shah Mustaffa, 2002). The focus of the newly merged Bank is on customer service and innovative products, backed by advanced, efficient and cost effective IT based processing systems.

The Bank's vision is to be a Malaysian icon – a dominant financial service provider in the country with significant presence. Its mission statement was “to build a financial institution with competencies and capabilities to deliver the highest standard of

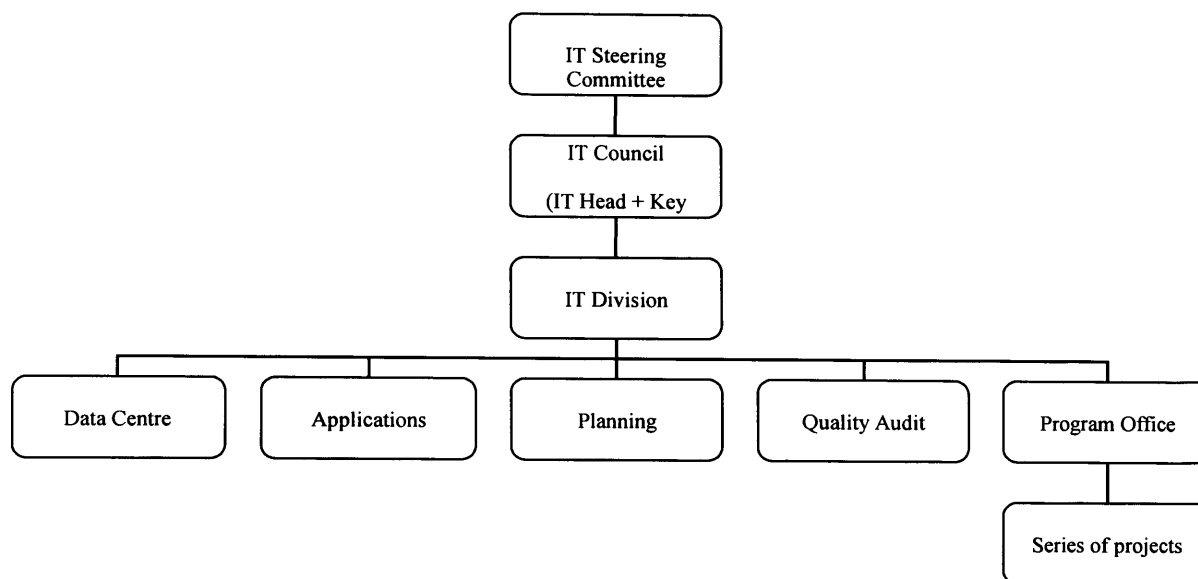
service and innovative financial products initially satisfying the needs of customers in all sectors of Malaysian society. This will be achieved through the introduction of best business practices, high standard of management, investment in enabling technology and strategic alliance with world-class players” (Annual Report 2001).

The Bank emphasized that three core values need to be inculcated as a culture within its realm as a guide to achieve its mission and vision. The core values were:

- Performance driven – be result-oriented while mitigating risk through the adoption of prudent policies and processes. Quality shall be the trademark of all the Bank’s endeavor;
- Trustworthiness – exhibiting the highest standard of professionalism, integrity and business and work ethics; and
- Innovation – encouraging innovation, adopting best practices and leveraging technology to raise efficiencies and continuously create superior value propositions for our customers.

IT Support Structure

Prior to the merger, BBMB and BOC had in-house IT departments which was responsible in managing all IT and IS requirements for the respective organizations each running a different platform.



An effort was made to merge their IT departments and integrate the banking application system to run on a single platform. In June 2001, the integration exercise was completed. The consolidated IT departments then formed a subsidiary which is wholly owned by the bank to act the Bank's IT service provider. Forming a 'normal' customer relationship with the Bank according to a full contractually binding, service level agreement, the subsidiary has a role manage the Bank's back office processing.

IT Based Products and Services

Electronic banking in CASE04 started with the installation of ATMs followed with the implementation of salary payment software which automatically pays monthly wages into customers' accounts. The most recent IT implementation at the Bank was PC Banking; which allows a corporate customer's personal computer to be connected to the Bank's computers. In order to ensure data security and high integrity, the Bank provides a smart card with a card reader to allow access to the Bank's system. The smart card technology uses US-based security software. In addition, the bank also

provided dedicated dial-up links to each customer for assured data transfer. Three major services provided via PC Banking are funds management, trade financing, and payment services. Due to the high cost involved in providing access to PC Banking, this product is only focused on corporate customers. PC Banking ensures easy access to banking services seven days a week from 7am to 11pm and enables corporate clients to conduct transactions within a matter of seconds from their PCs, thereby significantly reducing time costs. However, the informant believed that the Bank has quite a sizeable PC banking customer base.

For retail customers, the Bank implemented a Call Centre, which allows customer to make inquiries and conduct phone banking during a telephone call to the centre. Following the recent merger, the Centre was initially launched to provide a channel to handle inquiries from former customers of the two banks. The management also wanted to provide a channel to respond to customers and to help handhold them through their uncertainties. Soon the Centre was undertaking phone banking and aiding in the launch of new products and services. The call centre provides its service in two languages; Bahasa Malaysia and English. Customer Service Officers (CSO), who manned the Centre, are provided with a variety of information on the customer, including a long list of recent transactions that the customer has made (IT Malaysia Executive - January 2001).

The Bank admitted that until recently it had been taking the “wait and see” approach rather than leading the market in technology innovation. Comparing itself with foreign counterparts who have more than 20 years of banking experience in Malaysia, the Bank initiated its technology-based product at a time when customer demand has

already been created. The informant believed that the Bank's approach to IT implementation has inadvertently brought itself to the fore front of IT innovation. By deciding to develop IT-based products using in-house resources with external assistants, the Bank was able to incorporate new features quickly and build confidence among business units due to assured support. The Bank felt it became the first to introduce e-commerce using web-based application via intranet when even foreign bank were still using text-based applications. To promote e-commerce, the Bank had a strong marketing team to create demand among customers.

At the end 2001, the bank embarked on a massive system migration project to convert its SAFE II banking system to ALLTEL retail banking system. The project was undertaken by an outsourcing subsidiary of the bank. Subsequent to the migration to ALLTELL system, the back office operation was fully outsourced to the subsidiary company. The outsourcing arrangement had created massive redundancy problem among its huge number of IT staffs. The problem had created a serious protest from hundreds of its affected workers and subsequently turned into an ugly trade dispute.

