

**MANAGEMENT INFORMATION SYSTEMS IN
PRACTICE: AN EXPLORATORY STUDY ON BANKING
SECTOR OF BANGLADESH**

DOCTOR OF PHILOSOPHY

MOHAMMAD MIZENUR RAHAMAN



**DEPARTMENT OF MANAGEMENT INFORMATION SYSTEMS
FACULTY OF BUSINESS STUDIES
UNIVERSITY OF DHAKA
DHAKA, BANGLADESH**

**MANAGEMENT INFORMATION SYSTEMS IN
PRACTICE: AN EXPLORATORY STUDY ON BANKING
SECTOR OF BANGLADESH**

Mohammad Mizenur Rahaman

Department of Management Information Systems

Faculty of Business Studies

University of Dhaka

Dhaka, Bangladesh

Under the Supervision of

Dr. MD. HASIBUR RASHID

Professor

Department of Management Information Systems

Faculty of Business Studies

University of Dhaka

Dhaka, Bangladesh

A THESIS SUBMITTED TO THE DEPARTMENT OF MANAGEMENT INFORMATION SYSTEMS OF THE UNIVERSITY OF DHAKA, BANGLADESH FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN MANAGEMENT INFORMATION SYSTEMS.

Certificate from Supervisor

This is to certify that the thesis entitled “MANAGEMENT INFORMATION SYSTEMS IN PRACTICE: AN EXPLORATORY STUDY ON BANKING SECTOR OF BANGLADESH” submitted by Mohammad Mizenur Rahaman for the award of the degree of doctor of philosophy was done under my supervision and guidance. I certify that the works is original and has not submitted for the award of any degree or diploma. The thesis represents entirely an independent work on the part of the candidate, no portion of thesis is a reproduction from any other sources, published or unpublished without proper acknowledgement.

Professor Dr. MD. HASIBUR RASHID

Supervisor

Declaration

I do hereby declare that the thesis entitled “MANAGEMENT INFORMATION SYSTEMS IN PRACTICE: AN EXPLORATORY STUDY ON BANKING SECTOR OF BANGLADESH” submitted to the University of Dhaka for the award of the degree of Doctor of Philosophy is my original work done under guidance and supervision of Dr. MD. HASIBUR RASHID, Professor of the Department of Management Information Systems. This work has not submitted earlier by me in any other universities or institutions for the award of any degree or diploma.

Mohammad Miznur Rahaman

**MANAGEMENT INFORMATION SYSTEMS IN
PRACTICE: AN EXPLORATORY STUDY ON BANKING
SECTOR OF BANGLADESH**

Submitted By:

Mohammad Miznur Rahaman

For the degree of Ph.D of the

University of Dhaka

August, 2015

COPYRIGHT:

“Attention is drawn to the fact that copyright of this thesis rests with its author. This copy of the thesis has been supplied on condition that anyone who consults it is understood to recognize that its copyright rests with its author and that no question from the thesis and no information derived from it may be published without the prior written consent of the author.”

“This thesis may be made available for consultation within the university library and may be photocopied or lent to other libraries for the purposes of consultation.”

DEDICATED TO MY PARENTS

My father LATE MOHAMMAD MONABBAR ALI MAZUMDER

&

My mother SAHERA KHATUN

ABSTRACT OF THE STUDY

This research is an endeavor to understand and identify the existing practices of Management Information Systems (**MIS**) in the Banking sector of Bangladesh. This thesis argues that improved practices of MIS depend on the close alignment of the support of corporate executives, Information Technology (**IT**) infrastructures, and employee participation in the Information Systems (**IS**) of the organization. It attempts to uncover why and how these factors of internal organizational environment interactions is very important for better MIS practices and how this interaction influences the level of MIS practices in the banking organization. This interfacing theme is missing in previous research. This study argues that when there is an association among the commitment of corporate executives, status of IT infrastructure, and employees participation in IS, there is the likelihood that practices of MIS in the business organization will be improved. A comparative case study provides empirical evidence to support this argument.

Current practices of MIS in the banking sector are partial and relatively weak. Literature of MIS is examined to enhance theoretical foundation of this research and it shows the gap in existing literature because of which practices of MIS not improved according to the expectations. Objectives can act as a criterion to evaluate the outcome of the study.

Data were collected from two banks, one is Agrani Bank Ltd. (**ABL**) representative bank of nationalized commercial banks and another is Mercantile Bank Ltd. (**MBL**) representative bank of private commercial banks, in both cases same techniques were used. A research model was developed and multiple techniques were deployed to collect data from several sources. All the collected data were organized and analyzed systematically.

All the relevant theories were applied to explain the findings. Then the inter relationship between factors of organizational environment and level of MIS practicing was examined and analyzed. The main findings are: there are three MIS issues that are critical in improving practices of MIS and these are support of corporate executives, status of IT infrastructure, and level of employee participation in IS and also interactions of them; these issues were analyzed under different dimensions; again outcome also different based on two cases. There are four types outcome are: Unsatisfactory or not sufficeint, Natural or Usual, Reasonable, Satisfactory or up to the mark.

On the basis of this analysis, an interfacing model of MIS practices was developed and two hypotheses are put forward. The implications of the study on the relevant theories and also on practice are considered. The model and the hypothesis are the general conclusions of this study and issues for future research are identified and presented.

ACKNOWLEDGEMENT

This study could not have completed without the cooperation and assistance of many individuals and organizations to whom I wish to express my gratitude.

It is a great pleasure and proud privilege to acknowledge and express my profound gratitude to my supervisor Dr. MD. HASIBUR RASHID, professor of the department of Management Information Systems. I am also greatly indebted to him for his able guidance, constructive criticism and insightful comments during this study. His critical comments on first draft and final draft of this thesis aided considerably in improving this work. Indeed his help extends beyond this research to earlier studies too.

Thanks to Mr. Syed Abdul Hamid, honorable Managing Director and CEO of Agrani Bank Ltd. and Mr. Towfiq Rahman Chowdhury, honorable director of Mercantile Bank Ltd. for their invaluable assistance and cooperation for getting access into bank for collecting data and information.

This research would not have been possible without the professional support of the Managing Directors of Agrani Bank Ltd. & Mercantile Bank Ltd. and the bank in which the research was conducted. Their willingness to allow the research to proceed, their input, their interest and ongoing support of the research has been a source of encouragement. Thanks are also extended to the participants and bankers of the bank who were willing to give their time, permission.

Thanks are due to my teacher at Dhaka University for their constant encouragement to finish this project. They are Dr. Khondoker Bazlul Hoque, Abu Hena Reza Hasan Professor of the Department of International Business, Dhaka University.

Thanks are also due to all teachers of MIS department and teachers of other departments who were present in my two seminar presentation and have given constructive criticism and valuable suggestion in improving my research work.

Thank you too, to my other work colleagues and friends who always showed an interest and valued feedback about my research work and their willingness to take on board what was discovered.

I would like to thank some organization for their support and assistance in this study. The University Grants Commission (UGC) for nominating me for the scholarship and the Department of Business Administration, Shahjalal University of Science and Technology (SUST), Sylhet for giving me study leave to conduct this research.

Finally, I would like to thank my wife Parvin Akter and three sons Talha, Fahim & Farhan for their patience during the long period of study. To complete this study without their mental support this study may never have been completed!

Abbreviations

ABL	Agrani Bank Limited
AD	Authorized Dealer
AGM	Assistant General Manager
AIS	Accounting Information Systems
AMD	Assistant Managing Director
Apps	Applications
ATM	Automated Teller Machine
AVP	Assistant Vice President
BACH	Bangladesh Automated Clearing House
CD	Compact Disc
CEO	Chief Executive Officer
CIB	Credit Information Bureau
CS	Computer Science
CSE	Computer Science and Engineering
CSR	Corporate Social Responsibilities
DBBL	Dutch Bangla Bank Ltd.
DGM	Deputy General Manager
DMD	Deputy Managing Director
DR	Disaster Recovery
DSS	Decision Support Systems
EFT	Electronic Fund Transfer
EVP	Executive Vice President
FCBs	Foreign Commercial Banks
GDP	Gross Domestic Product

GM	General Manager
HR	Human Resources
I&O	Information and Organization
IBM	International Business Machines
ICIS	International Conference on Information Systems
ICT	Information and Communication Technology
IRS	Information Resource Management
IS	Information Systems
ISPs	Internet Service Providers
ISR	Information Systems Research
IT	Information Technology
JAIS	Journal of AIS
LAN	Local Area Networks
MBL	Mercantile Bank Limited
MD	Managing Director
MIS	Management Information Systems
MISQ	MIS Quarterly
NCBs	Nationalized Commercial Banks
NPA	Non Performing Assests
NRB	Non Residents Bangladeshi
PCBs	Private Commercial Banks
PGD	Post Graduate Diploma
RAM	Random Access Memory
SBS	Schedule Bank Statistics
SMEs	Small and Medium Enterprises
SVP	Senior Vice President

SWIFT	Society for Worldwide Interbank Financial Telecommunication
TPS	Transactions Processing Systems
UGC	University Grants Commission
WAN	Wide Area Networks
WEF	World Economic Forum

TABLE OF CONTENTS

S.N.	Contents	Page no.
PART – ONE		
DESCRIPTION OF THE STUDY		
Chapter – One: Introduction		
1.0	Background of the study	1
1.1	Problem Statement	5
1.2	Research Questions	6
1.3	Objectives of the Study	6
1.4	Methodological orientation	6
1.5	Scope of the Study	7
1.6	Organization of the Dissertation	7
Chapter – Two: Review of Literature		
2.0	Introduction	10
2.1	MIS in general	10
	2.1.1 MIS as discipline	13
	2.1.2 Scope of MIS	16
2.2	MIS and corporate executives	17
	2.2.1 Factors influencing support of corporate executives	19
2.3	IT infrastructure and MIS	23
	2.3.1 Factors influencing IT infrastructure and MIS	26
2.4	Employees participation	29
	2.4.1 Factors influencing Employees participation	30
2.5	MIS and banking sector	34
2.6	Conceptual framework for improved practices of MIS	36
2.7	Summary	38
Chapter –Three: Research Methodology		
3.0	Introduction	39
3.1	An extensive view of Methodology	39
3.2	Quantitative Vs Qualitative	44

3.3		Research methods in Information Systems	51
3.4		Research Gaps in previous study	54
3.5		Methodology of the study	55
	3.5.1	The method used in this study	56
	3.5.2	Justification of the research framework	56
	3.5.3	Selection a case and criterion for selecting a case	57
	3.5.4	Selection process of case	58
	3.5.5	Sources of Data	60
	3.5.6	Tools of data collection	61
	3.5.7	Selection of study area	62
	3.5.8	Techniques of Data Analysis	63
3.6		Justification of the choice of methodology for this research	65
3.7		Justification for using case study approach	73
3.8		Justification of the process of Data Collection	75
	3.8.1	Justification of Individual Interview as a technique of Data collection	77
3.9		Summary	79
		Chapter – Four: Scenario of the Banking Industry in Bangladesh	
4.0		Introduction	79
4.1		Development of banking sector in Bangladesh	79
4.2		IT Infrastructure and banking sector of Bangladesh	86
4.3		MIS & IT Division	89
4.4		ICT application and banking sector of Bangladesh	89
4.5		Corporate executives and banking sector of Bangladesh	91
4.6		Employees of banking sector of Bangladesh	91
4.7		Summary	92
		Chapter – Five : Description of Cases	
5.0		Introduction	93

5.1		Agrani Bank Ltd. (ABL)	93
	5.1.1	Background of the ABL	94
	5.1.2	Data from Head office Level	97
		5.1.2.1 Support of corporate Executives	97
		5.1.2.2 Employees Involvement	99
		5.1.2.3 Infrastructure of the Bank	103
		5.1.2.3.1 Website and webmail	106
		5.1.2.3.2 Information Systems Infrastructure of the Bank	110
		5.1.2.3.3 Online banking	117
		5.1.2.4 Application of MIS in ABL	122
	5.1.3	Data from branch level	127
		5.1.3.1 Support of corporate Executives	127
		5.1.3.2 Employees Involvement	127
		5.1.3.3 Infrastructure of the Bank	130
		5.1.3.3.1 Website and webmail	131
		5.1.3.3.2 Information Systems Infrastructure of the Bank	132
		5.1.3.3.3 Online banking	137
		5.1.3.4 Application of MIS in ABL	139
5.2		Mercantile Bank Ltd. (MBL)	141
	5.2.1	Background of the MBL	141
	5.2.2	Data from Head office Level	145
		5.2.2.1 Support of corporate Executives	146
		5.2.2.2 Employees Involvement	147
		5.2.2.3 Infrastructure of the Bank	153
		5.2.2.3.1 Website and webmail	156
		5.2.2.3.2 Information Systems Infrastructure of the Bank	160
		5.2.2.3.3 Online banking	166
		5.2.2.4 Application of MIS in MBL	168
	5.2.3	Data from branch level	169
		5.2.3.1 Support of corporate Executives	169
		5.2.3.2 Employees Involvement	170
		5.2.3.3 Infrastructure of the Bank	174

		5.2.3.3.1 Website and webmail	174
		5.2.3.3.2 Information Systems Infrastructure of the Bank	175
		5.2.3.3.3 Online banking	180
		5.2.3.4 Application of MIS in MBL	181
5.3		Summary	182
PART –TWO			
ANALYSIS OF THE STUDY			
Chapter – Six: Data Analysis			
6.0		Introduction	184
6.1		Corporate level and practices of MIS	185
	6.1.1	Corporate executives and MIS in ABL	185
		6.1.1.1 Firm’s and executives’ vision	187
		6.1.1.2 Executives’ technological know –how	188
		6.1.1.3 Corporate executives’ job satisfaction	189
		6.1.1.4 Subordinate coordination	189
		6.1.1.5 Corporative executives supports in improving practices of MIS in ABL	190
	6.1.2	MIS in MBL	190
		6.1.2.1 Firm’s and executives’ vision	192
		6.1.2.2 Executives’ technological know –how	193
		6.1.2.3 Corporate executives’ job satisfaction	193
		6.1.2.4 Subordinate coordination	194
		6.1.2.5 Corporative executives supports in improving practices of MIS in ABL	194
6.2		IT infrastructure	195
	6.2.1	6.2.1.0 IT infrastructure of ABL	195
		6.2.1.1 Hardware resources of ABL	196
		6.2.1.2 Software resources of ABL	197
		6.2.1.3 Data resources of ABL	199
		6.2.1.4 Network resources of ABL	200
		6.2.1.5 Support personnel of ABL	201
	6.2.2	IT infrastructure of MBL	201

		6.2.2.1 Hardware resources of MBL	202
		6.2.2.2 Software resources of MBL	203
		6.2.2.3 Data resources of MBL	204
		6.2.2.4 Network resources of MBL	205
		6.2.2.5 Support personnel of MBL	205
	6.2.3	IT infrastructure and practices of MIS	206
6.3		Employees Involvement in IS and practices of MIS	206
	6.3.1	Employees Involvement in ABL	207
		6.3.1.1 Academic knowledge of employees	208
		6.3.1.2 Training of the employees	209
		6.3.1.3 IT knowledge	211
		6.3.1.4 Information sharing	212
		6.3.1.5 Rewards and Pay	213
		6.3.1.6 Power sharing	214
		6.3.1.7 Systems friendliness	215
	6.3.2	Level of EI and improved practice of MIS in ABL	216
	6.3.3	Employees Involvement in MBL	217
		6.3.3.1 Educational qualifications of the MBL employees	218
		6.3.3.2 Training of the employees	219
		6.3.3.3 IT knowledge	220
		6.3.3.4 Information sharing	222
		6.3.3.5 Rewards and Pay	223
		6.3.3.6 Power sharing	223
		6.3.3.7 Systems friendliness	223
	6.3.4	Level of EI and improved practices of MIS in ABL	224
6.4		Comparative analysis of ABL and MBL	225
6.5		Summary	227

PART - THREE			
IMPLICATIONS & CONCLUSIONS			
Chapter –Seven: Implications of the Study			
7.0		Introduction	230
7.1		Theoretical Implications	231
	7.1.1	Theoretical implications on Ashill et al. model	231
	7.1.2	Theoretical implications on Keen model	234
	7.1.3	Theoretical implications on Lawyer et al. model	236
	7.1.4	Proposed model for improved practices of MIS	238
7.2		Practical Implications	241
	7.2.1	Implications for users	241
	7.2.2	Implications for studied bank	242
	7.2.3	Implications for new researchers	242
7.3		Summary	243
Chapter –Eight: Conclusions			
8.0		Introduction	244
8.1		Conclusions	245
	8.1.1	Central conclusion	245
	8.1.2	Additional conclusions	247
8.2		Limitations of the study	248
8.3		Future research directions	250
		References	253-284
		Appendix-A	285-290
		Appendix –B	291-296

LIST OF TABLES

No.	Name of Table	Page No.
2.1	Nature and scope of information and its use in different levels in the organization	16
2.2	Information technology infrastructure services	25
3.1	Dichotomous nature of Social sciences	42
3.2	Dichotomous nature of Social sciences	43
3.3	Characteristics of Quantitative and Qualitative research	49
3.4	Methodological diversity in IS research	52
3.5	Overview of MIS quarterly articles on qualitative interview 2001-2005	54
3.6	Methodology of the study	56
3.7	Distribution of participant in in-depth interview	59
3.8	Distribution of interviewee and location of the organization	62
3.9	Matching research purpose with methodology	71
4.1	Branches & Year of establishment of schedule banks operating in Bangladesh	81
4.2	Ratio of schedule bank Branches in banking sector	84
4.3	Banking sector at a glance	85
4.4	Status of online banking in the banking sector of Bangladesh	86
4.5	List of Online banking branches, web link, and ratio of online banking branched in banking sector of Bangladesh	87
5.1	Scenario of technical users in ABL	102
5.2	Reasons for lately updating information on the website	109
5.3	Status of IT Platform	112
5.4	Available server	113
5.5	Scenario of technical users in MBL	149
5.6	IT infrastructure of MBL	161
5.7	Available server of MBL	162

6.1	Factors influencing corporate executives' supports to the organization in ABL.	186
6.2	corporate executives' supports on improved practices of MIS in ABL	187
6.3	Factors influencing corporate executives' supports to the organization in MBL	192
6.4	corporate executives' supports on improved practices of MIS in MBL	192
6.5	IT Infrastructure of ABL	195
6.6	IT Infrastructure of MBL	202
6.7	IT infrastructure of ABL and MBL	206
6.8	Factors influencing employees' involvement in ABL	207
6.9	Employees participation on improved practices of MIS in ABL	217
6.10	Factors influencing employees' involvement in MBL	218
6.11	Employees participation on improved practices of MIS in MBL	225
6.12	Comparative scenario of practices of MIS	226

TABLES OF CHARTS AND FIGURES

No.	Name of Charts and Figures	Page No.
2.1	Framework of corporate executives support in practices of MIS	23
2.2	Framework of IT infrastructures in practices of MIS	28
2.3	Framework of Employees Involvement in the organization (Cotton et al. 2006)	30
2.4	Framework of Employees Involvement in the organization (Lawyer et al. 1995)	34
3.1	Methodology of the study	54
7.1	Framework of corporate executives support in practices of MIS with proposed modification	233
7.2	Modified framework of Employees Involvement in the organization.	238
7.3	Proposed model of improved practices of MIS in the banking sector	239
7.4	Component of the proposed model and factors of individual component for improving Practices of MIS in the bank	240

Title of the Research:

Management Information Systems in Practice: An Exploratory Study on
Banking Sector of Bangladesh

Name of the Researcher:

Mohammad Mizener Rahaman

Department of Management Information Systems

Faculty of Business Studies

University of Dhaka

Dhaka, Bangladesh

ABSTRACT OF THE STUDY

This research is an endeavor to understand and identify the existing practices of Management Information Systems (MIS) in the Banking sector of Bangladesh. This thesis argues that improved practices of MIS depend on the close alignment of the support of corporate executives, Information Technology (IT) infrastructures, and employee participation in the Information Systems (IS) of the organization. It attempts to uncover why and how these factors of internal organizational environment interactions is very important for better MIS practices and how this interaction influences the level of MIS practices in the banking organization. This interfacing theme is missing in previous research. This study argues that when there is an association among the commitment of corporate executives, status of IT infrastructure, and employees participation in IS, there is the likelihood that practices of MIS in the business organization will be improved. A comparative case study provides empirical evidence to support this argument.