Appendix F - Case Briefing: CASE 05 BANK

The CASE05 Bank was formed in 1994 when its founder, encouraged by the excellent growth of a stock broking firm which he rescued, decided to venture into full-fledged financial and banking services. With only 30 branches nationwide in its fledgling position as a 'new-kid-on-the-block', the Bank realized it will never be able to take on the older and more established players in the market. As such, the Bank decided to adopt a two-pronged strategy to help direct the Bank forward. First, products and services offered have to be ideas-driven, and second; IT will be fully harnessed to achieve the Bank's strategic goals. With this strategy, the Bank targets customers that fall under the middle to upper income bracket.

The Bank's first online banking product was launched in 1995 with the introduction of C5 Direct, an online banking and investing services. C5 Direct offers customers with access to computers, at home or at work, the ability to check account balance, order cheque book or undertake any virtual banking transaction. In addition, the customer will also be able to invest his money through an integrated stock broking unit. C5 Direct provides investing customers with the convenience of not having to make numerous phone calls or deal with remisiers.

In an effort to achieve competitive edge, the Bank provided innovative delivery channels to its customers not only to those with access to computers. Having only limited number of branches, in 1997 the Bank placed C5 Virtual Kiosks in shopping malls to provide full branch services to customers. C5 Phone, a telephone version of

C5 Direct, was introduced to customers with no internet access or less computer savvy. The Bank also targets family banking when it introduced C5 World which provides online shopping, travel and insurance facilities in addition to banking and investing services. Since internet banking was not permitted by the Bank Negara Malaysia until the year 2000, the Bank's online services can only be provided via the intranet. However, knowing that this banking feature would soon be available, the Bank used the internet protocol, TCP/IP in anticipation for when the permission will be granted.

A strategy that was adopted by the bank in the process of developing its IT infrastructure was to set up a subsidiary company. Fully aware that IT would play a critical role in its banking business, the subsidiary company acts as its technology arm in providing consultancy and systems integration services to the Bank. After the completion of the IT infrastructure project the company had been absorbed into the Bank to continue providing IT supports that it requires.

With the implementation of a fully integrated banking and financial system, the Bank was also able to introduce a revolutionary and controversial product, the OneAccount, an interest paying current account with fixed deposit facilities, which was a first in Malaysia. OneAccount provides the benefit of three accounts in one, the saving account; current account and fixed deposit. In order to curb abuse, this account is restricted a minimum balance of Ringgit Malaysia 2000.00. The Bank's bold and innovative ways proved to be successful as the OneAccount was later emulated by several other banks. As the Bank's CEO always puts it "...*unlike other banks where*

as a child you learn to crawl and then learn to walk and then you learn to run. For us, we were born to quickly learn to run”.

In recent years, the Bank has further enhanced its products. By integrating investment facilities with OneAccount, customers can enjoy an all-in-one investment facility. The Bank also introduced mobile phone banking by providing C5 Direct to mobile phone users. With Seamless Branch Banking, the Bank removes commission charges and transaction fees which are normally associated with inter-branch transactions.

Appendix G - Case Briefing: CASE 06 BANK

CASE06 takes pride in being the first among Malaysian Banks to harness IT in its integrated banking system and to introduce IT-based products. Headed by a visionary and committed top management, the Bank has an aim to be the market leader in IT innovation and implementation. The Bank's mastermind was an Australian expatriate, who was brought to join the senior management team. Following the recent merger with BL, the Bank is now attempting to integrate its back-end processing to run on one system and one platform.

IT Implementation

As one of the early adopters in technology, the Bank now offers a number of alternative delivery channels and is well positioned for digital economy. PC Banking allows customers to carry out safe banking transactions electronically using a 128-bit encryption technology, Secure Electronic Transaction (SET). PC Banking using personal computers that leverage connectivity with the Bank's secured private network. Prior to PC Banking, the Bank had already launched Direct Access, a 24-hour telephone based banking service. The Bank also strengthened transaction security for ATM customer by introducing biometric ATMS. Biometric technology authentication is based on the verification of a person's identity by hand geometry, a security device which provides positive identification of individuals. The biometric ATMs operates at a higher security level to prevent theft and fraud.

E-Banking system in CASE06 Bank was started in 1997. Prior to that, the Bank has already implemented commercial banking, direct banking and telephone banking which were started as early as 1995. E-banking, which was targeted for corporate customers, allows customers to do their banking from the convenience of their offices. Services provided include balance inquiry, statement inquiry and printouts, FD, loans, payroll as well as fund transfer. All data exchanges are fully secured through the usage of encryption and advanced authentication technologies. (CASE04 Bank, Annual Report 1997).

The Merger Process

BL was initially incorporated in 1935 as BL Bank, a private limited company. In 1987, BL launched the nation's first ATM network, GREAT. With years of prudence practice, the Bank was awarded a long term rating of A1 and a short term rating of P1 by the Rating Agency Malaysia (RAM). (BL The Millenium Retrospective: A Fitting Tribute to the People, 2000).

In 1998, BL introduced BL Connect, an on-line banking facility which offers services like applications for remittance, funds transfer, ATM notifications, cheque functions and others.

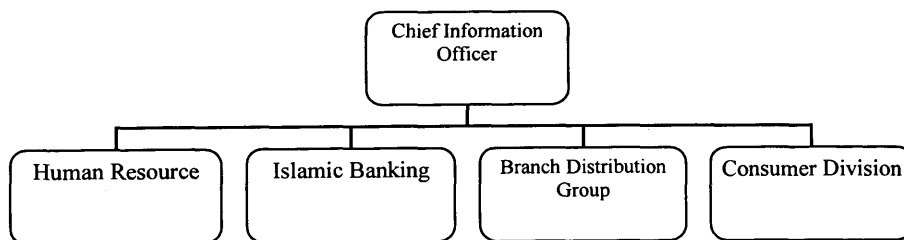
Although BL holds the controlling stake in the merged banks, it was literally smaller in size compared to CASE06 Bank. However, since the last ten years, BL has been concentrating on image improvement and enhancement by employing overseas graduates to inject western ideas into the bank's corporate culture. Both banks were very conservative in nature and very focused to the Chinese culture. Nevertheless, the differences between the banks have caused some issues left unresolved resulting in

“indirect” retrenchment to occur during the merger process. According to a former BL staff, many staffs were unhappy and chose to leave and a huge number of the IT division involving top to lower level staff also resigned. (Interview with former staff, HSuri).

IT Support Structure

Previously, the Bank’s IT technical support was provided by a technical support team which was based in Penang. Following the recent merger, technical support has now been moved to the headquarters in Kuala Lumpur. There is no technical support staff placed in the branches. Technical support in the branches is covered by vendor technician or technical staff from the headquarters.

Organizational structure



Key factors in successful IT implementation

- 1) Top management commitment
- 2) Internal technical support and expertise
- 3) System

Appendix H - Case Briefing: CASE 07 BANK

CASE07 come into existence in January 1994, however its history can be traced back as far as 1905 as one the financial institution established in the East Malaysian state, Sarawak. Prior to being owned by the current owner, the bank had changed hand twice to two different owners bearing the names KL Bank and MI Bank respectively.

When it was under the banner of KL Bank (Sarawak based) it had 18 branches, and then increased to 36 branches when it was acquired by the MI Group in May 1982 and later renamed as MI Bank. When CASE07 Group took over the ownership in January 1994, the bank had expanded its branches to 73. In the year 2000 the Group acquired another local bank and two finance companies and the number of branches had increased to 143. The bank plans to raise its network of branches to 200 by the year 2006. In its attempt to expand internationally, the bank has currently opened a branch in Singapore.

According to the banking group's current senior managing director, the bank has established itself as a niche bank and recognised as strong in consumer banking and SMEs (small and medium enterprise) loans²⁴. It foresees that there is a strong growth potential in these sectors considering the country's economy is showing significant sign of improvement since the economic turmoil towards the end of 1990s.

²⁴ Hong Leong: M&As to be based on value creation, *The Star*, 02/08/2003

During the restructuring of the Malaysian banking sector, the Central Bank had listed CASE07 Bank as one of the 10 anchor banks in Malaysia. CASE07 claimed that it is well geared to face the challenges of the new millennium. According to one of its executive, the top management of the bank had set a vision to lead the bank to become a major player in the local banking industry that emulates the high standards adopted by international banks.

CASE07 Information System

Historical Background

Prior to the computerization era, every single transaction in the bank was recorded manually. The biggest problem facing the manual system was the interest calculation which was carried out at the end of each month. Every bank staff would be forced to calculate the interest due on each customer account manually. The task was challenging and demand tremendous effort on the part of the bank staff. Interests had to be manually calculated and without any mistake. No staff would be allowed to take leave during month-end.

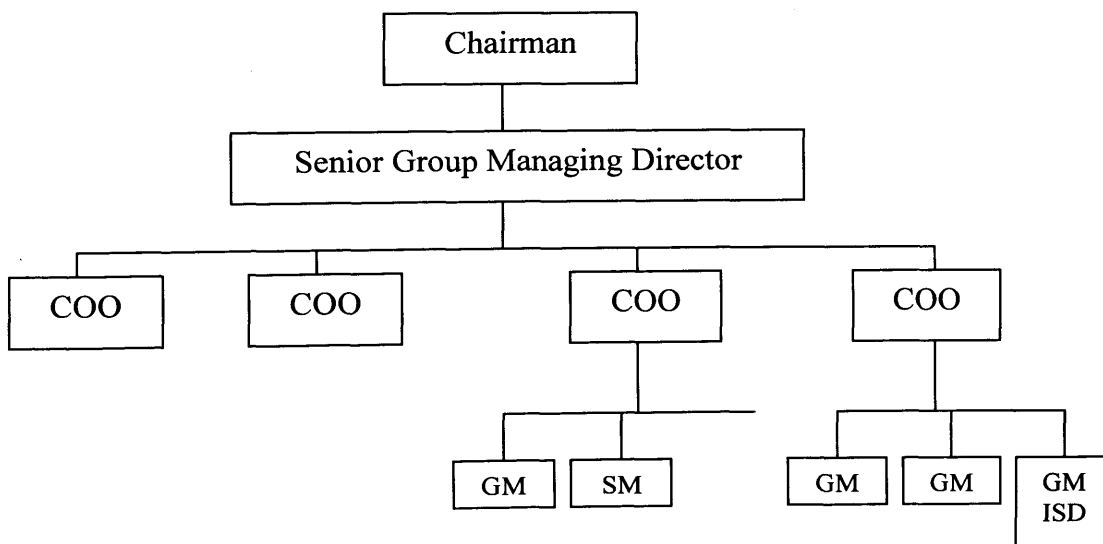
The computerization process in the bank began in 1982, when it was under the banner of MI bank. The computerization began with the deposit system which manages the saving and current account transactions. The main purpose of the computerization was to automate the process of calculating interest every month-end. An important fact to note was that the computerization was done based on a stand-alone technology. This stand alone system, based on a stand alone Nixdorf System was without any inter branch link. This system was used to host deposit system that manages the saving and

current account transactions. Those two transactions were the only computerized transaction records at that time. The other systems – Fixed Deposit (FD), Loan, General Ledger (GL) and Trade Finance were still processed manually.

The extent of computerization implemented during that phase was considered minimal. All of the 36 bank branches at that time implemented the computerized deposit system but were not interconnected via a network. In other words they were all running a computerized stand alone developed exclusively for the deposit system, while all other products were still being processed manually.

The IT Organization Structure

The position of the IT unit in relation to the whole group can be seen briefly in the following organization chart.



The whole group is headed by a chairman and a senior group managing director. The group has diversified businesses in financial services, manufacturing, and property and infrastructure development. Each one of these business is headed by a Chief Operating Officer (COO). Functional units within each business entity are divided into divisions. Each division is headed by a general manager (GM) or a senior manager (SM). The information technology services function in Hong Leong Bank is performed by the IT Services Division (ISD). Policies are formulated at the Group level and adopted by all of its businesses.

Appendix I - Case Briefing: CASE 08 BANK

CASE08 is a newly formed bank. It was incorporated in October 1999 as a result of a consolidation between the Islamic banking operations of BB together with the consolidation of the financing subsidiaries of both the BB and the BC. Their conventional banking operations were merged to form CASE08.