Current practices of MIS in the banking sector are partial and relatively weak. Literature of MIS is examined to enhance theoretical foundation of this research and it shows the gap in existing literature because of which practices of MIS not improved according to the expectations. Objectives can act as a criterion to evaluate the outcome of the study.

Data were collected from two banks, one is Agrani Bank Ltd. (**ABL**) representative bank of nationalized commercial banks and another is Mercantile Bank Ltd. (**MBL**) representative bank of private commercial banks, in both cases same techniques were used. A research model was developed and multiple techniques were deployed to collect data from several sources. All the collected data were organized and analyzed systematically.

All the relevant theories were applied to explain the findings. Then the inter relationship between factors of organizational environment and level of MIS practicing was examined and analyzed. The main findings are: there are three MIS issues that are critical in improving practices of MIS and these are support of corporate executives, status of IT infrastructure, and level of employee participation in IS and also interactions of them; these issues were analyzed under different dimensions; again outcome also different based on two cases. There are four types of outcome are: **Unsatisfactory, Natural or Usual, Reasonable, Satisfactory or up to the mark.**

On the basis of this analysis, an interfacing model of MIS practices was developed and two hypotheses are put forward. The implications of the study on the relevant theories and also on practice are considered. The model and the hypothesis are the general conclusions of this study and issues for future research are identified and presented.

Chapter – One

Introduction

1.0 Background of the study

Information Systems (**IS**) is any combination of Information Technology (**IT**) and people's activities that support operations, management and decision making functions of any organization. In a very broad sense, the term **IS** is frequently used to refer to the interaction among people, processes, data and technology. In this sense, the term is used to refer not only to the Information and Communication Technology (**ICT**) that an organization uses, but also to the way in which people interact with this technology in support of business processes. In other words, IS is comprised of different components that collect, manipulate, and disseminate data or information to facilitate decision making process and operational activities of the organization. The activities involved input data, process data into information, storage of data and information, and the production of outputs such as management reports while information technologies are the tools and techniques that used to design and develop information systems. Management Information Systems (**MIS**) is the study of people, technology, organizations and the relationships among them. **MIS** professionals help firms to realize maximum benefit from investment in personnel, equipment, and business processes. MIS is a people-oriented field with an emphasis on service through technology. It is the key information systems that creates, processes, stores, and generates information with the unprocessed data within and outside the organization. MIS is one of the most important information systems applications from different information systems like Executive Support Systems (**ESS**), Decisions Support Systems (**DSS**), Management Information Systems (**MIS**), Office Automation Systems (**OAS**), Knowledge Work Systems (**KWS**) **and** Transaction Processing Systems (**TPS**) that help the managers for taking effective

decision. In fact, managers are considered as information systems users and MIS is used as basic information systems that make information available to users with similar needs (McLeod & Schell, 2004).

In the last few decades, top management of different organizations has been increasingly urged to improve the way in which their information systems development efforts are being managed. Management concepts being advocated include viewing information systems as a business within a business (Cash et al., 1983), managing the information resource by committee (Nolan, 1982), developing strategic plans for the information systems function (Head 1978, King 1978, McLean & Soden 1977), understanding the contingency approach to management (Wetherbe & Whitehead, 1977), and analyzing the firm's portfolio of present and potential projects (McFarlan 1981, Buss 1983). The concept of general management and business concepts involved are not new, but an understanding of how to apply these concepts to the unique aspects of the information systems area is just starting to develop. Management of any organization rather than hardware, software, or technical expertise, is becoming viewed as the missing ingredient in the recipe for successful MIS development efforts.

Collectively, top management is responsible for providing general guidance for the IS activity. Top management's involvement may be a critical factor in determining the success of MIS development efforts (Lucas 1975, Willoughby, T.C. & Pye 1977). Information systems are just too important to leave development in the hands of technicians. However, many senior executives have lack of confidence in their ability to provide managerial guidance for this highly technical activity. Top management has not been told just what they should do when they get involved. We know little about the most effective areas or avenues for top management involvement (Ein-Dor, P. & Segev

E. A., 1981). MIS can play a significant role in an organization for taking right decisions at the right time and right place by analyzing the surrounding situations with the help of different information systems in a global competitive environment. Success of service organization mainly depends on the swift customer service, instant response, and keeping in touch with customers that enhance customer loyalty in the service organization. In the fiercely competitive business world, service sector may avail competitive advantage through proper customer care, quick decision while MIS would assist the manager to track quicker decision-making process in the service organization.

An IS is organized process. It condenses and filters data until it becomes information for use in decision making at various levels of the organization. Preferably an MIS would provide outputs that are reliable, timely, and accurate to support decisions making. Even an information system does not presume computer processing. Instead, it requires a system that can deliver the necessary information for management in a timely fashion at a reasonable cost. In many instances, information may be produced by purely manual means and it may be transmitted as either by oral or written report. Some manual systems may produce information on a routine basis at fixed time intervals, perhaps monthly or quarterly, and sometimes the information may be produced on request as study results based on a special analysis (Senn, 1978).

However, MIS exclusively facilitates operational and management functions and importantly in the decision making process of business organization (Lederer & Mendelow 1988, McLeod & Schell 2004). More recently, organizations have begun to create information systems that can provide a strategic impact and earn substantial profits. Despite an expanding literature shows that interest in developing information systems is increasing in the organization to take strategic impact, but recent research has

shown that top management still needs to be convinced about the potential strategic impact of information systems in the organization (Clemons 1986, Clemons et al. 1984, Clemons & Kimbrough 1986, Clemons & McFarlan 1986, Harris 1985, Ives & Learmonth 1984, Jonscher 1983, King 1978, McFarlan 1984, Petre 1985, Porter & Millar 1985, Rackoff et al. 1985, Wiseman 1985) Lederer and Mendelow 1988).

Basically, MIS emerged as a new field and its practice within the business organization is comparatively lower than other fields of business and social sciences. It is shown that, since the mid 1980s, there has been a shift in MIS research efforts (Alavi & Carlson, 1992).

Though few research were conducted on MIS in the last three decades, but the previous studies do not examine the MIS practice as a holistic approach to integrate the essence of different perspective of MIS in the service organization, particularly at the banking sector. Albeit a lot of divergent research efforts advocate that it is essential to examine the MIS practice from different dimensions and need to further research in this field (Alavi et al., 1992). As fields of research or professional practice evolve, they become objects of interest and study themselves (Farhoomand, 1987). For example, In 1984 Harvard Business School's Research Colloquium on Information Systems was devoted to highlighting the research needs of MIS. Furthermore, several studies published during the last decade have examined different aspects of the MIS field. Ives et al. (1980) developed a comprehensive taxonomy of potential MIS research areas.

Although previous studies have made some contributions to understanding the application of MIS, there is a lack of comprehensive studies of its practice from different dimensions. Now a day's MIS has become crucial issues to ensure operational efficiency, value added services, and decision making process of service organization

like a bank. The study has considered MIS practices in different aspects of the banking sector from operational activities to management functions.

1.1 Problem Statement

Empirical evidence unambiguously supports the view that MIS is an efficacious tool for modern business practitioners, but it is completely depends on the best practices of MIS in the organization (Benbasat and Zmud, 1999). The inconsistencies observed among various studies have been attributed to variation in application and practices of MIS in a different organization. Literature highlighted the practices of MIS in different organization focused on limited aspects because of formal meaning and application of MIS is not unique to everyone (Benbasat and Zmud, 1999; Santhanam and Hartono, 2003; Nolan and Wetherbe 1980). Previous studies conducted on the area of MIS application which is limited to the decision making process of business organization (Nolan and Wetherbe, 1980, Culnan 1986, Culnan and Swanson 1986, Alavi and Carlson 1992, and Baskerville and Myers 2002). Management of the different organizations has misunderstanding about MIS concept, dimensions of MIS, and its practices.

MIS practices are very limited in the banking sector of Bangladesh. Smooth practices of MIS depends on a few factors of the organization while management and employees have limited understanding about these factors and how these factors are responsible for improving practices of MIS. So, MIS must be designed and practices with due regard to organizational and behavioral principles as well as technical factors. Management must be informed enough to make an effective contribution to system design and Information specialists (including systems analysts, accountants and operations researchers), and system users must become more aware of managerial functions and needs so that, jointly, more effective MIS are developed and practiced in the organization.

1.2 Research Questions

The central research question of the study: what are the practices of MIS in the banking sector of Bangladesh?

This study has also attempted to answer the following questions:

- i. What are the factors and why these factors affect the practices of MIS in the banking sector of Bangladesh?
- ii. How could the practice level of MIS be improved in the banking sector of Bangladesh?

1.3 Objectives of the Study

The main objective of the present study is to examine current MIS practices and needs of MIS practices in the banking sector of Bangladesh. The specific objectives are the following:

- i. To identify the factors that affect the practice level of MIS in the banking sector of Bangladesh?
- ii. To develop a framework for suggesting MIS for the banking sector.
- iii. To identify future research issues those have been raised in this study.

1.4 Methodological Orientation

In order to achieve above mentioned objectives, qualitative methods, in particular comparative case study method were used in collecting necessary data. Two banks one from **Nationalized Commercial Banks** (NCBs), one from **Private Commercial Banks** (PCBs), were selected on the basis of access among information systems using banks in the banking industry. As a suitable technique, data were collected directly by the

researcher of the present study through personal in-depth interview, observation, and document review method. The key persons of selected organizations in each case were interviewed specifically the executives who directly involve in development, decision making, and implementation of MIS at the different level of the organization. All the interviews were recorded and after completing the interviews, data were transcribed. After data transcription, qualitative data were classified based on the research questions and objectives. Finally, interview data were presented in the form of findings and discussion based on issues, identify through literature review relating to the practices of MIS based on different dimensions. To this end, collected information from different banks was presented sequentially and hypothesis have been drawn on the basis of analysis.

1.5 Scope of the study

The present study covers the practice and pattern of MIS application at NCBs and PCBs in Bangladesh. It aims to project broad overview of current MIS practices in the banking sector of Bangladesh. Different activities of MIS locate the purpose of each activity individually as well as collectively and management expectations from its application. A good number of factors related to MIS practice have been considered to examine the performance of the bank. Efforts have been given to identify core components and their level of integration for improving current MIS practices in the banking sector and develop a framework for MIS practices for banking sector of Bangladesh.

1.6 Organization of the Dissertation

The study is organized into Eight chapters.

Having described the chapter one which is titled as introduction, the **chapter Two**

provides the theoretical background for the study by giving a review of relevant literature on the broader meaning and practices of MIS in the service organization especially in the banking sector and relevant information from the field of computing and information systems. The literature focuses primarily on the various concepts, functions, essence of MIS in the service organization. The chapter was examined practices of MIS and identified the factors influencing the practices of MIS in the service organization. Finally, a conceptual framework has given based on the gap in the reviewed literature.

Chapter Three discussed the original research questions and describes the methodological approach suitable to address this research question. In order to apply the appropriate research technique, general research paradigm in MIS and other social science disciplines were reviewed. The research design and methods that were employed in the study are described in detail and the rationale for underlying this method is also articulated. The strategies that guided data analysis is outlined.

Chapter Four discussed the scenario of the banking industry in Bangladesh with a comparative scenario of the banking industry in the form online and offline banking, number of branches, corporate executives, employees, and IT infrastructure of different categories schedule banks under NCBs and PCBs.

Chapter Five described the selected case on NCBs and PCBs. Based on the research questions and proposition drawn in the literature review chapter, collected data were presented sequentially to give an insight to the researcher and collected data were analyzed by the researcher himself using qualitative data analysis techniques in data analysis chapter.

Chapter Six presented an analysis of collected data in different sections through the in-depth interview, observation, and document review method with emphasizing on the

objectives of the study in relation to the theory.

Chapter - Seven presented theoretical and practical implications on the basis of analysis of the study.

Chapter – Eight presented a summary and conclusion of the study, which included central conclusions, additional conclusion, limitations of the study and finally future research implications based on the findings of the study.

Chapter – Two

Review of Literature

2.0 Introduction

Review of previous literature suggests that one of the most important aspects of MIS is the best practices in the business organization. Culnan (1986) argues that few attempts have been made to present a systematic application of MIS in the service organization. Therefore, this chapter is design to identify the gaps in the previous research on the MIS practices in general and in particular banking sectors in a developing country like Bangladesh. This chapter is an attempt to present a general scenario of MIS with the theoretical application of different factors of MIS which affects the systematic application of MIS in the service organization specifically in the banking sector of Bangladesh.

2.1 MIS in general

There is no consensus on the definition of the term ‘Management Information System (MIS)’ in the previous research. But modern MIS experts define it somehow exclusively.

MIS is an integrated, user machine system that provides information for supporting operations and decision making functions (Awad, 1988). Davis & Olson (2000) are leading MIS expert, pioneer of conceptual and structural development of MIS, professor of leading American university reproduced the concept of MIS. He clearly defines, MIS is an integrated, user-machine system for providing information to support operations, management, and decision-making functions in an organization. The systems utilizes computer hardware and software; manual procedures; models for analysis, planning, control and decision making; and a database. Definition of Davis & Olson focused as MIS is -

- integrated user machine systems;
- for providing information;
- to support the operations, management, analysis, and decision making functions;
- in the organization.

In their definition they explained application of MIS in each level of the organizational structure to assist varieties of purposes by unique name like MIS for transaction processing in lower level, MIS for operation planning, decision making and control in lower mid level, MIS for tactical planning and decision making in upper mid level, MIS for strategic planning and decision making upper level of the organization. So, MIS used in planning, operation, decision making purposes within the organization.

Senn (1978) explained the use of computer-based MIS to support managerial decision making. From his study, he established a number of distinguishing characteristics of MIS which has come with this increase in the use and investigation of computer-based systems. These characteristics form the basis for an emerging set of very fundamental and basic principles of systems development for management information systems. Information system analysts and users typically have been concerned with what information should be provided to the user or decision maker and into which report it should be incorporated. It is, however, also necessary to focus on being able to provide information that is appropriate to the characteristics of both the decisions' maker and the decision task.

On structural perspective of MIS, Dickson et al. (1977) argues that the IS structure consists of characteristics of the person, the decision environment, and the information

system, each of which has an impact on various measures of decision effectiveness. Simon (1960), Chervany et al. (1971) are also support the information structure on Dickson et al. (1977) which have an impact on various measures of performance and decision effectiveness. A series of experiments, The Minnesota Experiments, were conducted to determine whether or not the above beliefs appear valid. All these experiments in the series examined various aspects of the decision support problem (Simon, 1960; Dickson et al. 1977). The evidence of these efforts strongly suggests that a relationship exists between IS structure and decision effectiveness. It appears that information requirements and related requirements may vary with changes in form or media of information, but performance levels may not necessarily be affected. The main limitations of above study are not considering all the variables rather than the user interface of the management to focus decision making effectiveness.

Laudon & Laudon (2004, p.10) defined technically, Information systems as a set of interrelated components that collect or retrieve, process, store, and distribute information to support decision making and control in an organization. In addition to support decision making, coordination and control, information systems may help managers and workers analyze problems, visualize complex subjects, and create new products. Management Information Systems serve the management level of the organization, providing managers with reports and in some cases online access to the organization's current performance and historical records. The main features of the MIS is supporting decision making process in an organization through analyzing complex problems by generating routine reports.

Strengths of the definition:

The above definition considered the following aspects:

- *key factors of the business environment;*
- *support decision making process of the management level;*
- *or creating a friendly environment to make a complex decision simply.*

Limitations of the definition:

Definition presented only use process rather operational or development process. Use process means to support managerial activities of manager as a user in the management level.

Author of the present study developed a theory of MIS on the basis of empirical findings of the previous theory:

“Management Information Systems as an integrated user oriented systems that makes information available to users through collecting (or retrieving), processing, storing, and distributing information to support operations, management, and decision-making functions in an organization.”

Author of the study defined MIS is an integrated user oriented system for providing information to support operations, management, and decision-making functions of any organization.

2.1.1 MIS as a discipline

The MIS discipline started as applied Computer Science in the 1970s and gradually developed into a more social science oriented discipline (Baskerville and Myers 2002). Though, MIS is very much a young academic field (Culnan, 1986), It now has its unique identity, core journals, conferences, and an official association with 4000+ members

worldwide (Hoon et al. 2005). Historically, there are several other terms used by different departments, universities, regions, countries, journals, societies and associations to represent this discipline. These terms include computer information systems, business computing science, information technology, information management, decision support systems, electronic data processing, information resource management, and information systems (Carey et al., 2004). At the first **International Conference on Information Systems (ICIS)**, Keen (1980) defined MIS as ‘the effective design, delivery and use of information systems in organizations’. In a MIS text by Ahituv and Neumann (1986), they stated that: ‘MIS is the systematic study of information systems. An information system is a set of components (people, hardware, software, data, and procedures) that operate together to produce information that supports the operation and management functions of an organization’. One of the main distinguishing features of MIS revealed in this definition is that MIS has a *business-application* and *management orientation*. In order to encourage quality work in the area, MIS emphasizes development, application and validation of relevant theories and models. It also draws from other disciplines including: Computer Science, Organization Science, Management Science, Cognitive Psychology, Social Psychology, Organizational Psychology, Sociology, Management, Accounting, Marketing and Economics (Nolan and Wetherbe 1980, Culnan and Swanson 1986, Baskerville and Myers 2002). Over the past several decades, MIS has developed its own research emphasis and research tradition (Baskerville and Myers 2002). MIS research examines more than the technological system (e.g. hardware, software, data, networks), or the social system (e.g. people, business processes, politics, economics, psychology, culture, organization, management), but the interactions between the two (Lee 1999, 2001). To do this, MIS research draws heavily on the theoretical foundations of the behavioral and social science disciplines in addition to business and management.

Many of the specialist of the MIS community such as Nolan and Wetherbe (1980), Culnan (1986), Culnan and Swanson (1986), Alavi and Carlson (1992), and Baskerville and Myers (2002) describe the MIS development in different way in their writings. Nolan and Wetherbe (1980) proposed a comprehensive framework for research in MIS while Culnan and Swanson (1986) reviewed the nature of the MIS field. Culnan (1986) used a co-citation analysis to identify the sub-fields that constitute MIS research and the reference disciplines of these sub-fields. Alavi and Carlson (1992) examined published MIS articles to identify popular research topics, the dominant research perspective, and the relationship between MIS research and practice. Baskerville and Myers (2002) examined the MIS field and observed a steady shift of MIS research from a technocentric focus to a better balance of technology/ organizational/ management/ social focus. Baskerville and Myers (2002) also broadly define the MIS domain as 'the development, use and application of information systems by individuals, organizations and society'. Study results of Culnan (1986) provide a unique opportunity to study the evolution of MIS from its early beginnings. In addition to providing a baseline for the future study of MIS research subfields, it also suggest some of the intellectual journeys taken by its early contributors who came to MIS from a variety of different academic backgrounds (Davis 1984).