It was stipulated in the Share Transfer Agreement that by the end of 1999, that 30 per cent of the Bank's assets would be allocated to parent company of BC while the rest of assets and all liabilities would be owned and assumed by the Malaysian government²⁵. At the end of 2001 the Bank branches nationwide amount to 42 and it assets worth MYR 6.6 billions.²⁶

IT Background

As a new bank which operates as a new entity as a result of the merged operations of their Islamic and finance subsidiaries from their parent companies, CASE08 IT support depended on the courtesy of its previous owner. A grace period of three years was granted by the Cental Bank for the newly formed BM to formulate and decide on its future IT direction. Currently BM is *piggy-riding* on the IT systems of BC. CASE08 could not indefinitely depend on BC which is a competitor to support its IT requirement and had formulated a long term IT strategy. In the year 2002, the bank successfully migrate its old SAFE II system to a new ALLTEL integrated banking system. The conversion process was undertaken by an outsourcing vendor. The same

²⁵ A preface to pocket diary distributed to internal staffs.

²⁶ Yahoo Singapore – Finance: <http://sg.biz.yahoo.com/030806/15/3d6bw.html>

vendor concurrently undertook the task of converting the old SAFE II system of the former parent bank to the same ALLTEL system. With the new platform, the bank hoped to begin offering new products and services that are built on the existing IT infrastructure.

The Graphical User Interface based on Microsoft Windows 2000 Project.

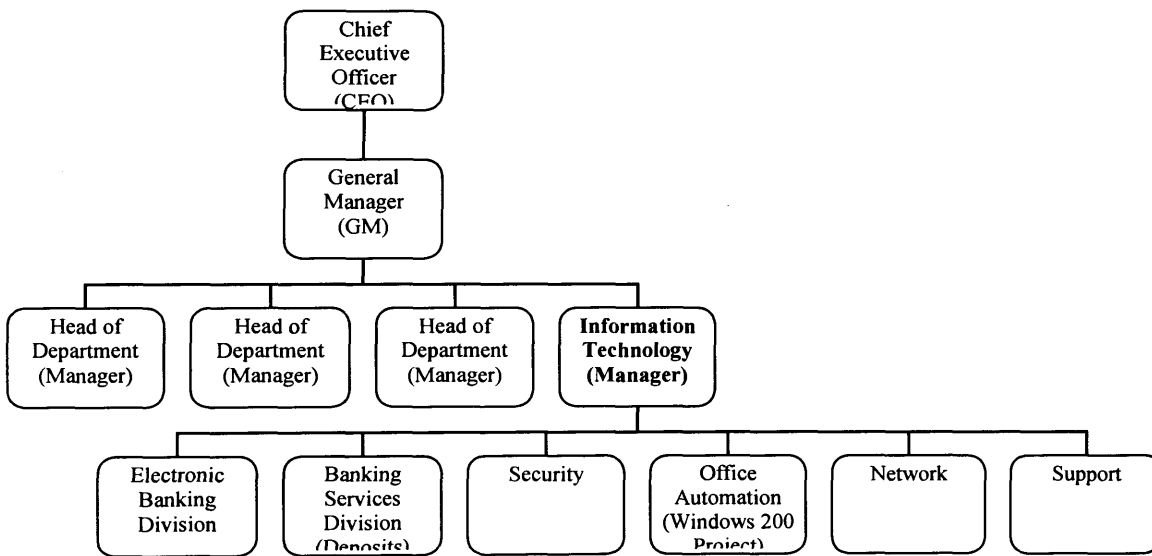
The need to take advantage of the Internet had motivated the bank's management to upgrade its system capability to allow the bank to offer new banking services such as E-banking and Internet banking. The potential Internet capable system would enable the bank to explore revolutionary ways of doing business in the new economy and this would help the bank with a further competitive edge. For this purpose the bank's management had decided to upgrade its front end operating system to Windows based operating system.

One of the main reasons cited by the bank for adopting the Windows 2000 technology is the reliability of the operating system. The bank's management believed that Windows 2000 is the most reliable, most secure and highest-performing operating system in Microsoft's history. Some of the advantages benefited from deploying such the technology include reduced cost of ownership, ease of management, reduced downtime and its uncompromised performance. The Windows 2000 as a platform of choice would enable the bank to ensure its IT infrastructure could grow to match the demands of the industry. Though the project was not seen as too ambitious, the aim was to go for a technology that was safe and reliable. The chosen system also could be optimized for existing and emerging new hardware and devices. It also interoperates with different platforms and is highly scalable if the bank expands its IT

operation. The project was implemented in two stages. The first phase involved implementation of the system at its head office and the second phase involved deployment in the bank's branches.

The IT Structure

The IT structure of the banks comprised of several layers. The highest authority in any IT project would be the executive sponsor normally the CEO or general manager (GM).



For a major project, a number of project level committees would be setup. The highest level is the IT Steering Committee which is comprised of the CEO, the General Manager, and Head of Departments. This committee will set the general requirements of the proposed system based on the strategic goals the bank strives to achieve. This committee will also decide on the major appointments to the project and determine a

number of top level project details. These include the appointment of the project champion, executive sponsor, system owner, project consultant, project advisor, project secretariat and project manager.

Once the appointments were made, the first project kick-off meeting will commence to elect the members to the project team. The team members will be assigned to determine the user requirements of the system. Based on the user requirements, the project team will produce a project requirement and recommendation that will be presented to the IT steering committee for approval. The committee will also determine the allocated budget for the project. The next step will be the preparation of Request for Proposal and tender documentation that would be sent out to vendors for their proposed solution and price quotation. The project team will also produce vendor selection criteria that will be used to evaluate the vendor's proposal and to select vendors. The vendor selection criteria include functional requirement, product requirement, security requirement, vendor requirement, pricing and miscellaneous requirements. Once a vendor has been chosen and procurement will be made the system will be developed according to the specification.

Appendix J - Case Briefing: CASE 09 BANK

CASE09 is owned by a public holding company which has a number of subsidiaries of which three of them are banking institutions – commercial bank, merchant bank, and a finance company. Other subsidiaries include security, assurance, and credit operations. Each of the subsidiaries is a strategic business unit (SBU) of the group holdings.

The CASE09 IT Background

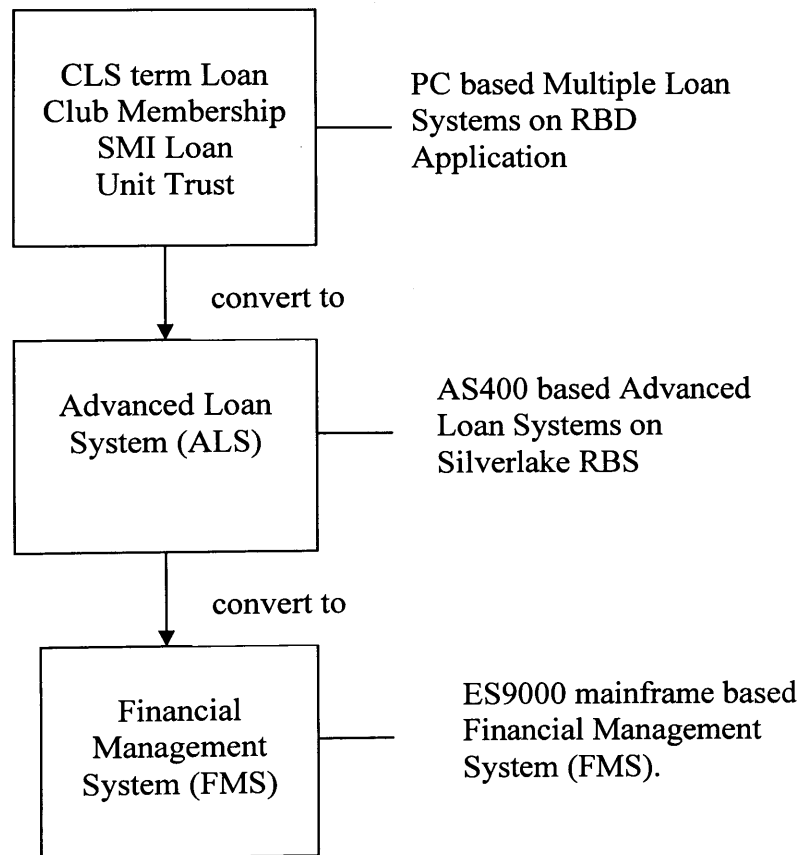
The bank IT main infrastructure comprised of mainframe, AS 400 (midrange) and PC based technologies. Previously the core systems – retail system and loan system – reside on an IBM ES9000 mainframe system. The retail system managed the bank's saving account and current account applications on the ES9000 mainframe. The same machine also previously accommodated the loan systems application for a short term period. The technology was acquired in 1990 at the start of the Host Computerisation exercise and runs ALLTELL Financial Management System (FMS). It is considered as the global system for the entire holding group.

With the deployment of AS400 technology, the retail banking system including the housing loan application were cut-over from the mainframe platform to the midrange platform. The retail applications had since been migrated to Silverlake retail banking system on the AS400 platform.

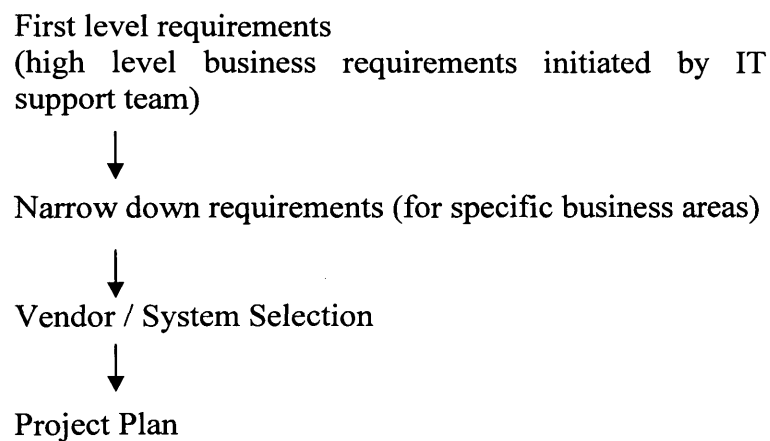
The Multiple Loan System Conversion Project

The Multiple Loan System (MLS) is part of the Retail Branch Delivery (RBD) system. This system originally runs on a stand alone platform. The ultimate aim was to integrate the Multiple Loan Application with the ALLTEL host system. However, integrating the MLS stand alone system to ALLTEL global system directly would require enormous amount of customization and the task would be too complicated.

The conversion project involves converting the MLS which was part of RBD to Advanced Loan System (ALS) which is part of Silverlake Retail Banking System (RBS) newly installed on the AS400 platform. The conversion from HLS in RBD to the newly installed ALS in Silverlake RBS would make it possible for the system to be integrated to the ALLTEL global system.



This project there was no business requirements from the business side. Normally with other projects the business would drive the project and the IT team will provide the technical support. However, there was no need to gather functional requirements from the business side in the loan conversion project. Due to this, the project was driven by IT people. The only occasion where the business side was involved was to describe their first level requirements (high priority basic requirements). Once the high level requirements have been specified, the project team narrowed down the requirements to the vendors.



There is a comprehensive IT structure at the group level that would undertake major IT implementations for all of the banking subsidiaries. For such project, the Project Management Office will be activated to coordinate the implementations. The group IT structure also includes a specialized vendor selection team. The highest IT authority would be the IT steering committee positioned at the corporate level. This committee would appoint project manager for a major IT project.

Appendix K - Case Briefing: CASE 10 BANK

During the restructuring exercise in 1999 the Central Bank had set a minimum requirement that to be granted the status an anchor bank, a bank must be able to maintain at least twenty billion ringgits worth of assets. The CASE10 Bank is one of the anchor banks that barely meet the minimum requirement stipulated by the Central Bank to qualify for this status. In the year 2000, CASE10 Bank has 162 branches and over RM23 billion worth of assets²⁷. As at 31 December 2001 the assets worth has increased to RM24.7 billion²⁸. CASE10 Bank was perhaps the smallest among the ten anchor banks.

The history of this bank has its root in the automobile industry. The incorporation of its parent company whose existence is to become the main distributor for the national automobile company in 1984 has led to the formation of this bank in 1992. However, its older history also could be traced back as far as the 1960s as a small Chinese-based bank in the state of Sarawak in East Malaysia.

In the year 2000, CASE10 bank began its first merger with another commercial bank – the ORI Bank. It acquired the assets and liabilities of the ORI Bank Berhad from its single largest shareholder - the Malaysian Industrial Development Finance Berhad (MIDF)²⁹. The merger process between the two banks was completed in 1st January 2001.