Attraction of new field to other established disciplines:

Researchers from a number of disciplines were attracted to the emerging field of IS. The primary contributors have been computer science, management science and organizational science, together with a host of supporting disciplines, including psychology, sociology, statistics, political science, behavioral science, economics, philosophy, mathematics (Bariff & Ginzberg, 1982; Culnan & Swanson, 1986; Boland &

Hirschheim, 1987; Kriebel & Moore, 1982; Nolan & Wetherbe, 1980). Indeed, it has been suggested that the IS field has nothing unique in terms of topics, theory or methodology, since these have been contributed by researchers from other fields (Keen, 1991). These multiple contributions nevertheless contributed to the quick development and rich variety of the MIS field.

2.1.2 Scope of MIS

By its very nature, MIS is designed to meet the unique needs of individual institutions. As a result, MIS requirements will vary depending on the size and complexity of the operations of business organization. Though, Management Information Systems is an integrated, user-machine system for providing information to support operations, management, and decision-making functions in an organization (Davis & Olson, 2000), but MIS used as priori role for problem solving and decision making in the organization. Gupta (1998) has depicted the nature and scope of information and its use in different levels in the organization in Table -2.1:

Table-2.1: Nature and scope of information and its use in different levels in the organization

Information characteristics	Level of Decision Making		
	<i>Operational</i>	<i>Tactical</i>	<i>Strategic</i>
Time Frame	Short range	Middle range	Long range
Source	Internal	Internal and external	external
Nature	Detailed	Mostly summery	Summery
Level of certainty	Certainty	Some uncertainty	Uncertainty
Risk Level	Low risk	Medium risk	High risk
Judgment	Very little	Some judgment	Extensive

			judgment
Dependence on Information Systems	High	Moderate	Low to moderate
Dependence on internal information	Very high	High	Moderate
Dependence on external information	Low	Moderate	Very high
Need for online information	Very high	High	Moderate
Use of Historical information	High	Moderate	Low
Use of 'what if ' information	Low	High	Very high

Source: Gupta, U.G. (1998:20)

Scope of MIS would be in planning, operation, decision making purposes within the organization with a different orientation based on organizational commitment of using information systems.

But proper practicing of MIS mainly depends on few factors of organization. Following section will discuss about different factors like corporate executives, employees' involvement, and IT infrastructure of the firm which contribution is very important for best practicing of MIS in the business organization.

2.2 MIS and Corporate executives

Corporate level people are key factors that creates environment for taking time required policy for the organization. The important role of corporate executives has been greatly emphasized in literature (McIvor and Humphreys, 2004; McIvor et al., 2006; Jiao et al., 2008). Since senior managers are the most cognizant of the firm's strategic imperatives to remain competitive in the market place, they have a better understanding of the needs of information systems in the organization (Agarwal and Lucas, 2005). Manfreda and Stemberger (2014) found that top management should have relationship or understanding

with IS personnel and financial resources to support the development of IS practices in all phases of the organization. Top management support, mainly defined as supporting the initiatives of IS personnel and understanding the importance of IS (Ragu-Nathan et al., 2004), is crucial for successfully implementing IS (Doom et al., 2010; Ramdani et al., 2009; Ranganathan and Kannabiran, 2004).

One of the major functions of top management executives is to influence the management culture to encourage collaboration and achieve sustained strategic performance. Previous literature has noted that top management must be aware of the competitive benefits that can be derived from inter-organization relationship and EI (Feng and Zhao, 2014). Thus, they have important role in developing IT infrastructure or self motivated employees and their involvement in the application of IS in the organization (Doll 1985). But support or commitment of corporate executive in an organization to adopt with the new changes determine by few factors like strategic goals of the firm, executive's job satisfaction, knowledge about changes, and cooperation of employees (Ashill et al., 2006).

Corporate executives and MIS directors have been increasingly urged to improve the way in which their information systems development and practicing efforts are being managed. Management concepts being advocated include viewing information systems as a business within a business (cash et al. 1983), managing the information resource by committee (Nolan 1982), developing strategic plans for the information systems function (Head 1978, King 1978, McLean and Soden 1978) understanding the contingency approach to management (Wetherbe & Whitehead 1977), and analyzing the firm's portfolio of present and potential projects (Buss 1983, McFarlan 1981). More recently, a related article has described how directors of data processing their management approaches and systems development philosophies play an important role in the track

record or credibility problem facing some information systems departments and practices (Doll and Ahmed 1983). Responsible top management thus has an important role since merely considering the strategic role of IS leads to obtaining comparative advantages from IS, while the technology itself is not a sufficient factor for successful IS implementation (Dhillon, 2008). Nevertheless, it was shown decades ago that it is up to IS managers to present IS as a strategic resource and IS implementation as a project of delivering value to the organization (Earl and Feeney, 1994) in order to obtain top management's support (Manfreda and Stemberger, 2014). Thus practicing pattern of MIS directly depends on coordination of corporate executives. Again positive role of corporate executive depends on knowledge, motivation, career goal, commitment to the organization.

2.2.1 Factors influencing support of corporate executives

Management commitment to development and practices of MIS is defined as consciously choosing proper IS as operational and strategic operations for the organization, and engaging in IS activities such as providing proper IT infrastructure and coordinating employees for the purpose of adoption and implementation of MIS (Manfreda and Stemberger 2014, Earl and Feeney 1994, Wetherbe & Whitehead 1977, Sandhu & Ajmal 2012).

Corporate executives creates environment and provide guidance that can influence the objectives the MIS director and his staff pursue. In the more successful firms, top management created an environment where: (1) employees involvement was expected and planning objectives could focus on picking the right projects via mutually agreed upon criteria, building a data-base, and managing the selection or development of

software to help users do their work; and (2) the planning process focused on placing IT projects in their business context. In the less successful firms, top management permitted the MIS directors to view the planning process as a budgeting procedure (Doll, 1985).

Kim and Kleiner (1996) empirically examined three high-performing financial institutions – Bank of America, Citibank, and One Valley Bank – and reported that these institutions focus on the following service elements: having a clear banking culture provided by committed management; Empowering employees by enhancing their knowledge and skills; and improving operating processes through the application of advanced technologies. To that end, customers should of course be counted in any objective evaluation of a firm's service outcomes. However, one should not ignore the view that happy employees will put extra effort into improving service performance. However, other studies (Reeves and Hoy, 1993; Natalisa and Subroto, 2003) have reported mixed findings on the relationship between management commitment and improved practices of MIS.

2.2.1.1 Firms and executives' vision:

It is very much important for the firm what will be strategic plan basically depends on corporate executive and their visionary thinking. Again strategic plan determine the executives commitment to develop and implement the new systems in the organization. Thus the visionary traits of leader dictate to set strategic goals which determine the support and commitment level of the executives. A decade later, articles representing the views of **Chief Information Officer (CIOs)** and academics suggest that the **CIO's** influence is growing and that the role has an unprecedented opportunity to provide leadership and company-wide vision for the use of technology and information (Ross and Feeny, 1999; Maruca, 2000).

2.2.1.2 Executives' technological know-how:

Some recent work by Kets de Vries and Miller (1984) takes a very different tack. They argue that particular organizational configurations reflect the technological knowledge of their chief executives. Different types of knowledge aspects are said to be central in determining the strategies and structures of many organizations. Perhaps, then, they can be of use in studying organizations since they may relate consistently to and even be at the root of some common configurations (Miller, 1980).

It has been shown that when top management possesses IS knowledge and skills this positively influences the adoption of IS in the company (Armstrong and Sambamurthy, 1999). The research thus indicates that responsible management will acquire at least some of the requisite skills. Further, it has been claimed that top management should understand the strategic role of the IS department, possess adequate IS knowledge and provide enough resources for implementing the IS project (Ranganathan and Kannabiran, 2004). Most of our existing knowledge about corporate executives comes from practitioner sources, such as Gartner and Forrester Group. By gathering these data directly from corporate executives and senior IT managers, we hope to identify long-term trends and derive implications from these trends for future IT management, governance, and organizational structure. Executives' knowledge and experience help to change organizational structure (Nelson, 1973). Thus their technological knowledge is very much important to develop required IT infrastructure and improved practices of MIS.

2.2.1.3 Executives' Job satisfaction:

This section provides a brief explanation about executive job satisfaction and their commitment to develop and change organizational structure to cope with modern technology based infrastructure. Executive pay comprises extrinsic monetary rewards in

the form of cash pay (salary and bonus), long-term incentives (e.g., executive stock options) and perquisites (pension contributions, limousines, etc.) leads job satisfaction of executives which ultimately influenced to increase commitment to the organization (Guay & Larcker 2003; Dalton & Rajagopalan 2003; Tosi et al. 2000; Kaplan 1997, 1999; Buck & Shahrim 2005; Oxelheim & Randoy 2005).

The technology based firm as gauged by research and development (R&D) presents a particularly interesting paradox for scholars and designers of executive compensation. On the one hand, the dynamism in such an industry would seem to call for entrepreneurially minded executives who are encouraged to show as much individual initiative as possible and who accordingly should be rewarded primarily on the basis of their own (or their subunits') performance (Hambrick 2005). Again job satisfaction directly relate commitment and support of corporate executives to their key and challenging jobs like changing existing organizational environment (Mitchell and Silver 1990, Vechil 1979, Gupta and Govindarajan 1984).

2.2.1.4 Cooperation of employees:

To increase the support of corporate executives another important factor directly influencing is employees' cooperation to top management. Employee cooperation is a system process that creates a spirit of cooperation within an organization and taps the creative contributions of each member. An organization's success in improving performance depends largely on the skills and motivation of its workforce. Employee cooperation aligns human resource development with strategic plans and change processes of corporate executives. It focuses on empowering the workforce and forming worker–manager partnerships. It builds commitment to a common purpose, a set of performance goals, and an approach (Potocki and Bocato 1995; Galbraith 1973; Wainer and Rubin 1969).

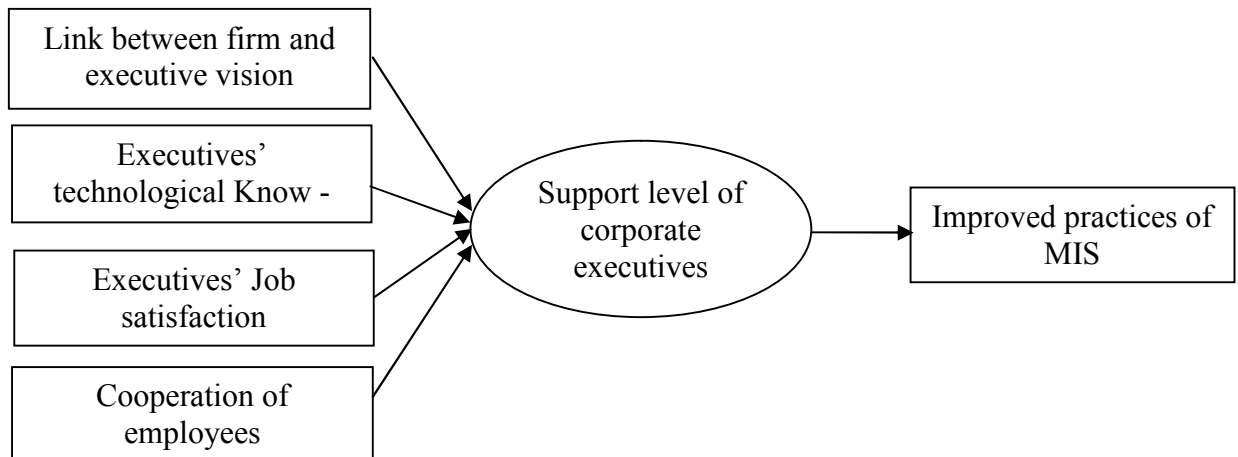


Figure-2.1: Framework of corporate executives support in practices of MIS

Source: The Author (constructed based on Ashill et al., 2006)

2.3 IT infrastructure and MIS

IT infrastructure is the shared IT resources consisting of a technical physical base of hardware, software, communications technologies, data, and core applications and a human component of skills, expertise, competencies, commitments, values, norms, and knowledge that combine to create IT services that are typically unique to an organization. These IT services provide a foundation for communications interchange across the entire organization and for the development and implementation of present and future business applications (Byrd and Turner, 2000).

Developing and practicing new IS is a pervasive tool for transforming organizations (Grover et al. 1993) and ranked as one of the most important issues for IS executives since the early 1990s (Brancheau et al. 1996; Index Group 1994; Watson et al. 1996). Information Technology is fundamental in enabling the innovative redesign of core business processes (Brancheau et al. 1996; Hammer and Champy 1993). There is a well-accepted iterative relationship between the strategic context of the firm, the nature of

business processes, and the significance of IT investments, both as barriers to and enablers for changing business processes (Bashein et al. 1994; Coulson and Thomas 1994; Stoddard and Jarvenpaa 1993).

Recent research on the relationship between IT and organization describes systems of organizational practices that complement of IT. One theoretical perspective that convincingly addresses the complementarity of IT and organizational processes, practices, routines, and activities is the resource-based theory of the firm (Wernerfelt 1984, Barney 1991). This theory argues that durable competitive advantage emerges from unique combinations of resources (Grant 1996) that are economically valuable, scarce, and difficult to imitate (Barney 1991).

IT infrastructure provides the foundation of shared IT services (both technical and human) e.g., servers, networks, laptops, shared customer databases, help desk, application development) used by multiple IT applications (Keen 1991, Weill and Broadbent 1998). Infrastructure investments are typically made to provide a flexible base for future business initiatives and thus are made in anticipation of future business needs. The disruptive nature of enterprise wide infrastructure implementations creates high up-front costs and long benefit time horizons (Duncan 1995, Weill and Broadbent 1998).

However, infrastructure investments also enable new applications and functionality and lay the groundwork for significant improvement of practices of newly developed IS in the organization (Duncan 1995, Broadbent et al. 1999). Table - 2.2 described IT infrastructure services of the organization.

Table -2.2: Information Technology Infrastructure Services

Core Information Technology Infrastructure Services
1. Manage firm-wide communication network services
2. Manage group-wide or firm-wide messaging services
3. Recommended standards for at least one component of IT architecture (e.g., hardware, operating systems, data, communications)
4. Implement security, disaster planning, and business recovery services for firm-wide installations and applications
5. Provide technology advice and support services
6. Manage, maintain, support large-scale data processing facilities (e.g., mainframe operations)
7. Manage firm-wide or business-unit applications and databases
8. Perform IS project management
9. Provide data management advice and consultancy services
10. Perform IS planning for business units
Additional Information Technology Infrastructure Services
11. Enforce IT architecture and standards
12. Manage firm-wide or business-unit workstation networks(e.g., LANs, P OS)
13. Manage and negotiate with suppliers and outsourcers
14. Identify and test new technologies for business purposes
15. Develop business-unit specific applications (usually on a chargeback or contractual basis)
16. Implement security, disaster planning, and recovery for business units
17. Electronically provide management information (e.g., MIS)
18. Manage business-unit-specific applications
19. Provide firm-wide or business-unit data management, including standards

20. Develop and manage electronic linkages to suppliers or customers
21. Develop a common systems development environment
22. Provide technology education services (e.g., training)
23. Provide multimedia operations and development (e.g., video-conferencing)

Source: Generic list of IT infrastructure services was developed by Broadbent et al. (1996).

2.3.1 Factors influencing appropriate IT infrastructure:

Perfect IT infrastructure is very important for ensuring better practices of MIS in business organization while IT is a potential enabler of change it is also a potential constraint or inhibitor (Benjamin 1993; Broadbent and Butler 1995; Davenport 1993; Earl 1994; Earl and Kuan 1994), particularly when the firm's IT infrastructure is inappropriate or inflexible (Brancheau et al. 1996; Wastell et al. 1994). Thus IT investment in different dimension has direct impact on practices of MIS in the business organization. But, appropriate IT infrastructure mainly depends on organization capability (financial base and technical human resource base) (Keen 1991, Weill and Broadbent 1998), commitment of corporate executives, strategic plan of the organization (Floyd and Wooldridge 1990, Dos Santos et al. 1993).

2.3.1.1 Organization's capability:

It is important to develop appropriate IT infrastructure for ensuring better practices of IS in the organization. Appropriate IT infrastructure not indicates high level IT investment rather matching the requirements and working patterns of the organization. Most empirical examinations of IT business value consider IT as an aggregate, uniform asset (Bharadwaj et al. 1999), divide IT investments into capital and labor stock (Bynjolfsson

and Hitt 1996, Hitt and Brynjolffson 1996, Bharadwaj 2000). Thus, it would be interesting to examine the impact of different types of IT investments such as innovative versus non-innovative, strategic versus nonstrategic, and internally focused (e.g., process control, coordination, etc.) versus externally focused. Although, IT investment allocations are likely to reflect firm strategy and affect firm performance (Floyd and Wooldridge 1990) but organization needs to measure its financial base to invest in IT project. Many people consider establishing IT in a business as an expense as well as IT may not be productive investment for every organization (Samabmurthy et al. 2003). Thus, it requires proper assessment of financial base to develop appropriate IT infrastructure. Again, firm need to assess technical resource capability to manage IT project efficiently.

2.3.1.2 Commitment of corporate executives:

Executives are the key factors to decide what will be the reach and range of organizations because IT investment and overall development of IT services not only depends financial base or technical people base but also depends on commitments of corporate executives and their involvement may be a critical factor in determining the success of MIS development efforts (Lucas 1975, Willoughby and Pye 1977). Executive steering committees provide the IT director with access to top management and serve as a mechanism for top management guidance in shaping strategies and policies for the IT function. Executive steering committees in successful firms also tended to be more active in discussing policy and strategy issues related to MIS development. However, many senior executives have lack of confidence on their ability to provide managerial guidance for this highly technical activity. Top management has not been told just what they should do when they get involved. We know little about the most effective areas or

avenues for top management involvement (Ein-Dor and Segev, 1981). Thus development of appropriate IT infrastructure needed support from corporate executive which lead to improved practices of MIS in the organization.

2.3.1.3 Strategic Plan of the organization:

The topic of business strategy and its relationship to MIS has recently become an area of considerable research interest. The majority of work analyzing the relationship between strategy and MIS has been in the form of definition of conceptual frameworks or case studies (Benson and Parker 1985; Ives and Learmonth 1984; Lucas 1984; McFarlan and McKenney 1983; Porter and Millar 1985). An example of an empirical study using strategy as a contingency variable is (Vitale et al., 1986), which examined information assets and opportunities and how they were incorporated into a firm's strategic planning process. In a study of wholesaling companies, Cron and Sobol (1983) looked at the number of standard business functions that were computerized and the relationship to financial performance. The business scope of firm-wide IT infrastructure can be defined in terms of "reach and range" (Keen 1991). A large reach and range indicates that the firm has a high level of IT infrastructure capability which depends on firm strategic IS planning.

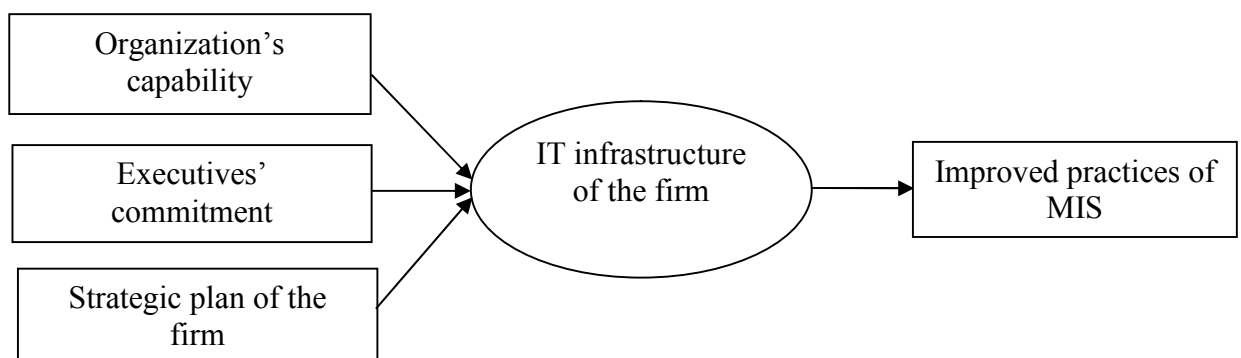


Figure-2.2: Framework of IT infrastructures for practices of MIS

Source: The Author (constructed based on Keen, 1991.)