Organization Structure

²⁷ Source: Business Times (9th January 2001)

²⁸ Source: Managing Director's Report, in CASE10 Berhad Annual Report 2001

²⁹ Source: <http://www.midf.com.my/index.php?ch=34&pg=168&ac=640>

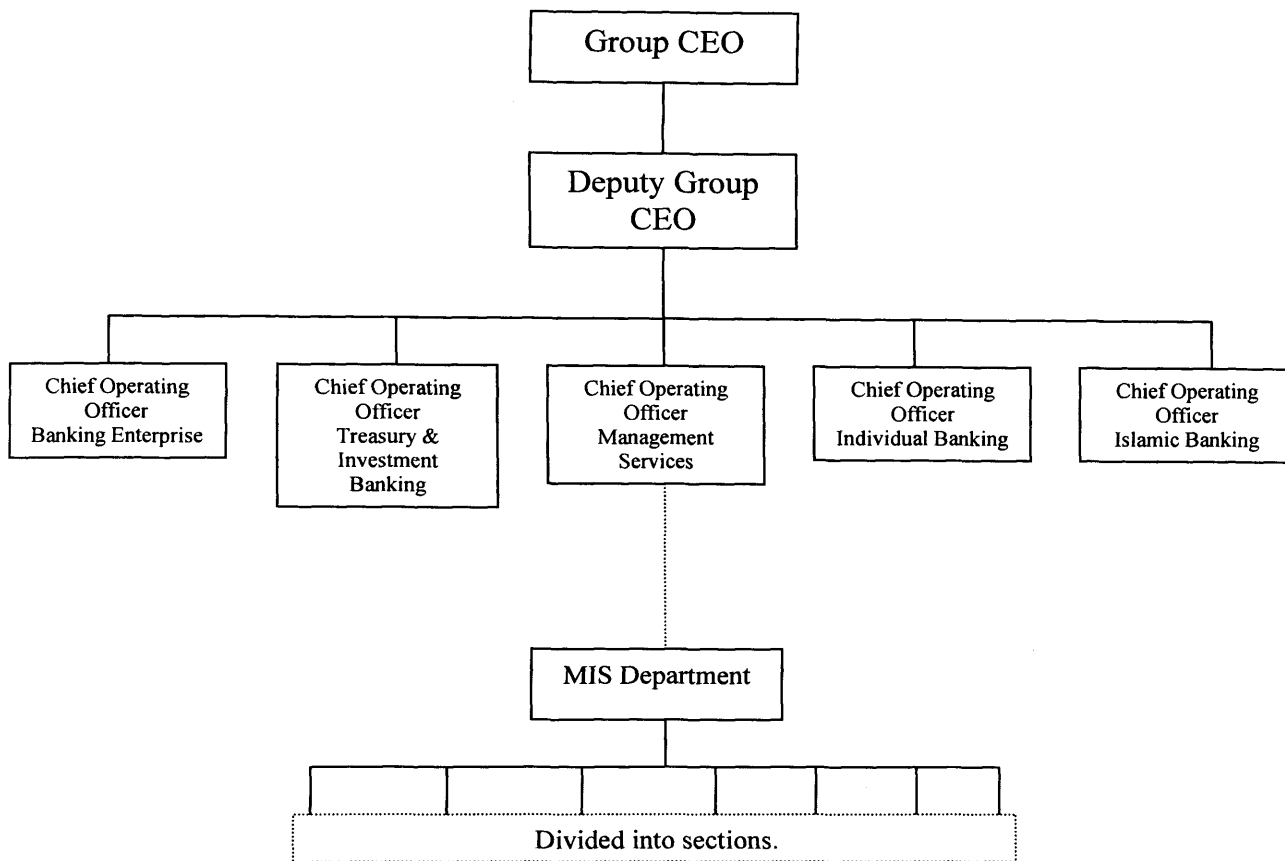
As a newly merged entity, the bank has adopted a new banking model where the banking group is aligned based core divisions. According to its senior manager of human resource division, the banking organization is structured into five divisions namely:

- Enterprise banking
- Individual banking
- Islamic banking
- Management services
- Treasury and international banking

Each of the division is headed by a Chief Operating Officer (COO). The enterprise (or corporate), individual and Islamic banking divisions are the divisions that operate the banks's core business activities, while the management services and treasury would support the core business activities³⁰.

The current management structure of the bank could be depicted in the following organization chart.

³⁰ Source: <http://thestar.com.my> (9th May 2001)



Organization Structure of CASE10 Bank

The IT Systems

In the 1960s, when the bank (KMing) started its operation as a small Chinese-based bank in Sarawak, no computing technology was adopted. The full banking transactions then were done manually. When CASE10 acquired the controlling stake in 1992 and turned it into CASE10 Bank, computerization was introduced. The first IT installation was a midrange system based on an IBM AS400 technology, which hosts Silverlake's banking system application. Computerization was done especially to automate the retail banking activities.

On the other hand, the merger partner – ORI Bank – had already computerized its banking operations using mainframe technology even before being merged with

CASE10 Bank. The popular IBM's SAFE system, albeit old, was running on the IBM mainframe supporting the back office processing activities in the ORI Bank.

The IT Structure

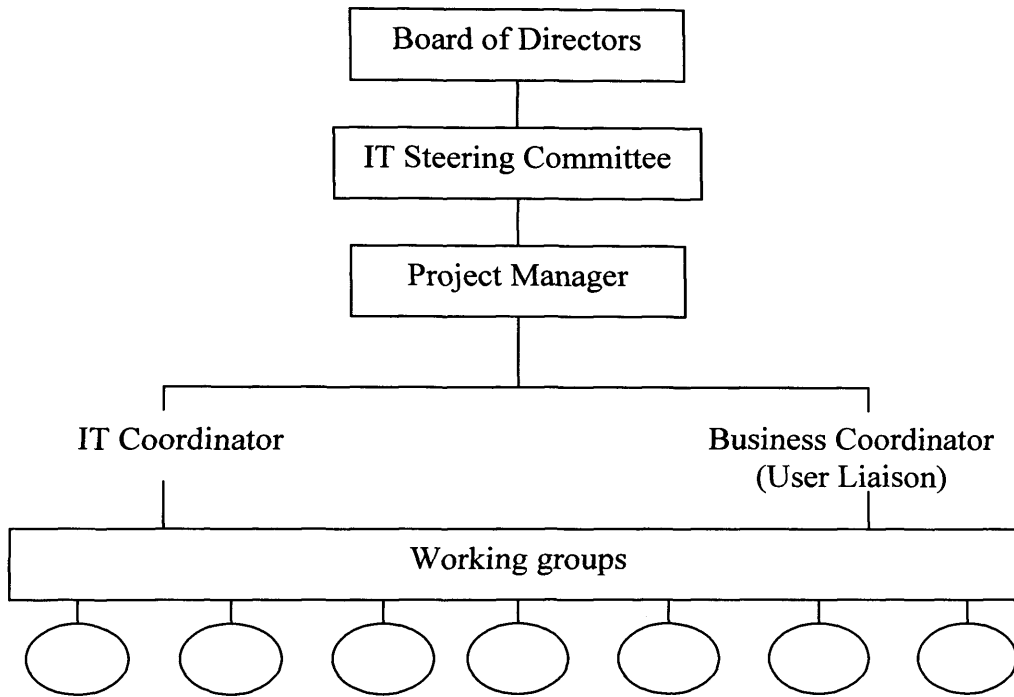
At the IT level, major rationalization was taken place prior to the merger between the two major IT units. The two banks had been operating on different IT structures. In the ORI bank, at the top of the IT structure was a General Manager (GM) which was equivalent to the COO position in the CASE10 Bank. Whereas, the IT in CASE10 Bank was structured as a department headed by an Assistant General manager (AGM) who reports to the COO of the management services division. After the merger, the ORI Bank's IT structure was absorbed into CASE10 Bank's IT structure and reduced to a department.

The IT Implementation

The merger of the two banks had brought together two different IT platforms, each of them operate a different technology. After the merger, a project team was set up to undertake the role of studying possible options and formulating the best strategy to integrate the two different systems. The AGM of IT department was appointed as the project leader.

Although on a routine basis, the IT department AGM reports to the COO of the management services division, there is a different reporting structure used for major projects. As the IT integration project affects the organization as a whole, it was considered a major project. Therefore it was subjected to the decision process structure used to monitor major projects. In this structure, the project manager (or

director) reports to the IT Steering Committee (ITSC) and in turn the ITSC reports to the Board of Directors (BOD), which is the highest authority in terms of making major decisions.



Reporting structure for major project

The project manager will refer to the IT steering committee which steers the direction in formulating IT strategies. Any major project proposal presented by the project team to the ITSC will be scrutinised to determine whether it fits the IT direction sets for the organization before giving the approval. In other words, the ITSC decides the ‘go’ or ‘no go’ for any major IT project proposed.

Since the project team could not fully determine if they possessed the internal expertise required to fully define the scope of the project, they had resorted to external

expertise. In this regard, IBM was appointed as an external consultant to help manage the project.

The task of the consultant is to determine what would be the best strategy to bring the two different systems together. Two of the most possible options being considered at the time of this study include either merging the two systems or to move on to a totally new system. The feasibility study evaluates the flexibility and viability of systems if they were to be integrated, the economic cost and benefit analysis as well as matching the bank's level of expertise against the implementation strategy that would be adopted.

At the lower level, the project organization was divided into two sections namely the IT section and the user section. The IT section responsibility is to deliver technology solution and was being headed by an IT Coordinator. On the other hand, the user section derived its members from among the expert users representing major business areas. This section was being headed by a Business Coordinator. Its main role was to determine user requirements.

The working groups comprised of various sub teams formed mainly based on major functional units such as finance, marketing, human resource, and the various business delivery areas. These groups were set up on a piecemeal or ad hoc basis. They were also arranged in a matrix structure where members of the sub team report both to the IT Coordinator as well as the Business Coordinator. In general, these working groups will remain throughout the life of the project. They may be dissolved at the cut over

point when the new system is completed and handed over to the project customer (end users).

There were instances where major projects may be driven by appointed vendor. In such a case, similar project organization structure would be used. The same project set up would be mapped on the vendor's project team such as the vendor's project manager and the various vendor working groups with the exception of the user groups. In such a project set up, the bank would appoint account representative typically the account manager, a system development representative from the MIS department, and an internal system auditor, all from the bank's side.

For smaller projects, approval from the IT steering committee would not be required. For example request for system modification or enhancement that does not effect the entire organization would be carried out by the MIS development team. Usually financial requirement for this kind of project would be borne by the requesting department or division that owns the system. User request from specific business unit would be escalated to the respective head of the business unit. A system service request form would be filled up by the head of the business unit and attached to a memorandum that would be sent to the head of the IT unit. Upon approval, an IT team leader would be appointed who would lead a team of developers to carry out the task.

The System Integration Project

There were several approaches considered in integrating the two systems. The first approach is to convert the current CASE10 Bank's midrange system to the ORI's mainframe-based system. The second approach works the other way around i.e.

converting ORI's mainframe-based system to CASE10 Bank's non-mainframe based system. And final approach is to change both systems with a totally new system.

The trend in the industry is that banks are slowly moving away from mainframe-based system. Most of the banks that still maintain a mainframe-based system usually had their system developed more than ten years ago during the computerisation era. This system was chosen because there were limited solutions offered in the market. Most of the mainframe-based systems were IBM systems while a few banks used Tandem systems or other systems. The main problem with these systems is that they are proprietary systems and integration with other systems was difficult. The systems were inflexible to be modified to cater for changes that would support the creation of new products and services.

Due to the high complexity in integrating the two systems, CASE10 Bank had to have the necessary expertise to undertake the project. Having assessed its capability, CASE10 Bank decided to engage IBM which is known as a vendor with vast experience in providing IT solution in the banking sector.

Appendix L - Case Briefing: CASE 11 BANK

The history of CASE11 bank started way back in 1960s as a bank that provides financial facilities for development and commercial purposes. Through the decade of 1990s the bank went through a number of mergers and acquisitions before finally being taken-over in by the current owner. In 1995 the bank launched a five-year program to re-configure its entire information system which resulted in the bank to integrate a number of mainframe-based platforms mostly running the SAFE banking systems respectively owned by the merging entities.

The SAFE system had many drawbacks. It was not fully integrated with other applications. As a result users would have to keep logging in and out of the system in order to access information in other applications. The SAFE system was later upgraded to Integrated Banking System (IBS) which still run on the same platform but offer much better integration features. The major migration process was planned in 1997 and implemented in 1998. IBS replaced SAFE system and provide interface for other applications by using single log on. During the migration process the IBM computing platform was also replaced due to its obsolescence and a Fujitsu mainframe was acquired in place of the outdated machine. The IBS integrated the following applications:

- IMPACS – for current account
- ST – saving and deposits account
- ALS Advanced Loan System for loans
- BDS Branch Delivery System for branch operations

-
- CIS – Customer Information System.

The bank currently has a number of IT facilities each one located at a different site.