2.4 Employees participation in MIS

The direct participation of employees help an organization fulfill its mission and meet its objectives by applying their own ideas, expertise, and efforts towards solving problems and making decisions. This type of participation is known as **employees' involvement (EI)**. EI is “the extent to which employees producing a product or offering a service had a sense of controlling their work, receiving information about their performance, and being rewarded for the performance of the organization” (Lawler et al., 1992, p. 2). This sense of involvement that employees may intrinsically experience must, however, be fostered extrinsically by managerial practices. Although such managerial levers are not in themselves intrinsic EI that employees may experience, the term EI is often applied to them.

The **Organization Behavior (OB)** literature has extensively studied EI's effect on employee job practices, satisfaction and performance, which, in turn, are thought to influence organizational performance. Even after decades of study, the evidence from individual studies has remained mixed and inconclusive. Meta-analytic studies have supported EI's positive effect on both satisfaction and performance (Miller and Monge, 1986; Cotton et al., 1988; Wagner, 1994). Yet, EI's effects statistically significant in organizational change like new system development (Wagner, 1994). EI's also increase the acceptance level and practices of new change in the organization which ultimately contribute in the **Total Quality Management (TQM)** (Deming, 1986; Flynn et al., 1995; Jack et al., 2001; Kathuria and Davis, 2001), kaizen and **continuous improvement (CI)** (Imai, 1986; Suzaki, 1987; Schroeder and Robinson, 1991), and waste elimination under **Just-in-Time (JIT)** systems (Shingo, 1981; Womack et al.,

1990). Recent research has begun a rigorous examination on employees' participation on practices of newly implemented systems in the organization.

2.4.1 Factors influencing employees' participation:

Several typologies have been offered for classifying different forms of employees involvement. Cotton et al. (1988) identified five properties of participation, based on typologies by Dachler and Wilpert (1978) and Locke and Schweiger (1979). The most important combinations of these six properties are:

- i. participation in work decisions;
- ii. consultative participation;
- iii. short-term participation;
- iv. informal participation;
- v. employee ownership; and
- vi. representative participation.

Lawler et al. (1992, 1995), arguing that such theoretical typologies of EI have yet to be supported by data, instead identified four empirically supported factors of EI:

1. Knowledge and training;
2. Information sharing;
3. Rewards and pay
4. Power sharing.

From the view point of this research, author of the study identified Lawler et al.'s (1992, 1995) classification holds greater appeal than other theoretical typologies.

2.4.1.1 Knowledge and training of the employees

Training is an essential element of employee participation in any systems. Different types of skills frequently identified as being necessary for effective employee involvement which can be improved by training (Lawler et al., 1992, p. 16). These skills are group decision-making/problem-solving skills, leadership skills, skills in understanding the business (accounting, finance, etc.), quality/statistical analysis skills, team-building skills, and job skills.

Training has also received much coverage in the quality management area (Deming, 1986; Imai, 1986; Saha, 1987; Sila and Ebrahimpour, 2002) and again coverage with practicing with newly developed systems (Suzaki, 1987). Cross training improves communication about work procedures (Suzaki, 1987), eliminates “perspective based waste” (Robinson and Schroeder, 1992), and improves performance (Jayaram et al., 1999).

Prior knowledge of employees about the systems has direct impact on participation in using new systems in the organization. Such types of technical knowledge supports employees to participate in the practicing newly developed information systems in the organization (Lawler et al., 1992; Baskerville and Myers (2002). Again Knowledge and skills of IS employees with general employees are also an important factor in developing relationship between employees and top management. The discussion considering the importance of different knowledge and skills while technical vs business and management skills were mainly emphasised (Byrd and Turner, 2001). The importance of different skills and capabilities of IS personnel was confirmed in various studies (Lerouge et al., 2005; Parolia et al., 2007; Wade and Parent, 2001), however including the perspective of IS managers and top management in order to examine the differences

in perceived knowledge and examine factors that are increasing the gap between them is missing.

2.4.1.2 Rewards and pay

Compensation systems play an important role in supporting EI. “Pay for performance” systems are the most common, and include individual and team incentives, profit sharing, gain sharing, and **employee stock ownership plans (ESOPs)** (Lawler et al., 1992). Many of these traditional compensation approaches are not considered well suited to EI. Individual incentive plans are not supportive of EI, although team incentives can be (Lawler et al., 1992). Profit sharing and **ESOPs** are only useful “as part of a broad range of evolving human resource strategies” (Poole and Jenkins, 1991, p. 52). Several non-traditional approaches have gained prominence as being supportive of EI. They include all-salaried pay, knowledge- or skill-based pay, flexible benefits, and non-monetary rewards (Lawler et al., 1992). In the area of IS practices, traditional pay systems are viewed poorly for increasing participation level from employee side. Favored systems include: knowledge and skill based pay, promotion based on knowledge, team-based rewards, incentives for improvement, and non-monetary compensation (Imai, 1986; Flynn, 1992; Choi and Eboch, 1998).

2.4.1.3 Power sharing

Lawler et al. (1992) identified two types of power sharing practices. Practices for generating employee suggestions and problem solving include participatory groups like **quality circles (QCs)**, **quality of work life (QWL)** committees, and survey feedback. Practices involving work redesign include job enrichment or redesign, and self-managing work teams. The former, “low-power”, practices use a “parallel organization structure”, while the latter, “high-power”, practices “involve a substantial change in the basic structure of the organization and are aimed at moving important decisions into the hands

of the individuals and teams” (Lawler et al., 1992, p. 28). In case of using IS, technical employees expect to power sharing practices in developing and practicing IS (Baskerville and Myers, 2002).

2.4.1.4 Information sharing

Information sharing can be viewed in terms of the types of information provided regularly to employees namely, information on the company’s overall operating results, business unit’s operating results, new technologies that may affect employees, business plans/goals, and competitors’ relative performance (Lawler et al., 1992). Information regarding the business unit’s operating results “is often the most important information for employees”, as it provides them with a “line of sight”; it is also what employees “need in order to contribute ideas and suggestions and be involved in the business” (Lawler et al., 1992, p. 14). Different researchers have also noted the benefits of information sharing. Different forms of communication cited include displays and charts (Suzaki, 1987; Schonberger, 1992; Flynn et al., 1994), provision of operational information (Banker et al., 1993; Flynn et al.1994), performance and financial data (Choi and Eboch, 1998), feedback on suggestions (Choi and Eboch, 1998; Flynn et al., 1995). Employees can be benefitted and their participation of systems using increased because of formal and informal communication about the aspects of systems as well as organizational activities (Lawler et al., 1992). Thus information sharing practices is the important factor of EI.

From reviewing the vast literature on EI, it appears that each of the sets of EI practices discussed above has the potential to affect, to a different extent in the organization. Training and knowledge of the employees about IS clearly stand out from the other EI sets, with a greater effect, and more conclusive results. Further, rewards for involvement,

information sharing play a more salutary role than power practices in participation of IS using. On the other hand, power practices not so much for their own effect, but rather as supportive practices. Rewards too appear to have an effect mainly in the context of greater participation. Figure – 2.3 depicted relationship between factors influencing EI and improved practices of MIS.

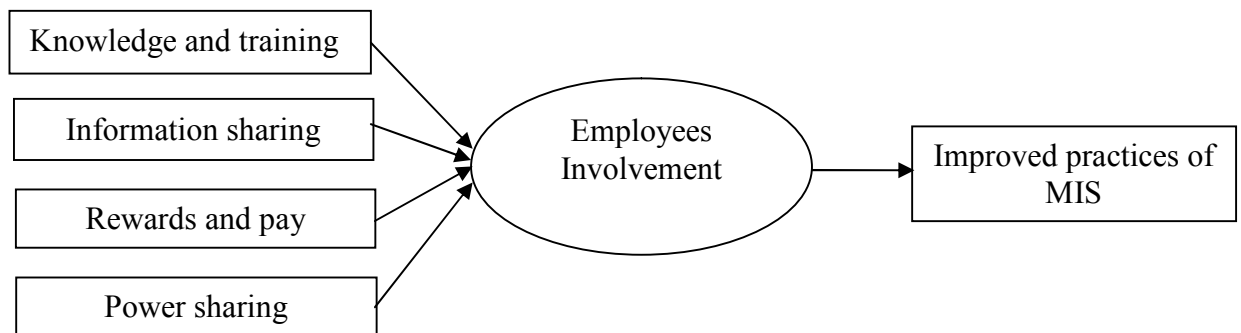


Figure-2.3: Framework of Employees' (EI) Involvement in the organization.

Source: The Author(constructed based on Lawler et al., 1992.)

2.5 MIS and Banking sector

A bank is a financial intermediary that accepts deposits and channels those deposits into lending activities, either directly or through capital markets. The banking sector of Bangladesh relative to the size of its economy is comparatively larger than many economies of similar level of development and per capita income. The total size of the sector at 26.54% of GDP dominates the financial system, which is proportionately large for a country with a per capita income of only about US\$370. The non-bank financial sector, including capital market institutions is only 3.22% of GDP, which is much smaller than the banking sector (Sayeed et al. 2002). Service sector contribute about 50% of total GDP (Economic Review, 2010) and banking sector is the key role playing sector not for direct contribution but to inducing the contribution in the GDP of other sectors.

Modern banking system plays a vital role for a nation's economic development. Over the last few years the banking world has been undergoing a lot of changes due to deregulation, technological innovations, information systems application, and globalization etc. These changes also made evolutionary changes of a country's economy. Banking Sector in Bangladesh is facing challenges from different angles though its prospect is bright in the future because of stiff competition among the banks within efficient operational activities, prompt customer service, customized products & service, innovative idea and strategic operational & management decision. Many banks offer better customer services, personal financial services, corporate facilities, trade services with the help of efficient operational department, credit department, and information technology department. Only a few studies regardless of research context have been conducted which focus on the attributes of innovations, as perceived by potential users (Ostlund, 1974; Taylor, 1977). Lack of utilization of IT is the main intricacy of the banking sector of Bangladesh.

During last decade, a high percentage of financial organizations frequently used Management Information Systems to facilitate the provision of services; and that the speed of the adoption is expected to grow further as the technology expands. To financial institutions, MIS is used at various levels by top-management, middle and even by the operational staff as a support for decision making that aims to meet strategic goals and strategic objectives (Karim, 2011).

Again (Rawani & Gupta, 1999) explain the importance of MIS that it will assure the top management that the MIS development is in the right direction. It has been well recognized that IS plays different roles in different industries. However, there is limited research examining the differences in the role of IS within a single industry. Results of the different studies found that only private and foreign banks have obtained strategic advantages using

IT, public sector banks, although late, have also realized the importance of IT. It has been empirically proved that the future impact of IS does not vary significantly with the banking groups. This suggests that IS efforts put in by the public sector banks are in the right direction and can be expected to give them a strategic advantage in future.

Chandrasekhar and Sonar (2008) depicted that banks will reap the benefits of IT truly and totally, if and only if they pay adequate attention to technological progress as well as efficiencies on the input and output sides. So this sector to realize innovative service for customer to keep up their satisfaction with the application of MIS urgently.

Bangladesh Bank has achieved a historic milestone in the trade and business arena, departing from conventional banking with the introduction of e-commerce recently; a giant stride towards digital Bangladesh (Rahman, 2010). Banking industry is mature to a great extent than earlier period. It has developed superb image in their various activities including electronic banking. In Bangladesh, now infrastructure has been developing for performing internet banking, SMS banking etc. and many banks already open MIS department to performing operational and decision making activities. Few banks have IT department rather than MIS department to perform operational activities only. But in many cases it is vague about the meaning and application of MIS.

Within a shortest possible time all the banks will be under the common platform to speed up their customer.

2.6 Conceptual framework for improved practices of MIS

Theory explains different factors influencing MIS practices in discrete form different dimension. Theory also proved that how these factors are directly related to practices of MIS, but previous theory has not provided sufficient support on relationship between

level of integration among the factors and improved practices of MIS in the banking sector Bangladesh.

Considering previous theory relate to the practices of MIS which are discussed in earlier section, author of the present study develop a conceptual framework for practices of MIS. This framework highlights different factors of practices of MIS and their integration for improved practices which is not considered in previous theory. Thus this framework tries to overcome the limitations of previous theory for improved practices of MIS. Figure – 2.4 showed the relationship among three dimension of using MIS in the banking organization.

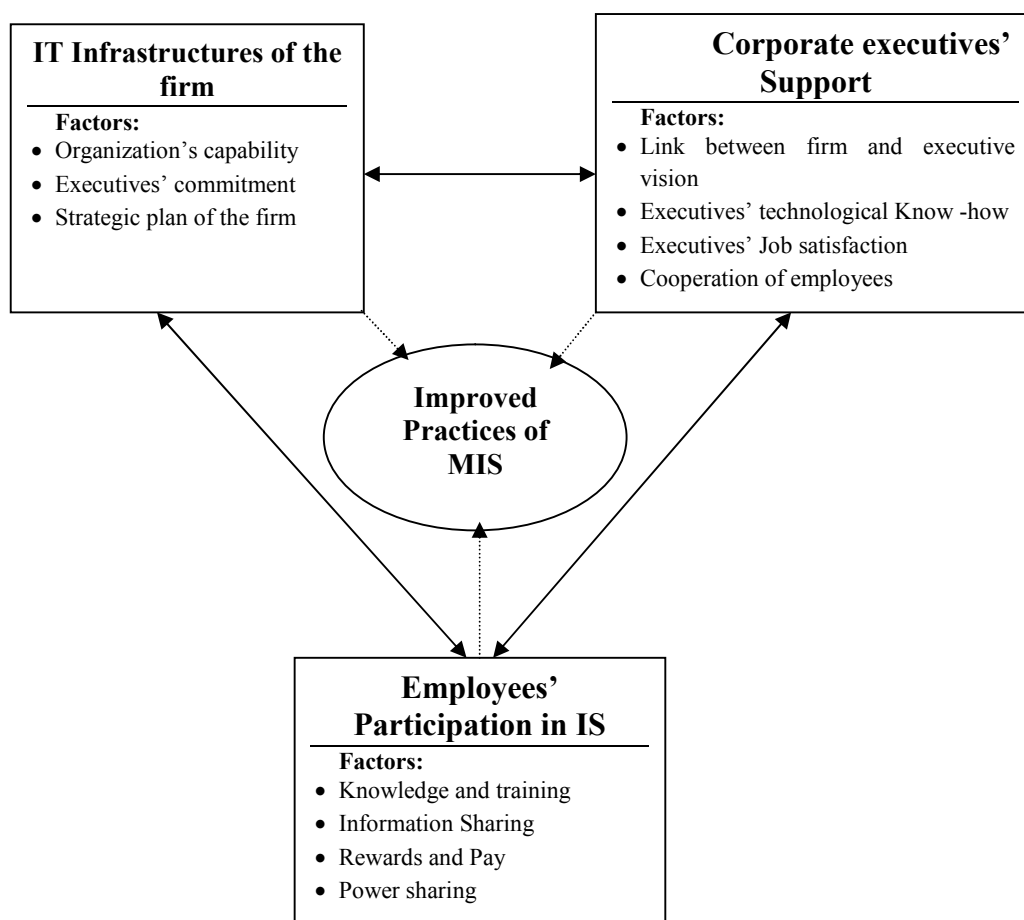


Figure -2.4: Conceptual framework of practices of MIS

Source: The Author

2.7 Summary

Literature review showed the practices of MIS and factors affecting practices of MIS in the service organization specifically in the banking sector of Bangladesh. Author of the present study found the gap in previous literature which commits to conduct this study logically to minimize the existing research gap. So there is need to understand the specific method to identify the scenario of MIS practices and its application in the banking sector of Bangladesh. Next chapter will discuss about the appropriate method for the current study.

Chapter – Three

Research Methodology

3.0 Introduction

Review of the methodology of previous study suggests that there is no uniform method to conduct IS research, especially in the areas of MIS practices in the service organization. Therefore, this chapter is designed to identify the gaps in the previous research methods on the MIS practices in general and in particular banking sector in a developing country like Bangladesh. This chapter is an attempt to present general concepts of research method and application of different methods in IS research and also a research method for this study also developed with a justification of selecting this method considering the gap in previous research methods. Finally, the data collection process and data analysis techniques for the present study also outlined in this chapter. The next section will discuss about the meaning and application of method and methodology.

3.1 An extensive view of Methodology

The word method means a special form of procedure adopted in any branch of mental activity, whether for exposition or for investigation. In other words, it means a procedure to attain an object and a systematic arrangement what refers to a branch of logic that teaches how to arrange thoughts and topics for investigation, exposition or literacy composition. Thus, it indicates an orderly arrangement of ideas and topics (Islam, 2002). In a simple term, method means a way of doing anything, especially on the basis of the overall plan. In other side, the word methodology means the science of the method. Science is systematized knowledge (Ghe, 1950). Science is an objective, logical, and systematic method of analysis of phenomena, devised to permit

the accumulation of reliable knowledge (Lastrucci, 1963). Bernard (1995) emphasized on three words in the definition of Lastrucci are 'objective', 'method', 'reliable'. The research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done systematically (Kothari, 2004).

The philosophical arguments regarding research methodology in the field of MIS have gone through a numerous academic 'terminology' surrounding quantitative and qualitative methods. Again, these quantitative and qualitative methods can be considered as a broad classification of research methodology currently used by social science and anthropological researchers. Different researchers have introduced different concepts, i.e. Terminology for explaining their logic and understanding to profess the use of a particular methodology (i.e. either quantitative or qualitative) as they perceived and believe as a process of scientific research from an epistemological point of view. Whatever the terminology is used by the researchers, however, basically it reflects the arguments either for or against the quantitative or qualitative approaches.

The underlying assumptions of the quantitative and qualitative paradigms result in differences which extend beyond philosophical and methodological debates. The two paradigms have given rise to different journals, different sources of funding, different expertise, and different methods. There are even differences in scientific language used to describe these paradigms (Sale et al., 2002).

It would refer to ethnographic immersion in a culture. "Validity" to a quantitative researcher would mean that the results correspond to how things really are out there in the world, whereas a qualitative researcher "valid" is a label applied to an

interpretation or description with which one agrees (Smith and Heshusius, 1986). Similarly, the phrase “research has shown . . .” or “the results of research indicate . . .” refers to an accurate reflection of reality to the quantitative researcher, but to a qualitative researcher it announces an interpretation that it becomes reality (Smith and Heshusius, 1986). McLaughlin (1991) observes that the quantitative or qualitative dichotomy is one of the related dichotomies with which the social sciences are revived. The essential nature of social sciences enterprises has been discussed and debated by the different researchers at length in terms of different dichotomies. Deshpande (1983) has characterized Reichardt and Cook’s (1979) distinctions between quantitative and qualitative paradigms.