The facilities include:

- Data Centre
- Network Support Centre
- System Development Centre
- An offline backup centre
- CRC (Recovery centre)

The migration from SAFE to IBS was a major upgrade process that would affect the entire business areas and operations of the bank. The project began with a carefully conducted feasibility study and soliciting expert advice to assess the scope and magnitude of the project. A top level project steering committee (PSC) was set up to steer the project. The PSC charted the major objective and targets for the project and officially appoint the project manager from among the senior managers. A project management office (PMO) was set up for this project for the purpose of streamlining and coordinating the project operations.

The bank's strategy has been highly focused on achieving its business objectives. Business issues were always given the highest priority in any project undertaken by the bank. The migration from SAFE to IBS was also seen as being driven by the business rather than technical side so that all major business issues would be adequately address as the bank moved to a new technology platform.

The migration from SAFE to IBS was not just a change in technology as it impacted the entire organisation. The management took the opportunity of the technology change to institute a transformation program that change the bank old ways of doing business to a new working culture which emphasise more on serving customer needs. A campaign program was carried out involving road shows to the bank's entire branch network to explain the need for the bank to transform itself. Part of the campaign program also involves internally circulating special publication that explain the 'what's and the 'why's of the transformation program. The following are excerpts from a special brochure produced for that purpose.

What is bankwide transformation?

- Changing our ways of doing business end-to-end
- Differentiating our products and services
- Totally focused on customer needs
- Evolving into a customer focused financial services company
- Redesigning the business model of the bank
- Implementing a holistic approach – each and every part of the business must change in unison
- Transforming the business process end-to-end – changing the market approach
- Differentiating our strategy and execution
- Making it easy for customers to do business with us.

Why bank-wide transformation?

- A survival strategy – ensuring that we remain relevant in a changing global environment
- Ensuring that we lead in the new millennium
- Responding to changes in Malaysian banking
- Opening up of the markets, post financial crisis Asia, globalization and liberalization
- Differentiated products and services to meet the demand of more discerning customers
- Ensuring that we create business based on our customer needs
- A business that is vibrant, flexible and stands for something different from that of our competitors
- Opportunities for the (bank) staff – be part of a winning organization, develop world class skills, benefit from a successful future.

Appendix M - Case Briefing: CASE 12 BANK

CASE12 is a foreign bank based in London as part of the CASE12 PLC. CASE12 Bank was born out of the merger of two banks Standard Bank which has a strong presence in Africa and C12 Bank which operates most in Asia Pacific. CASE12 (M) Berhad which was locally incorporated in 1993 is still 100 percent owned by the foreign office. The Bank is now headed by a Board of Directors comprising of local member and several representatives from foreign office. Following the Bank Negara regulations, a specific amount of profit is retained in the country to allow for growth and development.

Structurally, the Bank is made up of eight divisions; Consumer Banking, Corporate Banking, Treasury, Information Technology, Banking Services, Group Audit, Legal and External Affairs. All division heads are responsible to the Chief Executive Officer. Each division is then made up of several subdivisions. For instance, the Consumer Banking division is made up of branch and direct banking, branch management, secured lending, unsecured lending and Business Function Services. The head of the subdivision then reports to the Senior Manager who then reports to the General Manager at the Headquarters.

IT Based Products

The Bank's direct banking comprises all branch consumers banking including teller machines, phone banking and direct sales agents. In terms of automated systems, the Bank has implemented automated lobby which covers deposits, cash, checks and

withdrawals; phone banking and tele-sales which targets consumers who have no access to fully automated machines. Compared to other banks in Malaysia, branch operations are centralized in the headquarters. As a foreign entity which operates in many countries across Africa and the Asia Pacific, it is cheaper for the Bank to centralize all branch operations in hub centres. Hub centres act as a Multi business Platform which performs most of the Bank's back end processing. For example, telegraphic transfer processing can be processed in hub centres and the result is then re-directed to its destination. Because of the Bank's strong presence in Asia Pacific and Africa, the Bank's operations are most conducted in these regions whilst the Headquarters in London concentrates in policy making.

Group's IT Strategy

As the third biggest contributor to the Bank's group profit behind Hong Kong and Singapore, Malaysia has an important position within the group. Any IT implementation within the group will be first rolled out in these three countries before it is then extended to other countries. Where decision making is concerned, the Bank's IT Group Executive Director will consult the Managing Director before a decision is delegated to the country head and subsequently to the branches. A country head does not have the authority to decide on major upgrade of IT. All requests for IT upgrades must be submitted to the IT Group Executive Director who will consider and decide where and when an IT implementation is rolled out. In most cases, a new IT implementation will be tested in a pilot country before it is rolled to other countries.

Planning and development of IT projects are conducted by the Group's IT department based in foreign office and HK. Implementation of IT projects, however, is done using the individual country's local vendor. The Bank's local headquarters is responsible for appointing the local vendor. All IT implementation across the Group use the same standard application with the exception of certain customization to suit local requirements like Islamic banking which is only specific the Malaysian branch. As such, IT planning that caters for Malaysian needs only is done locally and a representative is then sent to HK to ensure that the local requirement is included in the IT development.

Although monitoring and support of IT applications is handled by regional centres, certain applications like local processing are monitored locally in Kuala Lumpur in line with Bank Negara's requirements.

Due to its organized and structured IT planning, development and implementation; the Bank has been very responsive toward new IT innovation in banking products. In fact, the Bank is in full readiness to implement internet banking. However, due to the requirement of Bank Negara which needs to ensure that local banks are able to withstand the competition, foreign banks can only start internet banking after the local banks has been given adequate head start. In contrast, the Bank's HK and Singapore branches were able to start internet banking immediately as no such restrictions were imposed by their countries' central banks.

Local IT Infrastructure

Back end processing of CASE12s transaction runs on a system known as HOGAN which uses an IBM mainframe. HOGAN keeps the updated account information and is updated every night as batch processing. HOGAN is integrated with RLS, a loan processing system and CCMS, a credit card processing system. While front end processing is accessed via console terminals and PCs connected to application servers.

The entire local IT infrastructure and network setup are monitored closely by the HK office that will be able to detect any faults, defects or irregularities in the system. Maintenance and remedial works is however done by a local vendor who is appointed to provide operational and technical support services. In other words, the local vendor is contracted to act as first level support for application and hardware support. On the other hand, the IT staffs in the Bank focuses on IT planning and strategy.