Peter and Olson (1983) have provided a summary of the distinctions between positivist and empiricist and relativistic or constructionist views of science. Hirschman (1986) has presented the contrast between the humanistic and positivistic metaphysics. Bryman (1988) has noted Guba and Lincoln’s (1982) contrast between rationalistic and naturalistic paradigms and Evered and Louis’ (1981) contrast between inquiry from the inside and an inquiry from the outside. Similar to Hirschman’s contrast, Gumesson (1991) also presents a comparison between positivistic and hermeneutic paradigm based on Swedish researcher Anderson (1981) studies perhaps many more dichotomies than these can be identified. To better understand, Mclaughlin (1991) has outlined a list of the dichotomous nature of social science as in Table -3.1:

Table-3.1: Dichotomous nature of Social sciences

Qualitative	Quantitative
Subjective	Objective
Inductive	Deductive
Participant observation	Survey technique
Anthropology	Sociology
Naturalism	Anti –naturalism
Art	Science
Hermeneutics	Positivism
Aristotelian	Galilean
Teleological	Causal
Finalistic	Mechanistic
Understanding	Explanation
Verstehen	Erklaren
Phenomenological	Logical positivism
Micro	Macro

Source: McLaughlin, 1991:39(1):301

Again Cook and Reichardt (1979) also such dichotomy in the following way (Table - 3.2)

Table-3.2: Dichotomous nature of Social sciences

Phenomenological	Positivistic
inductive	deductive
holistic	particularistic
subjective centered	objective centered
process oriented	outcome oriented
anthropological worldview	natural science worldview
relative lack of control	attempted control of variables
dynamic reality assumed	static reality assumed
discovery orientated	verification orientated
explanatory	Confirmatory

Source: Reichardt & Cook (1979:22).

There are several further oppositions that can be attached in the McLaughlin's list such as good and bad, descriptive and predictive, empiricism and rationalism, practical and theoretical etc. Although there is no doubt that such binary oppositions are entrenched in the core disciplines of the social sciences (McLaughlin, 1991), such a dichotomous frame of reference might actually be less than useful if the complexity of the social world is not caught or encapsulated by either side of this divide of social sciences (Worsley 1974, Silverman 1985), Bryman (1988) has argued that this kind of dichotomous frame of reference has exaggerated what difference there are between quantitative and qualitative research.

3.2 Qualitative Vs Quantitative

The quantitative paradigm is based on positivism. Science is characterized by empirical research; all phenomena can be reduced to empirical indicators which represent the truth. The ontological position of the quantitative paradigm is that there is only one truth, an objective reality that exists independent of human perception. Epistemologically, the investigator and investigated are independent entities. Therefore, the investigator is capable of studying a phenomenon without influencing it or being influenced by it; “inquiry takes place as through a one way mirror” (Guba and Lincoln, 1994). The goal is to measure and analyze causal relationships between variables within a value-free framework (Denzin and Lincoln, 1994).

In contrast, the qualitative paradigm is based on interpretivism (Altheide and Johnson, 1994; Kuzel and Like, 1991; Secker et al., 1995) and constructivism (Guba and Lincoln, 1994). Ontologically speaking, there are multiple realities or multiple truths based on one’s construction of reality. The reality is socially constructed (Berger and Luckmann, 1966) and so is constantly changing. On an epistemological level, there is no access to reality independent of our minds, no external referent by which to compare claims of truth (Smith, 1983). The investigator and the object of study are interactively linked so that findings are mutually created within the context of the situation which shapes the inquiry (Guba and Lincoln, 1994; Denzin and Lincoln, 1994). This suggests that reality has no existence prior to the activity of investigation, and reality ceases to exist when we no longer focus on it (Smith, 1983). The emphasis of qualitative research is on process and meanings. Techniques used in qualitative studies include in-depth and focus group interviews and participant observation. Samples are not meant to represent large populations. Rather, small, purposeful

samples of articulate respondents are used because they can provide important information, not because they are representative of a larger group (Reid, 1996).

"There's no such thing as qualitative data. Everything is either 1 or 0" explained by quantitative researcher Fred Kerlinger. To this another researcher, D. T. Campbell, asserts "all research ultimately has a qualitative grounding". However, because typically qualitative data involves words and quantitative data involves numbers, there are some researchers who feel that one is better (or more scientific) than the other. Another major difference between the two is that qualitative research is inductive and quantitative research is deductive. In qualitative research, a hypothesis is not needed to begin research. However, all quantitative research requires a hypothesis before research can begin.

Another major difference between qualitative and quantitative research is the underlying assumptions about the role of the researcher. In quantitative research, the researcher is ideally an objective observer that neither participates in nor influences what is being studied. In qualitative research, however, it is thought that the researcher can learn the most about a situation by participating and/or being immersed in it. These basic underlying assumptions of both methodologies guide and sequence the types of data collection methods employed. Although there are clear differences between qualitative and quantitative approaches, some researchers maintain that the choice between using qualitative or quantitative approaches actually has less to do with methodologies than it does with positioning oneself within a particular discipline or research tradition. The difficulty of choosing a method is compounded by the fact that research is often affiliated with universities and other institutions. The findings of research projects often guide important decisions about specific practices and policies.

The choice of which approach to use may reflect the interests of those conducting or benefiting from the research and the purposes for which the findings will be applied. Decisions about which kind of research method to use may also be based on the researcher's own experience and preference, the population being researched, the proposed audience for findings, time, money, and other resources available (Hathaway, 1995).

Some researchers believe that qualitative and quantitative methodologies cannot be combined because the assumptions underlying each tradition are so vastly different. Other researchers think they can be used in combination only by alternating between methods: qualitative research is appropriate to answer certain kinds of questions in certain conditions and quantitative is right for others and some researchers think that both qualitative and quantitative methods can be used simultaneously to answer a research question.

To a certain extent, researchers on all sides of the debate are correct: each approach has its drawbacks. Quantitative research often "forces" responses or people into categories that might not "fit" in order to make meaning. Qualitative research, on the other hand, sometimes focuses too closely on individual results and fails to make connections to larger situations or possible causes of the results. Rather than discounting either approach for its drawbacks, though, researchers should find the most effective ways to incorporate elements of both to ensure that their studies are as accurate and thorough as possible.

In this vein Deshpande (1983) simplifies the arguments and identifies the two major schools of thought as positivism and idealism. Their adherences continue the debate today in the classic arguments between quantitative and qualitative. However, using

different terminologies researcher have identified that quantitative and qualitative each has distinct epistemological positions and hence divergent approaches to what is and should count as valid (scientific) knowledge (e.g. Anderson 1986, Deshpande 1983, Hunt 1976, 1983, Hirschman 1985, 1986, Peter and Olson 1983, Smith and Heshusius, 1986). The view taken by the researchers is that quantitative and qualitative research represents distinctive approaches to social research. In relation to the distinction between quantitative and qualitative research many reviews now exist in the literature of the social sciences, namely in marketing, management, sociology, and information systems (e.g. Bullock et al., 1992, Bryman 1988, Kuhn 1962, Calder 1977, Reichardt and Cook 1979, Sampson 1978, Wells 1974). Conducting present research applying 'science of method' seems that it is useful to review the conventional arguments on quantitative Vs qualitative. Hopefully the arguments will determine the direction or destiny of the study to be conducted.

To make a choice, one has to undertake the two concepts, the circumstances when they are applicable and their significance to this study. Quantitative methods most commonly are i) the sample survey or experimental design ii) respondents selection on some statistically representative basis, iii) the use postal survey or standardizing interviewing tools –most commonly structured questionnaire, iv) large sample size (Leather, 1987). Moreover, it implies the application of measurement or numerical approach to the nature of the issue under scrutiny (Bullock et al., 1992).

Qualitative methods, in contrast, most commonly are: i) focus group interviews or in-depth individual interviews ii) participant observation iii) open-ended, non directive or the use of unstructured questionnaire iv) and small number of sample size. It is often viewed as intensive or a micro perspective which relies on case studies or

evidence from individuals or particular situation (Bullock et al., 1992). Bryman (1988) argues that the terms, quantitative and qualitative research signifies more than ways of gathering data they are taken to denote divergent assumptions about the nature and purpose of research in the social sciences. To differentiate between the two paradigms, Reichardt and Cook (1979) report, “----- the quantitative paradigm is said to have a positivistic, hypothetico-deductive and natural science world view. In contrast the qualitative paradigms is said to subscribe to a phenomenological, inductive, holistic, subjective, process oriented and social anthropological world view.

Reiterating the last part of Reichardt and Cooks (1979) distinction, Deshpande (1983) points that the metaphor prevalent in the quantitative paradigm is that of natural science. Under the consideration of this paradigm researcher objectively develop a priori model and then derived some hypothesis from the model which are subjective to empirical test with some related closed questions prepared by the researcher where the respondents are within a specific boundary to provide the answer as researchers’ need to verify a priori model.

To Anderson (1983) these processes create an idealized notion of science the ultimate source of which is objectively certified knowledge. The natural world view of the scientific method leads its proponents (e.g. Hunt 1983) to believe that this science model is good science while any alternative must suffer by comparison (Mitroff, 1974). Literature in the philosophy, sociology, and history of science reveals that this canonical conception of science (i.e. natural science world view) cannot be supported (see Anderson, 1983). Therefore, another alternative metaphor, that of anthropology and sociology –adopted into the qualitative paradigm, has been developed by the

other researchers consider the perspective and view of the respondents or participants in that situation (e.g. Anderson 1986, Hirschman 1985, 1986, Mitroff 1974).

Johnson & Christensen (2008) compared Quantitative and Qualitative research on the basis different criteria which depicted in Table-3.3

Table-3.3: charecteristics of Quantitative and Qualitative research

Criteria	Qualitative Research	Quantitative Research
Purpose	To understand & interpret social interactions.	To test hypotheses, look at cause & effect, & make predictions.
Group Studied	Smaller & not randomly selected.	Larger & randomly selected.
Variables	Study of the whole, not variables.	Specific variables studied
Type of Data Collected	Words, images, or objects.	Numbers and statistics.
Form of Data Collected	Qualitative data such as open-ended responses, interviews, participant observations, field notes, & reflections.	Quantitative data based on precise measurements using structured & validated data-collection instruments.
Type of Data Analysis	Identify patterns, features, themes.	Identify statistical relationships.
Objectivity and	Subjectivity is expected.	Objectivity is critical.

Subjectivity		
Role of Researcher	Researcher & their biases may be known to participants in the study, & participant characteristics may be known to the researcher.	Researcher & their biases are not known to the participants in the study, & participant characteristics are deliberately hidden from the researcher (double blind studies).
Results	Particular or specialized findings that are less generalizable.	Generalized findings that can be applied to other populations.
Scientific Method	Exploratory or bottom-up: the researcher generates a new hypothesis and theory from the data collected.	Confirmatory or top-down: the researcher tests the hypothesis and theory with the data.
View of Human Behavior	Dynamic, situational, social, & personal.	Regular & predictable.
Most Common Research Objectives	Explore, discover, & construct.	Describe, explain, & predict.
Focus	Wide-angle lens; examines the breadth & depth of phenomena.	Narrow-angle lens; tests specific hypotheses.
Nature of Observation	Study behavior in a natural environment.	Study behavior under controlled conditions; isolate causal effects.

Nature of Reality	Multiple realities; subjective.	Single reality; objective.
Final Report	Narrative report with contextual description & direct quotations from research participants.	Statistical report with correlations, comparisons of means, & statistical significance of findings.

Source: Johnson & Christensen (2008:34)

The traditional arguments on quantitative Vs qualitative research have provided almost an accepted wisdom about the relative strengths and weakness of each method. But selection of an appropriate method for the study depends on the research area, field of the study, and study objectives. The next section describes about the field of the study and the appropriateness of the research methods for this study.

3.3 Research methods in Information Systems

The field of **Information Systems (IS)** has evolved for more than three decades. Although many schools of thought have emerged and even become well established, few historical analyses of research paradigms and methodologies have been undertaken in this field. In Niehaves (2005), Information Systems research can be seen as rich embroidery of diverse research methods, research paradigms, and research approaches (Chen & Hirschheim 2004; Wade & Hulland 2004). Different academic disciplines and different research communities tend to develop those distinct research methods, paradigms and research approaches (Chen & Hirschheim 2004). Many disciplines, such as information systems, business administration,

information science, sociology, psychology, etc., contribute to studying the development, implementation, and use of information systems and information technology in organizations (Fitzgerald & Howcroft 1998; Hevner et al. 2004; Wade & Hulland 2004). The discussion of research paradigms has influenced the discourse in the IS discipline (Burrell & Morgan 1979; Chen & Hirschheim 2004; Hirschheim & Klein 1989; Iivari 1991). Paradigms are in many cases unconscious and not explicated by the individual who is conducting research. IS research is multi-disciplinary and multi-national. Also the contribution of many different (national) research communities to the ‘international’ discussion in IS research is very rewarding. Chen & Hirschheim (2004) conducted an empirical study analyzing eight major IS publication outlets between 1991 and 2001. The examination of 1893 articles published in American journals and European journals shows that, on a methodological level, 49% of the articles published in the European journal applies qualitative methods while 71% of the articles published in the American journal apply quantitative methods. This methodological diversity in IS research indicates research methods applied in IS not uniform in different culture which are actually based on research paradigm and nature of the previous research trends.

Table -3.4: Methodological diversity in IS research

		European Journal	American Journal
Methods	Quantitative	40%	71%
	Qualitative	49%	29%
	Mixed	11%	09%
Total		100%	100%

Source: Niehaves, (2005:3)

In recent IS literature, an extensive discussion of epistemological research paradigms, such as positivism and interpretivism, and their assumptions can be found (Burrell & Morgan 1979; Chen & Hirschheim 2004; Fitzgerald & Howcroft 1998; Hirschheim & Klein 1989; Iivari et al. 1998; Lee 1991; Monod 2003; Weber 2004). Epistemological assumptions were considered alongside ontological and methodological ones, those mainly taken into account in order to identify and to describe distinct paradigms as well as to differentiate them from each other. Especially positivism and interpretivism have been intensively discussed against the background of (their) epistemological assumptions for understanding which method is appropriate for MIS research.

Myers & Newman (2007) examined the research methods section of qualitative studies from four leading IS research journals. These are **MIS Quarterly (MISQ)**, **Information Systems Research (ISR)**, **Journal of AIS (JAIS)**, and **Information and Organization (I&O)**. In the above mentioned journal, among the research methods section of qualitative studies showed that about 69% of the study used single technique like in-depth interview or focus group discussion or observation method rather multiple technique (Myers & Newman (2007)).

An overview of MISQ (2001-2005) showed for clear understanding of qualitative interview technique.

Table – 3.5 Overview of MIS quarterly articles on qualitative interview 2001-2005

Article	2 # Subject/ #Interviews	3 Period of Interviews	4 Interview model	5 Descriptio n of process	6 Type of interview	7 Recording technique	8 Thick/Thin description	9 Anon/ revealed	10 Feed back
Ang & Slughter (2001)	12/12	Not reported	None	Some	SS*	Taped and transcribed or extensive notes	Thin	Anon	Not reported
Lamb & King (2003)	48/48	Not reported	Not reported	Interview instrument included	SS	Taped and transcribed	Some thick	Anon	Not reported
Subramani (2004)	27/27	Not reported	Not reported	Not reported	SS	Not reported	Thin	Anon	Not reported
Garud & Kumaraswamy (2005)	?/56	Over a three period	None	Some	SS	Taped and transcribed	Some thick	Anon	Yes
Baudry & Pinsonneault (2005)	17/17	Not reported	None	Some	SS	Taped and transcribed	Some thick	Anon	Not reported
Martensson & Lee (2004)	?/105	Ten years.	“Reality Constructing, meaning-making occasions”	Some	SS	Hand-written notes typed up afterwards	Thin	Anon	Yes

Source: Myers & Newman, 2007:17(1):8

*SS = Semi Structured

Above table shows that among the 265 articles published in the MISQ have used semi structured interview method rather FGD or in-depth interview which also indicates previous research methods in MIS followed previous research trends in selecting research design.

3.4 Research Gaps in previous study

The methodological literature on previous study has failed to establish a generalized research method with an appropriate research approach to conduct MIS research.

Author of the current study identified the following research gaps:

- i) Firstly, previous study only consider previous research trend in selecting research method and tools.

- ii) Secondly, previous study not considers data availability in the context of developing and developed country in selecting research method and tools.
- iii) Thirdly, previous study not focused on the increasing of data reliability and validity by considering multiple tools and techniques in case of qualitative method.
- iv) Finally, previous study not considered impact of the heterogeneity of the participant's characteristics like educational background, technical knowledge, experiences in using IS etc. in selecting interview techniques.

The author of the current study tries to minimize the methodological gap and develop a generalize method for MIS research. The next section discusses about appropriate research methods and approaches for the current study and the following section discussed about the justification of the selection of this method.

3.5 Methodology of the Study

The exact number of different research methodologies that have been applied in the MIS field is unknown. The selection of an appropriate methodology requires the evaluation of many factors and the determination of how well they work together in supporting the research objectives.

Most of the previous research study focused on qualitative or quantitative or mixed method based on the research paradigm or the nature of the study, which is developed as a common method, but the previous study failed to develop a generalized method which can be changed on the basis of research questions, objectives and study field. For this reason, research method in IS in USA mostly on quantitative while in Europe, mostly on qualitative (Burrell & Morgan 1979; Chen & Hirschheim 2004; Hirschheim

& Klein 1989; Iivari 1991) which are considered as leading literature in the field of IS and MIS research (Stone 1978; Kaplan 1964; Baisley and Clover 1979; and Buckley et al. 1976)

To ensure the appropriateness of the study at the MIS practice level in the banking sector, the methodology for the present study is designed by considering the gaps of the previous literature on methodology and research questions, objectives and study field of the present study.

3.5.1 *The method used in the study*

Author of the present study selected qualitative research method for conducting this study as a research method with considering case study as an appropriate research approach with multiple techniques for collecting data from the source. This can be shown in following diagram:

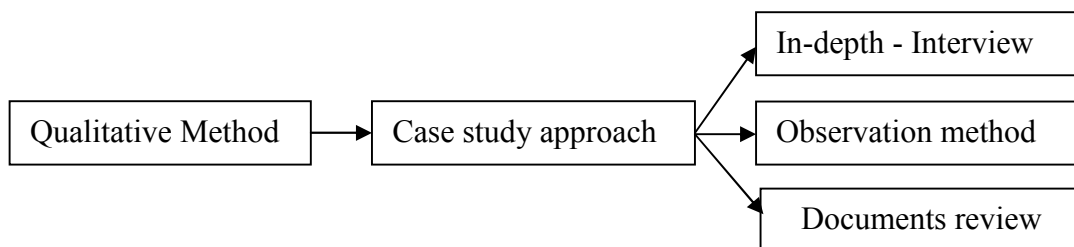


Figure: 3.6 Methodology of the study

Source: The Author

3.5.2 *Justification of the research framework*

This research framework has been developed to conduct this study. It was developed considering the gaps in previous research methodology, reality and context of the field where from data has been collected. Moreover, intellectual interplay between

previous research, context and initial understanding of the field helps the researcher to develop this framework. This framework emerged from the field and experiences that helps the researcher to address the issues relating to the emerging area of the study such as practices of MIS in the banking sector of Bangladesh. This framework can also be used to conduct study in the emerging area.

This research framework is an addition in the field of research methodology because it was grounded in field.

3.5.3 Selection a case and criterion for selecting a case

It has been argued by the researchers that a case can be a firm, a group of organizations, an institution, a group of people such as consumer or even an individual or an event (Gumesson 1991, Yin 1990). This study considered a bank or a banker individually a case, but the researcher interest is to explore practices of MIS in development, decision making, and implementation at the different level of the banking organization, therefore jointly a bank and bankers were considered as a case. Smith (1990) argues that there is no optimal way to decide the number of cases. The researcher using qualitative methods and especially case studies have the experience that as each case progressed, as each interview was conducted, the data were conformed to research expectations. This procedure is referred to as “saturation” of data (Glasser and Strauss, 1967). When saturation is achieved, the researcher may claim to have a sufficient number of cases.

By considering the nature and depth of study and the time and financial considerations, two cases were studied, each with multiple interview with “Key executives” who those are directly involved in designing MIS, using MIS in decision making, operations and implementing MIS and also those who are the key decision

makers but may not be IS educated and it is hoped that the data required for the study can be achieved.

3.5.4 Selection process of case

Case selection or sampling is the vital question when multiple case studies are used for research (Voss et al., 2002). So, in case research, we often build a sample of cases by selecting cases, according to different criteria (Eisenhardt 1989, Yin 1990). When building theory from case studies, case selection using replication logic rather than sampling logic should be used (Voss et al., 2002).

To satisfy the purpose of the research, this study considered the following criterion for selecting a case (Islam, 2005):

- i) Data required for the particular study
- ii) Demographic, economic, and social criteria can be a basis of practicality of the study

Considering these two criteria author of the present study identified the following basis for selecting case studies for the present study on the basis of access:

Bank(s):

Bank (i) which performing business transactions daily with its national and international clients. (ii) Out of 49 (Forty nine) banks, two banks were selected as a case for this study and one from each category (NCBs & PCBs) which are using IS in their operations (iii) and geographically located corporate office in Dhaka .

Bankers (Management people):

Bankers holding top position including all levels from the selected banks: (a) Management executive (Managing director or deputy managing director or CEO) (b) MIS executive (if any) or responsible manager of IT department or System designer (c) Operational executive who monitors and control operational activities of the bank. (d) Branch manager whose branch has online or IT based operation.

Sample size:

In each case, at least one from each category other than branch manager, but total five and ten branch managers were selected based on judgmental sampling. So, the sample size was thirty (30).

Table – 3.7: Distribution of participant in in-depth interview

Type of participants	First Case	Second Case
Managing director or deputy managing director or CEO	02	02
MIS executive/s	01	01
Operational executive/s	02	02
Branch Manager	10	10
Total	15	15

Source: The Author

3.5.5 *Sources of Data*

Despite the study is exploratory, data were collected from both primary and secondary sources.

3.5.5.1 *Sources of Primary data:*

The study is an exploratory one which depends on the field based primary data. Primary data are collected from the participants through in-depth interview using guideline questionnaire. Data also collected by the researcher himself through observation method from the field study in head office level and branch level of the bank, which is considered as a case of this research.

3.5.5.2 *Sources of secondary data:*

This study also used secondary data. The study mainly collected secondary data from reviewing documents related to research objectives from internal and external reports and documents. The other sources of secondary data are related books, articles, thesis, website, newspaper, publications of the commercial banks, publications of the Bangladesh bank, Annual report of the bank, different brochure of the banks, website of the banks, the website of the central bank, Bangladesh bank guidelines, internal and external report of the banks, and other sources. The rich library of the Dhaka University, Shahjalal University of Science and Technology and online library of the foreign universities also used for data collection.

3.5.6 Tools of Data Collection

Different tools and techniques are used for collecting data in order to achieve objectives of the study, which is depicted in the method used in the study section (3.5.1). All these three techniques used for collecting data in this study, but in-depth interview and observation method are highly emphasized.

3.5.6.1 In-depth interview:

The main tools for collecting data in this study have used individual in-depth interviews. However, data were collected using an interview guideline. All the thirty (30) interviews were conducted by the researcher himself. The researcher first ensures confirmation from the interviewee about the time schedule of the interview and it also reconfirm with interviewee before the day of the interview. At the interview session researcher/interviewer used a voice recorder to record the complete interview. Participants of in-depth interview are the top management people and the branch managers of the banks.

3.5.6.2 Observation method:

Observation is one of the popular qualitative methods of data collection. Through this method, it is possible to gather practical data from field level directly by the researcher. In this study author of the present study collected data from two banks one is Agrani bank Ltd. (Case one) and other is Mercantile Bank Ltd. (Case two) from the period of May 2011 to April 2012. At that time period researcher has visited banks physically and observed the practices of MIS in the bank directly. Based on the observation, researcher has taken notes considering research objectives and the dimension of the theoretical framework of MIS practices in the bank. Finally, collected data were presented in the form of narrative texts, quotation, table, graphs etc.

3.5.6.3 Documents Review:

Document review is a way of collecting data by reviewing existing documents. The documents are internal as well as external. In the period of observation, Researcher collected different documents of the bank related to MIS practices such as IT infrastructure of the bank, MIS report, operational performance report etc. Collected documents were hard copy or electronic. These documents have reviewed by the author to support logical explanation of collected data through in-depth interview and observation method.

3.5.7 *Selection of Study Area*

To collect qualitative data, Banks were selected as case which has corporate office in Dhaka but interviewee has selected from Dhaka and Sylhet city. One of the crucial reasons for selecting a bank, bankers from the Dhaka and Sylhet city is researcher's convenience, since researcher's research working place in Dhaka and job place is Sylhet so communication, transportation is so good in Dhaka and Sylhet. All these interviewee, other than top management selected based on judgmental sampling.

Table – 3.8: Distribution of interviewee and location of the organization

Type of office	Dhaka city		Sylhet	
	ABL	MBL	ABL	MBL
Head office	05	05	-	-
Branch office	08	09	02	01
Sub Total	13	14	02	01
Total	27		03	

Source: The Author

3.5.8 *Techniques of Data Analysis*

The collected data carefully reviewed, edited, studied, and scrutinized on the basis of research questions and objectives. Qualitative data collected from primary and secondary sources are analyzed through inductive and deductive method and logical interpretation.

Qualitative data analysis is usually seen as extremely complicated since a very few number of researchers has discussed this issue (e.g., Miles and Huberman 1984, Griggs 1987). Eisenhardt (1989) suggests two steps in analysis: analysis within case data, and searching for cross case patterns. However the standard method of data analysis is not available for the qualitative researchers; at least as the quantitative researchers have different standard statistical tools such as standard deviations, indices, correlation coefficients, regression, factor analysis etc. Nevertheless, Griggs (1987) suggests the following three systematic steps for qualitative data analysis, which is used in this research:

1. Data reduction

- i. Summarizing and paraphrasing
- ii. Selecting some things and excluding others
- iii. Subsuming specific instances into larger patterns
- iv. Quantification into numbers and ranks

2. Data display

- i. Narrative text
- ii. Quotations

- iii. Tables, matrices, graphs, etc.
3. Drawing and verifying conclusions
 - i. Nothing regularities and patterns
 - ii. Deriving explanations
 - iii. Deriving causal flows and preparation
 - iv. Rechecking data
 - v. Reviewing findings among colleagues
 - vi. Looking for replicate findings

The author of the study collected data from different sources using different techniques of data collection (discussed in the previous section). After collection of interview data, these are transcribed in the form of interview script and finally presented in descriptive form (presented in Chapter -five). Observational data also presented in the same form. **In the first stage**, Author of the study firstly summarizes the statement and paraphrasing them. Among the statements have selected something and excluded others to organize ideas and concepts. Finally, subsuming specific instances into larger patterns and quantified them into numbers and ranks.

In the second stage, After reducing data, this study presented data logically in the form of narrative text, quotations, table, figure, chart and graphs which are related to the research objectives and the dimension of the theoretical framework.

In the third stage, the author of the study presented final findings in the form of conclusions which have drawn considering data validity and reliability. So the conclusions has drawn considering irregular outcome of the study with proper

explanation and findings also rechecked for repetition of data and findings has taken before drawing conclusion.

3.6 Justification of the choice of methodology for this research

The main objective of the study is to explore and explain the MIS practices with the deep insight understanding strategic essence in the banking sector of Bangladesh (detail in Chapter -One). It appears that relevant to the objectives, “what”, “how” & “why” questions are to be posed for which attitudinal and behavioral data are more important than factual one. To accumulate such data, it appears that a qualitative method is more appropriate than a quantitative method. Moreover, the interest of this study is concerned not to ‘test’ or ‘verify’ the theories, but to ‘generate’ the multiple theories as their potentiality observed in the literature (Chapter-Two) in obtaining adequate knowledge for pre-understanding (Gummesson, 1991) of the research issues. Literature suggests that for achieving such objectives, qualitative method is scientifically appropriate and only viable way of generating the theories. As Bonoma (1985) asserts that when researchers’ interests or phenomenal requirements dictate theory generating rather than verification or extension, the tasks of description, classification and comparison become relevant. To do such relevant tasks the present research directs to apply the qualitative method.

Offering a definition in consistent with popular perceptions of qualitative research Gordon& Langmaid (1988) state that ‘It is centrally concerned with understanding things rather than measuring them’. Baker (1991) observes that one is concerned to know ‘why’ people behave in a particular way and inference from observed and experimental data is notoriously weak in doing this statistically. Research by

qualitative methods, however, can provide, if properly conducted, a “deep understanding” a fuller contextual sense of the phenomena under study (Miles, 1979).

Furthermore, Information systems research has some special characteristics where qualitative research may give appropriate results. Kaplan & Maxwell (1994) describe, when a researcher or evaluator wishes to study issues that are not easily partitioned into discrete entities, or to examine the dynamics of a process rather than its static characteristics, qualitative methods are more useful than solely quantitative ones. The strengths of qualitative research methods lie in their usefulness for understanding the meaning and context of the phenomena studied, and the particular events and processes that make up these phenomena over time, in real-life, natural settings (Maxwell, 1996). When evaluating computer information systems, these contextual issues include social, cultural, organizational, and political concerns surrounding an information technology; the processes of information systems development, installation, and use (or lack of use); and how all these are conceptualized and perceived by the participants in the setting where the study is being conducted (Kaplan & Shaw, 2004).

Thus, qualitative methods are particularly helpful for any of the following:

- i. To determine what might be important to measure, why measured results are as they are, or if the subject of study cannot be measured easily.
- ii. To understand not only what happened, or what people are responding to, but why; to understand how people think or feel about something and why they think that way, what their perspectives and situations are and how those influence what is happening; to understand and explore what?

- iii. A technology (such as a banking information system) or practice (such as using a computer to access health information) means to people.
- iv. To investigate the influence of social, organizational, and cultural context on the area of study, and vice versa.
- v. To examine causal processes, and not simply what the causal relationships exist.
- vi. To study processes as they develop and emerge, rather than in outcomes or impacts;

There are five main reasons for using qualitative methods in evaluating MIS practices in the banking sector:

- i. Understanding how a system's user perceive and evaluate that system and what meanings the system has for them Users' perspectives generally are not known in advance. It is difficult to ascertain or understand these through purely quantitative approaches. By allowing researchers to investigate users' perspectives in depth, qualitative methods can contribute to the explanation of users' behavior with respect to the system, and thus to the system's successes and failures and even of what is considered a "success" or "failure" (Kaplan & Shaw, 2004).
- ii. Understanding the influence of social and organizational context on systems use Computer information systems do not exist in a vacuum; their implementation, use, and success or failure occur in a social and organizational context that shapes what happens when that system is introduced (Rogers 2003, Kaplan 2001). As is true for users' perspectives, the researcher usually does not know in

advance what all the important contextual influences are. Qualitative methods are useful for discovering and understanding these influences, and also for developing testable hypotheses and theories.

- iii. Investigating causal processes: Although experimental interventions can demonstrate *that* causal relationships exist, they are less useful in showing *how* causal processes work (Cook 2002, Shadish et al. 2002, Maxwell 2004). Qualitative methods often allow the researcher to get inside the black box of experimental and survey designs and to discover the actual processes involved in producing the results of such studies. Qualitative research is particularly useful for developing explanations of the actual events and processes that led to specific outcomes (Miles & Huberman, 1994) or when causality is multidirectional and there is no clear effect or impact of one factor on any specific outcome (Kaplan & Shaw, 2004). In this way, qualitative methods can yield theories and explanations of how and why processes, events, and outcomes occur (Markus & Robey, 1988).
- iv. Providing formative evaluation that is aimed at improving a program under development, rather than assessing an existing one, although quantitative and experimental designs often are valuable in assessing outcomes, they are less helpful in giving those responsible for systems design and implementation timely feedback on their actions. Qualitative evaluation can help both in system design as well as in studies of system use (Kaplan and Shaw, 2004). Using qualitative methods can help in identifying potential problems as they are forming, thereby providing opportunities to improve the system as it develops. These evaluations also allow for varying and changing project

definitions and how the system and organization are mutually transformative, thereby enabling learning by monitoring the many experiments that naturally occur spontaneously as part of the process of implementation and use (Kaplan and Shaw, 2004).

- v. Increasing the utilization of evaluation results Administrators, policy makers, systems designers, and practitioners often find purely quantitative studies of little use because these studies do not seem related to their own understanding of the situation and the problems they are encountering. Qualitative methods, by providing evaluation findings that connect more directly with these individual perspectives, can increase the credibility and usefulness of evaluations for such decision makers (Patton, 2001).

In addition, as concern to the research issue – ‘dimension of practicing MIS’, many puzzling data may be observed in relation to interaction with corporate executives, employees, and IT infrastructures. Brannen (1992) remarks that qualitative research is more suitable when clarification of puzzling findings which require more detailed investigation.

Finally, the study was conducted in the context of developing country like Bangladesh. With a number of practical experiences of conducting research in different developing countries, Goodyear (1982) asserts that the qualitative research has a special role value in assessing different problems in developing countries. He recommends using qualitative research in a developing country for the following reasons:

- i. Qualitative research helps to paint a picture of life in the developing country if someone has no pre understanding about the lifestyle of the people of such a country,
- ii. Qualitative research is necessary in developing countries because of their scanty data bank. Moreover, qualitative research can help to establish certain basic dimension about an unfamiliar, uncharted market such a developing country situation,
- iii. In developing countries, information, even at official levels (viz. the local Statistic Office) is often distorted by greed and laziness, and sheer ineptitude. For data to be collected in an impersonal and objective manner assumes that the collectors of that data subscribe to the concept of the value of knowledge for its own sake. This seems to be rarely true in the context of developing country.

Here the first point is not necessary since the researcher conducting the research in his host country where he born and grown up and thus he familiar with the lifestyle of the people, Moreover, the interest of the present research is an organizational research but the rest three points are in consideration. Because the Bangladeshi context practicing MIS in service organization, especially in the banking sector is not so familiar to the bankers, clients and some cases management also. Goodyear's last contention in relation to information from official documents also a case in Bangladesh.

Moreover, after gaining the theoretical knowledge from the literature on developed countries and developing some hypotheses based on such literature and try to test in the context of developing country, obviously it will be a misleading way of conducting research since cultural, environmental, economical and political

conditions of a developing country are different from developed one and they may affect the whole business practice. For the present study in relation to research topic due to absence of literature on developing countries researcher has to review the bulk of literature on developed Countries. Thus the researcher has obtained an adequate understanding of the research issue but felt that in the context of Bangladesh situation the theory generation can be more appropriate than theory testing. Therefore, qualitative research approach has been considered to pursue the current study. Indeed, all the above arguments from Baker (1991), Bonoma (1985), Bonoma et al. (1977), Brannen (1992), Gordon and Langmaid (1988), Goodyear (1982), Miles (1979) serve as the justification for choosing and using a qualitative research approach for this research.

One of the qualitative methods has been suggested by the researchers is the case study approach (e.g.. Banana 1985, Marshall and Rossman 1989, Smith 1990. Yin 1981a, 1981b, 1990). Yin (1990) argues that, case studies are the preferred strategy when “what”, “how” and “why” questions are being posed when the investigator has little control over events, and when the focus is on some contemporary phenomena within some real life context. Handfield and Melnyk (1998) have portrayed as in Table 3.9 to the relevant situation for case study research.

Table-3.9: Matching research purpose with methodology (Handfield and Melnyk, 1998)

Purpose	Research question	Research structure
<i>Exploration</i> Uncover areas for research and theory development	Is there something interesting enough to justify research?	In-depth case studies unfocused, longitudinal field study
<i>Theory building</i> Identify/describe key variables Identify linkage between variables	What are the key variables? What are the patterns or linkage between variables? Why should this	Few focused case studies In depth field studies Multi-site case studies

Identify “why” this relationship exist	relationship exist?	Best-in-site case studies
<i>Theory testing</i> Test the theories develop in the previous stages Predict future outcomes	Are the theories we have generated able to survive the test of empirical data? Did we get the behavior that was predicted by the theory or did we observe another anticipated behavior?	Experiment Quasi-experiment Multi case studies Large case sample of population
<i>Theory extension/refinement</i> To better structure the theories in light of the observed results	How the generalisable is the theory? Where does the theory apply?	Experiment Quasi-experiment Multi case studies Large case sample of population

Source: Adapted from Voss et al. (2002): 22(2):198

In addition, Meredith (1998) cites three outstanding strengths of case research forward by Benbasat et al. (1987):

- i) The phenomenon can be studied in its natural setting and meaningful, relevant theory generated from the understanding gained through observing actual practice.
- ii) The case method allows the questions of why, what, and how to be answered with a relatively full understanding of the nature and complexity of the complete phenomenon.
- iii) The case method lends itself to early, exploratory investigations where the variables are still unknown and the phenomenon not at all understood.

For the study to be undertaken, based on the earlier mentioned research objectives and to explore the phenomena or concepts embraced in those objectives. As such, qualitative case study research is appropriate for the present study. To support case

study research strategy for the study undertaken, one can consider the argument that has been put forward by Marshall and Rossman (1989), and Yin (1990). Here, it is hoped that the case study will help to: (a) discover important variables, (b) identify plausible causal networks shaping the phenomena for generating the theory, and (c) get the answer of “what”, “how” and “why” question in particular. The next section described the reasons for using case study in details.

3.7 Justification for using case study approach

Case study research is the most common qualitative method used in information systems (Orlikowski and Baroudi, 1991; Alavi and Carlson, 1992). Although there are numerous definitions, Yin (2002) defines the scope of a case study as follows:

A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident (Yin 2002).

Clearly, the case study research method is particularly well-suited to IS research, since the object of our discipline is the study of information systems in organizations, and "interest has shifted to organizational rather than technical issues" (Benbasat et al. 1987).

Case study research can be positivist, interpretive, or critical, depending upon the underlying philosophical assumptions of the researcher. Yin (2002) and Benbasat et al. (1987) are advocates of positivist case study research, whereas Walsham (1993) is an advocate of interpretive in-depth case study research.

Yin (1990) contends that as a research study, the case study is used in many settings, including:

- i. policy, political science, and public administration research;
- ii. community psychology and sociology;
- iii. organizational and management studies;
- iv. city and regional planning research, such as studies of plans, neighborhoods, or public agencies; and
- v. the conduct of a large proportion of dissertations and theses in the social sciences.

The present research is particularly one of the organizational and management studies. The researcher interested to study the organizations' (Banking organization) for preparing a dissertation broadly for the subject of Management Information Systems (MIS) and in particular for practicing of MIS, and what belongs to the social sciences? As such, the use of case study in this study is similar to many other settings. One may consider this reason as a nebulous one. Therefore, the more healthy reasons are presented in the following discussion.

There is no universal theory and model has been established in relation to present research issue of the researcher as well as the variables which can accurately describe the practices of MIS and factors affecting the practices of MIS in the organization. In addition, the literature about the business practice of developing countries and practices of MIS in banking organization are very limited and in the context of Bangladesh is not different. Elsewhere Yin (1981) argues that as a research strategy, a case study is an empirical inquiry that attempts to examine (a) a contemporary phenomenon in its real life context, especially when (b) the boundaries between phenomenon and context are not clearly evident, and in which (c) multiple sources of evidence are used. Bonoma (1985) states that a case study is a description of a management situation which relies on multiple data sources, Mitchell (1983) asserts

the case study is a detailed examination of an event (or series of related events) which the interpreter believes (or exhibits) the operation of identified general theoretical principle. However, research interest is to describe practices of MIS in the banking sector of the Bangladesh (such as its application and use in decision making of strategic and mid level, operational activities in lower level). To this end, it has been observed that data is necessary from multiple sources for the multiple management people such as managing director, manager of different level (i.e. MIS manager, operation manager, customer relations manager) is directly involved in such MIS practicing. Therefore, all above arguments given by Bonoma (1985), Benbasat et al. (1987), Orlikowski & Baroudi (1991), Alavi & Carlson (1992), Yin (1981,1990,2002), Smith (1990), Walsham (1993), Mitchell (1983) endorse the justification for choosing and using the case study approach for the present study.

3.8 Justification of the process of Data Collection

In case study research data can be collected frequently from both primary and secondary sources (Smith, 1990). An underlying principle in collection of data in case research is that of multi method, the use and combination of different methods to study the same phenomenon. Such methods can include interviews, questionnaires, direct observations, content analysis of documents, and archival records. Reliability of data will also be increased if multiple sources of data on the same phenomenon are used (Voss et al. 2002).

Many researchers argue that qualitative data are often collected via depth interviews (e.g. Leather 1987, Tull & Hawkins 1990). Depth interviews generally conducted one to one or one to many. It can involve one respondent and one interviewer or they may involve an interviewer and a small group. The first one is termed individual in-depth

interviews and the later one is called focus group interview. There are other types of data collection methods such as Observation, projective technique, enabling technique. However, in a case study research data are required from multiple sources of evidence (Yin 1990). Yin suggests that case study research focused six sources of evidence for data collection. The sources are: documentation, archival records, interviews, direct observations, participant observation and physical artifacts. But, the author of the present study has main interest of this research is to find the current practices of MIS in the banking business as well as others organization, how they evaluate its performance, what are the problems they faced in practicing MIS, what are the factors influencing the practices of MIS. The above mentioned multiple sources may perfectly help to find this answer, but may not be feasible for technical and practical reasons. For example, it is highly possible that documentation system and archival records system in developing countries like Bangladesh is not so strong, even government statistical office sometimes cannot provide the adequate documents. Many of the private organization maintained archival records but for their strategic issue, it is not easy to access their all documents or archival records. Similarly, participant observation also depends on the access facility to the organization as well as to the particular event which may be perceived as interesting by the researcher. On the other hand, physical artifacts cannot provide the actual reasons for "why" as the respondents perceive, since it is totally depends on researcher own perception, hence interpretation. Despite the fact is that these methods can be a powerful tool in data collection especially in a situation when the respondents verbally cannot properly communicate. Therefore, the interview technique is chosen as the main primary source of data collection for the present study. Among the other sources of data collection direct observation, documentation also used to collect evidence from the

case research. Though the lack of documents and archival records of Bangladesh society, this is the likelihood that one would find some current documents (Khan, 1991). Such data can be considered as a secondary or ancillary subject to availability and opportunity to substantiate evidence collected from interviews.

3.8.1 Justification of Individual Interview as a technique of Data collection

In information systems research mainly conducted two types of interviews are used for data collection are in-depth and Focus group discussion with a semi structured or unstructured interview (Myers & Newman, 2007). From the in-depth interviews (individual) and focus group, the in-depth individual (person-to-person) interview technique will be used for the current research.

Robson and Foster (1989) argue that the individual interview comes into its own under certain circumstances. They maintain, "When cause barriers, inhibitions, and intimidation, the individual interview is needed". Myers & Newman (2007) contend that the qualitative interview is treated as unproblematic in the IS research literature and in many Ph.D programs. The qualitative interview is essentially taken for granted and seen as a relatively straightforward means of gathering data. Most IS research articles that report on the use of interviews simply state how many interviews were conducted, who conducted them, and who the interviewees were. For the present study author need to take individual opinion and experience in relation to practices of MIS in decision making, operations and other activities for smooth operation and customer oriented services in the banking business. It is highly possible a party wants to say something about their counterpart, but not in front of them, the best way to know about such insight information is in-depth individual interview rather than any forms of group discussion. Thus, it appears that here individual in-depth interviews

are appropriate technique. However, data will be collected using an interview guideline. Although many researchers recommend open-ended interview, but in practice the interview guide provides a discipline to think through the likely responses to the questions and to rehearse the ways into topics that are unlikely to be raised spontaneously by respondents (Robson and Foster, 1989).

Interview data can be accumulated by taking notes or using a tape-recorder. The first way has been criticized that the taking of accurate notes in an interview requires skillful shorthand, an angle mind to ask questions, prompt, listen and transcribe all at the same time (Mitchell, 1993). While exactness of what people said is important, then taping will be a benefit (Yin, 1990). Mitchell (1993) contends that with professional interviewers and a reasonably sensitive subject area, the use of the tape recorder could have some small biasing effect. On balance, use of a tape recorder appears to be the preferable way of ensuring error-free data capture. For best results, it is suggested that interviews are recorded using a small discreet portable machine which is placed on the table with the transparent workings facing the researcher (Mitchell, 1993). This ideas minimum distraction for the interviewee as he or she is not able to see the turning tape and allows the researcher to check the tape is working and when the rape changing. So, accurate data can be collected through individual interviews and author of the study collected data through individual interviews using a tape recorder.

3.9 Summary

The chapter started with the meaning of 'method' and 'methodology'. A broad classification of methodology has been discussed in this chapter. Methodological review found that methodology used in the field of MIS research in the previous study focused on qualitative or quantitative or mixed method based on research paradigm or the nature of the study rather failed to develop a generalized method to conduct IS research. Author of the present study found this gap in previous studies which commits to conduct this study logically to minimize the existing methodological gap. Thus the author of the present study explains research methods for this study considering research questions, objectives and study field. Again the justification of the selection of the methods for this study explains throughout this chapter. Next two chapters (Chapter – 4: Scenario of the banking industry in Bangladesh and Chapter – 5: Description of the cases) of this dissertation presented the collected data from primary and secondary sources on the basis of methods discussed in this chapter.

Chapter – Four

Scenario of the Banking Industry in Bangladesh

4.0 Introduction

This chapter is designed to understand the scenario of the banking industry in Bangladesh. It is designed based on secondary data collected from different sources, considering the research methodology discussed in the last chapter to conduct the present study. The data in this chapter presented in the form of text, tables, figures, graphs in relation with research questions and objectives of the study. This chapter presented scenario of the banking sector of Bangladesh with a few sections which included development of the banking sector of Bangladesh, IT Infrastructure and banking sector of Bangladesh, MIS & IT Division, ICT application and banking sector of Bangladesh, Corporate executives and banking sector of Bangladesh, Employees of the banking sector of Bangladesh, and final summary of this chapter.

4.1 Development of banking sector in Bangladesh

Generally banking sector considered as a backbone of an economic infrastructure of the country. It is a very old institution that is contributing towards the development of any economy as well as plays a vital role of financial intermediary of any country like Bangladesh. The banking sector of Bangladesh expanded in terms of assets, number of customers, deposits, and credits in the last few years. Domestic private banks hold a majority of banking assets, and the role of state-owned commercial banks (SCBs) and specialized banks (SBs) has declined correspondingly (Financial Stability Report, 2012).

After liberation, the banks operating in Bangladesh (except those incorporated abroad) were nationalized. These banks were merged and grouped into six

commercial banks. Of the total six commercial banks, Pubali Bank Ltd. and Uttara Bank Ltd. Were subsequently transferred to the private sector with effect from January 1985. Rupali Bank was transferred as a public limited company since December 1986. The rest three States Owned Banks were operating as a public limited company from the quarter 'October- December'2007. The two Govt. owned specialized banks were renamed as a Bangladesh Krishi Bank and Bangladesh Shilpa Bank. In March 1987 Bangladesh Krishi Bank was bifurcated and another specialized bank emerged as Rajshahi Krishi Unnayan Bank (RAKUB) for Rajshahi Division. Bank of Small Industries & Commerce Bangladesh Ltd. (BASIC) started its operation as a private bank from September 1988. Later on BASIC was brought under direct control of the Government and was reckoned as a specialized bank with effect from June 1993. From July 1995 again the BASIC was categorized as a private bank. In 1997, the Government decided to treat this bank as a specialized bank again. So in this booklet, the BASIC has been treated as a specialized bank. BSB & BSRS merged and renamed a BDBL from the quarter January-March'2010. Standard Chartered Grindlays Bank was merged with Standard Chartered Bank during the Quarter (January-March, 2003). American Express Bank also merged with Standard Chartered Bank during the quarter (October- December, 2005). The Oriental Bank Ltd. An Islamic private bank was renamed as ICB Islamic Bank Ltd. from the quarter (April-June, 2008). Credit Agricole Indosuez, a foreign private bank is renamed as Commercial Bank of Ceylon Ltd. from the quarter (October-December, 2003). Shamil Bank is renamed as Bank Al-Falah Ltd. From the quarter (April-June, 2005). Arab Bangladesh Bank Ltd is renamed as AB Bank Ltd from the quarter (January-March, 2008) and Social Investment Bank Ltd is renamed as Social Islami Bank Ltd from the quarter (April-June, 2009). It is mentioned that First Security Bank Ltd has started its

operation according to Islamic Shariah from the quarter (January-March'2009), Shahjalal Bank Ltd. has started its operation according to Islamic Shariah from the quarter 'April-June'2001 and it is renamed as Shahjalal Islami Bank Ltd. from the quarter 'April-June'2004 and EXIM Bank Ltd has also started its operation according to Islamic Shariah from the quarter (July-September, 2004). The branches of foreign banks operating in Bangladesh are being treated as foreign private banks. Among all fourth generation Scheduled Banks "NRB COMMERCIAL BANK LTD.", "SOUTH BANGLA AGRICULTURE AND COMMERCE BANK LTD.", "MEGHNA BANK LTD.", "THE FARMERS BANK LTD.", and "UNION BANK LTD." have started their operation from the quarter April-June, 2013. "MIDLAND BANK LTD.", "MODHUMOTI BANK LTD.", "NRB BANK LTD." Have started their operation from the quarter July- September, 2013. It is mentioned that Union Bank Ltd. based on Islamic Shariah (SBS, 2013).

At present (as of 30th June 2013) there are 55 scheduled banks are operating in the banking industry of Bangladesh. The following table shows list of different categories of schedule banks in Bangladesh with their number of branches and the year of establishment:

Table - 4.1: Branches & Year of establishment of schedule banks operating in Bangladesh

	Types of bank	Year of Establishment	No. of Branch
A.	STATE OWNED BANKS: (04)		
	1. Agrani Bank Limited.	1972	902
	2. Janata Bank Limited.	1972	898
	3. Rupali Bank Limited.	1972	517
	4. Sonali Bank Limited.	1972	1204

B.	SPECIALISED BANKS: (04)		
	1. Bangladesh Krishi Bank.	1973	987
	2. Rajshahi Krishi Unnayan Bank.	1987	376
	3. Bank of Small Industries and Commerce Bangladesh Ltd.	1989	62
	4. Bangladesh Development Bank Limited.	2009	28
C.	FOREIGN PRIVATE BANKS: (09)		
	1. Standard Chartered Bank	1948	26
	2. State Bank of India	2001	8
	3. Habib Bank Ltd.	1976	5
	4. Citi Bank, N.A.	1995	4
	5. Commercial Bank of Ceylon Ltd.	2003	10
	6. National Bank of Pakistan	1994	4
	7. Woori Bank	1996	1
	8. The Hong Kong & Shanghai Banking Corporation Ltd.	1996	14
	9. Bank Al-Falah Ltd.	1997	7
D.	PRIVATE COMMERCIAL BANKS (Excluding Islamic Banks): (30)		
	1. AB Bank Ltd.	1982	89
	2. National Bank Ltd.	1983	175
	3. The City Bank Ltd.	1983	92
	4. International Finance Investment and Commerce Bank Ltd.	1983	65
	5. United Commercial Bank Ltd.	1983	139
	6. Pubali Bank Ltd.	1972	419
	7. Uttara Bank Ltd.	1972	220
	8. Eastern Bank Ltd.	1992	71
	9. National Credit and Commerce Bank Ltd.	1993	101
	10. Prime Bank Ltd.	1995	121
	11. Southeast Bank Ltd.	1995	94

12. Dhaka Bank Ltd.	1995	71
13. Dutch Bangla Bank Ltd.	1996	136
14. Mercantile Bank Ltd.	1999	93
15. Standard Bank Ltd.	1999	85
16. One Bank Ltd.	1999	73
17. Bangladesh Commerce Bank Ltd.	1999	43
18. Mutual Trust Bank Ltd.	1999	94
19. Premier Bank Ltd.	1999	86
20. Bank Asia Ltd.	1999	79
21. Trust Bank Ltd.	1999	82
22. Jamuna Bank Ltd.	2001	91
23. BRAC Bank Ltd.	2001	155
24. NRB Commercial Bank Ltd.	2013	17
25. South Bangla Agriculture and Commerce Bank Ltd.	2013	
26. Meghna Bank Ltd.	2013	7
27. Midland Bank Ltd.	2013	10
28. The Farmers Bank Ltd.	2013	18
29. NRB Bank Ltd.	2013	6
30. Modhumoti Bank Ltd.	2013	6
E.	PRIVATE COMMERCIAL BANKS (Islamic Banks): (08)	
1. Islami Bank Bangladesh Ltd.	1983	286
2. ICB Islamic Bank Ltd.	1987	33
3. Al-Arafah Islami Bank Ltd.	1995	110
4. Social Islami Bank Ltd.	1995	95
5. EXIM Bank Ltd.	1999	80
6. First Security Islami Bank Ltd.	1999	119
7. Shahjalal Islami Bank Ltd.	2001	92
8. Union Bank Ltd	2013	17

Source: The Author (Developed based on information of website of above mentioned bank). Visit date: 10th June, 2014.

Table - 4.2: Ratio of schedule bank Branches in banking sector

At the end of quarter	State Owned Banks			Specialized Banks			Foreign Banks	Private Banks			All Banks		
	Urban	Rural	Total	Urban	Rural	Total	Total	Urban	Rural	Total	Urban	Rural	Total
2012													
Jul.-Sep.	<u>1248</u>	<u>2207</u>	<u>3455</u>	<u>171</u>	<u>1254</u>	<u>1425</u>	<u>63</u>	<u>2001</u>	<u>1174</u>	<u>3175</u>	<u>3483</u>	<u>4635</u>	<u>8118</u>
	15.37%	27.19%	42.56%	2.11%	15.45%	17.55%	0.78%	24.65%	14.46%	39.11%	42.90%	57.10%	100%
Oct.-Dec.	<u>1253</u>	<u>2225</u>	<u>3478</u>	<u>175</u>	<u>1265</u>	<u>1440</u>	<u>65</u>	<u>2069</u>	<u>1270</u>	<u>3339</u>	<u>3562</u>	<u>4760</u>	<u>8322</u>
	15.06%	26.74%	41.79%	2.10%	15.20%	17.30%	0.78%	24.86%	15.26%	40.12%	42.80%	57.20%	100%
2013													
Jan.-Mar.	<u>1260</u>	<u>2232</u>	<u>3492</u>	<u>176</u>	<u>1284</u>	<u>1460</u>	<u>66</u>	<u>2079</u>	<u>1278</u>	<u>3357</u>	<u>3581</u>	<u>4794</u>	<u>8375</u>
	15.04%	26.65%	41.70%	2.10%	15.33%	17.43%	0.79%	24.82%	15.26%	40.08%	42.76%	57.24%	100%
Apr.-Jun.	<u>1262</u>	<u>2237</u>	<u>3499</u>	<u>176</u>	<u>1300</u>	<u>1476</u>	<u>66</u>	<u>2096</u>	<u>1290</u>	<u>3386</u>	<u>3600</u>	<u>4827</u>	<u>8427</u>
	14.98%	26.55%	41.52%	2.09%	15.43%	17.52%	0.78%	24.87%	15.31%	40.18%	42.72%	57.28%	100%
Jul.-Sep.	<u>1265</u>	<u>2238</u>	<u>3503</u>	<u>177</u>	<u>1308</u>	<u>1485</u>	<u>66</u>	<u>2122</u>	<u>1306</u>	<u>3428</u>	<u>3630</u>	<u>4852</u>	<u>8482</u>
	14.91%	26.39%	41.30%	2.09%	15.42%	17.51%	0.78%	25.02%	15.40%	40.41%	42.80%	57.20%	100%

Source: Banking Regulation and Policy Department, Bangladesh Bank.

Table -4.3: Banking sector at a glance

ITEMS	(Amount in Taka)	
	as on	
	30-09-2013	30-06-2013
Number of Banks	55	52
Number of Reporting Bank Branches (including Head office, Islamic Windows and SME Service Centre)	8,544	8,490
<u>DEPOSITS (Excluding inter-bank)</u>		
a) Total Deposits	5,806,529,800,000	5,721,076,800,000
Urban	4,750,217,000,000	4,690,168,300,000
Rural	1,056,312,800,000	1,030,908,500,000
b) Number of Accounts	62,512,093	61,212,175
c) Average Deposits per account	92,887	93,463
<u>ADVANCES (Excluding inter- bank)</u>		
a) Total Advances	4,315,769,200,000	4,248,044,700,000
Urban	3,880,998,700,000	3,813,784,000,000
Rural	434,770,500,000	434,260,700,000
b) Number of Accounts	9,696,210	9,662,958
c) Average Advances per account	445,099	439,622
<u>BANK CREDIT (Advances + Bills)</u>		
Ratio of Advances to Deposits	0.74	0.74
Ratio of Bank Credit to Deposits	0.78	0.79
Rate of Interest on Deposits(Weighted Average)*	8.42	8.43
Rate of Interest on Advances(Weighted Average)*	13.51	13.61
<u>SCHEDULED BANKS' INVESTMENT (Excluding inter-bank)</u>		
	1,474,290,000,000	1,424,598,900,000
<u>BORROWINGS FROM BANGLADESH BANK</u>		
	85,694,000,000	94,368,100,000

Source: Banking Regulation and Policy Department, Bangladesh Bank.

4.2 IT Infrastructure and banking sector of Bangladesh

In modern banking system, IT infrastructure is one of the important components of the total banking infrastructure. It could provide stable, predictable and appropriately scaled long-term support for infrastructure on the basis of robust banking principles. Electronic Banking is transforming the financial services industry through various impossible innovations. The quantity of cross-border trading and other financial activities is increasing geometrically make possible by technology. It has been made possible by technology, particularly information technology to generate, collect and process information about bank operation and bank customers efficiently and effectively. Application of technology in banking offers opportunity for reduction of both paper and people (Horseman, Michael J. 1979). IT infrastructure of the bank consists of Hardware resource, software resources, network resources, data resources of the bank. In banking sector, all the banks are fully or partially try to develop strong IT infrastructure for doing IT based operations which is now considered as a hub of competitive strength. The following table will show online banking status of the banking sector of Bangladesh.

Table: 4.4 –Status of online banking in the banking sector of Bangladesh

Types of bank	Full Online	Partly Online	Offline	Total
NCBs	0 (0%)	04 (100%)	0 (0%)	04 (100%)
PCBs	35 (83.3%)	06 (14.4%)	01 (2.3%)	42 (100%)
FCBs	09 (100%)	0 (0%)	0 (0%)*	09 (100%)
Total	44	10	01	55 (100%)
Percentage	80%	18.2%	1.8%	

* One specialized bank (Rajshahi Kriksi Unnayan Bank)

Source: The Author (Developed based on information of website of schedule banks).

Table: 4.5 – List of Online banking branches, web link, and ratio of online banking branched in banking sector of Bangladesh

	Types of bank	No. of Branch	No. of online branch	%	Web link
A.	STATE OWNED BANKS: (04)				
	1. Agrani Bank Limited.	902	200	22.17	http://www.agranibank.org
	2. Janata Bank Limited.	898	123	13.70	http://www.janatabank-bd.com
	3. Rupali Bank Limited.	517	31	6.00	http://www.rupalibank.org
	4. Sonali Bank Limited.	1204	1148	95.35	http://www.sonalibank.com.bd
B.	SPECIALSED BANKS: (04)				
	1. Bangladesh Krishi Bank.	987	28	2.84	http://www.krishibank.org.bd
	2. Rajshahi Krishi Unnayan Bank.	376	0	0	http://www.rakub.org.bd
	3. Bank of Small Industries and Commerce Bangladesh Ltd.	62	62	100	http://www.basicbanklimited.com
	4. Bangladesh Development Bank Limited.	28	28	100	http://www.bdbl.com.bd
C.	FOREIGN PRIVATE BANKS: (09)				
	1. Standard Chartered Bank	26	26	100	http://www.standardchartered.com/bd
	2. State Bank of India	8	8	100	http://www.statebankofindia.com
	3. Habib Bank Ltd.	5	5	100	http://www.habibbankltd.com
	4. Citi Bank, N.A.	4	4	100	http://www.citi.com/domain/index.htm
	5. Commercial Bank of Ceylon Ltd.	10	10	100	http://www.combank.net/bdweb/
	6. National Bank of Pakistan	4	4	100	http://www.nbp.com.pk
	7. Woori Bank	1	1	100	http://www.wooribank.com
	8. The Hong Kong & Shanghai Banking Corporation Ltd.	14	14	100	http://www.hsbc.com.bd
	9. Bank Al-Falah Ltd.	7	7	100	http://www.bankalfalah.com
D.	PRIVATE COMMERCIAL BANKS (Excluding Islamic Banks): (30)				
	1. AB Bank Ltd.	89	89	100	http://www.abbl.com
	2. National Bank Ltd.	175	N/A		http://www.nblbd.com
	3. The City Bank Ltd.	92	90	100	http://www.thecitybank.com
	4. International Finance Investment and Commerce Bank	65	65	100	http://www.ificbankbd.com

Ltd.				
5. United Commercial Bank Ltd.	139	139	100	http://www.ucbl.com
6. Pubali Bank Ltd.	427	427	100	http://www.pubalibangla.com
7. Uttara Bank Ltd.	220	220	100	http://www.uttarabank-bd.com
8. Eastern Bank Ltd.	71	71	100	http://www.ebl-bd.com
9. National Credit and Commerce Bank Ltd.	101	101	100	http://www.nccb.com.bd
10. Prime Bank Ltd.	121	121	100	http://www.prime-bank.com
11. Southeast Bank Ltd.	94	94	100	https://www.southeastbank.com.bd
12. Dhaka Bank Ltd.	71	71	100	http://www.dhakabank.com.bd
13. Dutch Bangla Bank Ltd.	136	136	100	http://www.dutchbanglabank.com
14. Mercantile Bank Ltd.	93	93	100	http://www.mblbd.com
15. Standard Bank Ltd.	85	85	100	http://www.standardchartered.com.bd
16. One Bank Ltd.	73	73	100	http://www.onebank.com.bd/
17. Bangladesh Commerce Bank Ltd.	43	N/A		http://www.bcbl-bd.com
18. Mutual Trust Bank Ltd.	94	94	100	http://www.mutualtrustbank.com
19. Premier Bank Ltd.	86	86	100	http://www.premierbankltd.com
20. Bank Asia Ltd.	79	79	100	http://www.bankasia-bd.com
21. Trust Bank Ltd.	82	82	100	http://www.trustbank.com.bd
22. Jamuna Bank Ltd.	91	91	100	http://www.jamunabankbd.com
23. BRAC Bank Ltd.	155	155	100	http://www.bracbank.com
24. NRB Commercial Bank Ltd.	17	17	100	http://www.nrbcommercialbank.com/
25. South Bangla Agriculture and Commerce Bank Ltd.	13	13	100	http://www.sbacbank.com/
26. Meghna Bank Ltd.	7	7	100	http://www.meghnabank.com.bd
27. Midland Bank Ltd.	10	10	100	http://www.midlandbankbd.net/
28. The Farmers Bank Ltd.	18	18	100	http://www.farmersbankbd.com
29. NRB Bank Ltd.	6	6	100	http://www.nrbbankbd.com
30. Modhumoti Bank Ltd.	6	6	100	http://modhumotibankltd.com/
E.	PRIVATE COMMERCIAL BANKS (Islamic Banks): (08)			

1. Islami Bank Bangladesh Ltd.	286	286	100	http://www.islamibankbd.com
2. ICB Islamic Bank Ltd.	33	N/A		http://www.icbislamic-bd.com/
3. Al-Arafah Islami Bank Ltd.	110	110	100	http://www.al-arafahbank.com/
4. Social Islami Bank Ltd.	95	95	100	http://www.siblbd.com
5. EXIM Bank Ltd.	80	80	100	http://www.eximbankbd.com
6. First Security Islami Bank Ltd.	119	119	100	http://www.fsblbd.com
7. Shahjalal Islami Bank Ltd.	92	92	100	http://www.shahjalalbank.com.b d
8. Union Bank Ltd	17	17	100	http://www.unionbank.com.bd/

Source: The Author (Developed based on information of website of schedule banks).

4.3 MIS & IT Division

All the schedule banks in Bangladesh either online or offline have an MIS section to full fill the requirements of Bangladesh bank for doing some regular works like to prepare Schedule Bank Statistics (SBS), supporting CIB report, etc., but truly all of the banks has not an MIS department rather few have MIS department, few have IT department, few have ICT department, few have IT and MIS department, few have none and doing their IT operations under MIS section in the computer department.

4.4 ICT application and banking sector of Bangladesh

Bangladesh Bank (BB) has adopted advanced ICT to be digitized in all spheres of its functions including monetary policy, banking supervision and internal management. BB has already introduced e-commerce, e-banking, automated clearing house, etc.; a historic move towards achieving higher productivity across all economic sectors including agriculture and SME through the use of ICTs. Engineers could be pioneers innovating new applications of ICT, and reaching them to the doorstep of the common people (Rahman, A. 2009).

Bangladesh bank also introduced Online **Credit Information Bureau (CIB)** report, a pivotal component of risk management measures in 2010. Banks and financial institutions accessed the **CIB** database through online, and get the credit report of the concerned borrower. The database consists of detailed information of individual borrowers, owners and guarantors.

Activities of ICT based banking:

- Back-office
- Front-office
- Ledger
- Cash management
- Head office MIS
- Cash dispensers
- Second generation
- Transaction processing [offline]
- Generation of information for record keeping
- Fund transfer
- Telephone bill payment
- POS systems
- Check verification
- ATMs
- Authorization
- Third generation
- On-line transaction processing
- Centralized processing at country level
- Internet banking

- Inter bank transaction processing
- Automatic Fund
- Transfers
- On- line Banking
- Direct Deposit
- Check Truncation
- Lock Box Check
- Truncation
- Electronic Fund Transfer
- Internet Banking

4.5 Corporate executives and banking sector of Bangladesh

Banking sector of Bangladesh composed of three types of banks are NCBs, PCBs, and FCBs. Their management style also differs category to category. Top management of NCBs is somehow different from PCBs & FCBs and management pattern also different. All the state owned Bank are governed by a Board of Directors consisting of 13 (thirteen) or 12 (twelve) members headed by a Chairman. The Bank is headed by the Managing Director & Chief Executive Officer; Managing Director is assisted by Deputy Managing Directors and General Managers while PCBs and FCBs are different with a number of board members and management style but all the banks have to be followed rules and regulations of Bangladesh bank.

4.6 Employees of banking sector of Bangladesh

Employees are the crucial part of any business. Effective utilization of human resources produces higher return. Earned more profit by fewer numbers of employee

indicates the commendable performance of the banks and human efficiency. Since the nature of the industry is service oriented, so human efficiency depends on the intellectual abilities of the employees. At present, the performance or productivity of any employees highly influenced by the use of IT and MIS, and also the commitment of employees in participating in using information systems. Though the recruitment pattern of NCBs is somehow different from PCBs and FCBs but educational qualifications of each bank is more or less same in the entry level position. Considering the efficiency and knowledge, FCBs are far ahead from PCBs and NCBs. According to the Bangladesh bank guideline, all the banks have to arrange different types of employees training and management training program and bank also doing this for improving operational and management skills of them.

Again, among all of the banks employees' have some deviation in terms of efficiency, knowledge, technical capability which will be minimized in the shortest possible time.

4.7 Summary

From the reviewing documents of each bank it was found that the banking sector of Bangladesh holds heterogeneous characteristics in terms of employee efficiency, productivity, deposits, number of branches, online banking, IT based operations, etc. For the purpose of strengthening MIS practices in the banking sector of Bangladesh, total banking systems need to be reshaped. The next chapter of this study, presented data collected from different sources through in-depth interviews, observation, and documents review methods.

CHAPTER - FIVE

DESCRIPTION OF CASES

5.0 Introduction

This chapter is designed to describe a comparative case study of the practices of MIS in the banking sector of Bangladesh. The description is presented by characterizing the different aspects on the basis of data collected from the period of May 2011 to April 2012.

All the evidence was collected by applying research design described in the research methodology chapter (Chapter -Three). Attempts are made to give much detail by using quotations, documented sources and observations. This chapter is broadly divided into two parts to describe two cases. In part one, author of the present study described a case of **Nationalized Commercial Banks (NCBs)** and in the second part described another case of **Private Commercial Banks (PCBs)**. Again, each part explained on the basis of observational data and in-depth interview's data divided into two sections are i) Head office level ii) Branch level. In both cases, head office level and branch level observation and in-depth interview were conducted in two phases: (One – Before implementing online banking; Two- After implementing online banking.) Data presented sequentially based on research questions and objectives of the study.

5.1 Agrani Bank Ltd. (ABL)

Author of the study has selected ABL as a first case and representative of the Nationalized Commercial Banks (**NCBs**) on the basis of access which is a leading commercial bank with 868 outlets strategically located in almost all the commercial areas throughout Bangladesh. This bank also pioneer in introducing information

systems among the NCBs in the banking sector of Bangladesh. Again the bank is in the process of implementing online banking in selected branches.

5.1.1 Background of the ABL

ABL is one of the leading commercial banks in Bangladesh with 868 branches, overseas exchange houses and hundreds of overseas correspondents, came into being as a public limited company on May 17, 2007 with a view to take over the business, assets, liabilities, rights and obligations of the Agrani Bank which emerged as a nationalized commercial bank in 1972 immediately after the emergence of Bangladesh as an independent state. Agrani Bank Limited started functioning as a going concern basis through a vendor agreement signed between the ministry of finance, Government of the People's Republic of Bangladesh on behalf of the former Agrani Bank and the Board of Directors of Agrani Bank Limited on November 15, 2007 with retrospective effect from 01 July, 2007.

i) Corporate Body:

Agrani Bank Limited is governed by a Board of Directors consisting of 13 (thirteen) members headed by a chairman. The Bank is headed by the Managing Director & Chief Executive Officer; Managing Director is assisted by Deputy Managing Directors and General Managers. The bank has 10 Circle offices, 30 Divisions in head office, 53 zonal offices and 868 branches, including 27 corporate and 40 AD (authorized dealer) branches. This corporate body fully responsible and authorized body for managing all activities of ABL.

ii) Employees of the Bank:

Slogan of the bank is “Committed to serve the nation and its people” and service quality which is mainly depends on employees’ direct participation in the banking activities while ABL serves the people through following twenty-four divisions:

- i. Branch & Subsidiaries / Unit Control Division
- ii. Company Affairs & Board Division
- iii. Credit Policy & Credit Risk Management Division
- iv. Establishment & Engineering Division HR Discipline, Grievances & Appeal Division
- v. Human Resources (**HR**) Planning, Deployment & Operations Division
- vi. HR Training, Research & Development Division
- vii. Industrial Credit Division
- viii. Information Technology & MIS Division
- ix. Internal Control & Compliance Division
- x. Planning, Co-Ordination & Marketing Division
- xi. Procurement & Common Services Division
- xii. Recovery and Non Performing Assests (**NPA**) Management Division
- xiii. Rural Credit Division
- xiv. Small and Medium Enterprises (**SME**) Credit Division
- xv. Treasury Division

- xvi. Vigilance Division
- xvii. International Trade & Foreign Currency Management Division
- xviii. Foreign Remittance & Card Division
- xix. Law Division
- xx. Central Accounts Division
- xxi. Reconciliation Division
- xxii. Audit & Inspection Division
- xxiii. Public Relation Division
- xxiv. Core Risk Management & Basel-2 Implementation Division.

Best practices of MIS mainly depend on the skilled of organizational human resources known as skilled employees and their committed participation is very important. ABL has sufficient human resources. At the end of December 2010 bank has 11900 employees in different grades.

iii) IT Infrastructure:

ABL now emphasized on the MIS and IT division as a key department of the bank. Management people in head office level and manager of the different branches have considered the MIS & IT division as a driver of the bank as the bank tries to get competitive advantage through the use of information systems.

Manager of Palton corporate branch Mr. Habibur Rahman stated:

“IT is the competitive weapon for success of the bank and we are trying to cope with the changes as the government has declared the country will be digital within 2021”

Though the bank partially, few branches and head office first computerized in 1968 (After independence, it starts operation as a govt. owned bank in 1972) but IT expansion starts in actual form in 1980. At that time IT staffs recruited mainly from science background (like graduation from physics, applied physics, mathematics, statistics, etc.) and finally selected by world standard aptitude test conducted by International Business Machines (**IBM**). These staffs have given on the job and off the job training on specific IT management related issues like:

- Database Administration
- Hardware Maintenance
- System Administration, etc.

In the meantime, they also got training on banking activities. From the year 2006 IT department fully equipped by new recruitment of IT staffs graduation from the CSE or engineering area. Though they are IT graduate (CSE or engineering), they are managed by management level people, those are non-IT or graduation from different discipline like business, social science, and science and enriched their IT knowledge by training, experience, and learning process.

5.1.2 Data from Head office Level:

5.1.2.1 Support of corporate Executives:

ABL's corporate body consists of 13 (thirteen) members consisting chairman and **Managing Director (MD) & Chief Executive Officer (CEO)**. Banks practices of MIS level and improvement of practicing directly depends on the support of corporate executives. Management people like **Deputy Managing Director (DMD), General Manager (GM)** also contribute to support in improvement of MIS practices in the

organization. But, the level of corporate people support to develop practices of MIS which depends on a few factors such as firms and executives' vision, executives' technological know-how, executives' job satisfaction, cooperation of employees.

Corporate executives of the ABL are visionary about the future of the bank. The bank also has a strategic policy about the competitiveness. It has the vision how will compete with the others PCBs and FCBs and how its large number of branches will be converted to source of competitive advantages.

Manager of Ramna corporate Branch explained:

“Our corporate executives always concern about the challenges of the bank and we are always aware about stiff competition with PCBs and FCBs. Thus we are implementing online banking and IT based operations in every important branch and others will be converted as soon as possible.”

The above statement gives clue about the vision of corporate people. The bank always tried to be a pioneer in every change in the banking sector. Another top management people of the bank stated the bank policy in following way:

“ABL always pioneer in every case in their strategic group. It first introduced and used computer among NCBs. Again started IT based operation and online banking systems firstly among NCBs.”

Corporate executives of the ABL are modern business and technology knowledgeable people, so they can easily differentiate what is right or wrong in the modern business arena. Though all of them not from IT background but their academic background is sufficient for understanding IT impacts and its role in the banking business.

Satisfaction of corporate executive not measured clearly, but top management people gives their views that executives are satisfied with their job. Another important factor

is that employee's cooperation to executives, which induces support and commitment level of the corporate people. AGM and Project director of online implementation of ABL Mr. Jalal Uddin Ahmed stated:

“Our employees are cooperative and obedient, but the policy of the organization not supported in some cases to develop employees as a result they are somehow dissatisfied.”

From the study of the ABL, author of the study identified corporate executives of the bank has very much supported in developing policy which supports for the best practices of MIS other than a few exceptions.

5.1.2.2 Employees Involvement:

Employees are inevitable part of the information system as they are users of the systems. Without their committed involvement, information system is meaningless. There are two types of users:

End users are people who use an information system. They can be data entry operators, executives and managers. In this bank, generally banker are the users of the information systems and they use most of their time in communicating and collaborating in teams and creating using and distributing information. These people are also known as business people. This bank has 11443 employees, and out of these only 3800 is the computer users and trained, but many of them are not trained to use any systems of the bank. So the bank has to arrange in-depth on the job training for improving the skills of the existing users and in case of new recruitment would be given priority to graduates, those have business knowledge and IT knowledge like MIS or Computer science with an MBA. This is the scope of the bank minimizing training and others cost and will ensure efficiency and productivity of the individual

employee. Now the bank emphasizing on IT and in the recruitment policy bank has tried to employ business and non business people with at least a basic IT knowledge.

DGM and Head of IT & MIS division of ABL Mr. Kazi Alamgir explained their human resource deficiency in following way:

“Actually, our bank currently performs better than before based on the newly recruited people because of their basic knowledge of using information systems. After retirement of old pool bank will ensure efficient human resources of using information systems, but we have not faced any serious problems in managing branches”

According to the Organogram, ABL has 14000 (fourteen thousands) vacancy in different positions all over the bank, but they have about 12000 (twelve thousands) employees in different positions. So they have about 14% vacant positions till date though last three years every selection process done successfully.

At present most of the branches has performed information systems related online or offline banking activities based on their currently recruited people or few cases old experienced trained people.

Shahidul Islam AGM of IT division currently transferred from head office to Ramna corporate branch stated in the following way:

“Just some selected employees perform IT or IT related activities of the whole branch and generally newly appointed recruited employees helping the branch manager to do the task as they have some IT or information systems knowledge before appointment.”

So the banker emphasized on IT or Information systems knowledge with academic graduation from business and non business discipline other than computer science and engineering.

Technical users are people who design, develop and troubleshoot information systems. They include system analysts, software developer, hardware engineer, network engineer, database developer, software project manager and so on. The bank has near about 160 technical users who are responsible for troubleshoot information systems and support to Vendor for designing and developing information systems. These users appointed as IT expert of the bank in the year 2006 but when they recruited, they were fresh graduate without any training, learning, or experience. They are not so skilled to design and develop important software like T24 and even without a few, most of them are not understand training of vendor how software will be customized or maintained after handover the project to the bank. Again, some of them lost their commitment in initial level in doing such types works because of banking policy and procedures. Now they are doing only schedule works of the bank. Though the technical users would be self-initiative and committed to their expertness in designing and developing system, they are not thinking about these rather comparing benefits, promotion and position with end users (general banker) and worried & dissatisfied about these. However, many of these technical users loaded in works because many end users' task is performed by the technical users of the bank. Therefore, this is the important task of the bank for taking better benefits from the used and proposed information systems to develop a committed technical user's team, meanwhile bank will consider motivational factors for them.

In the year 2011 another 8 employees have recruited as IT officer. All these officers (old and new) posted in the head office and branch level, zonal office and circle offices.

Table -5.1: Scenario of technical users in ABL

Types of offices	No. of office in December 2013			Total Employees	IT staffs	Percentage of IT staffs on total
	Online	Offline	Total			
Head office	1	0	1	13890	86	0.6%
Branches	200	668	868			

Source: The Author (constructed based on document review of ABL)

One employee of the head office level describes the above scenario in the following way:

“We have a shortage of IT person and a purely shortage of experienced and efficient IT people in every office and we have used our some IT people in clerical works like for documents composing and preparing.”

Employees’ participation in development and practices of MIS depends on some factors such as knowledge and training of the employees, information sharing, rewards and pay, and power sharing. Only a few employees of the ABL are efficiently trained though training is a continuous process of the bank.

Lastly, author of the present study has found no noticeable difference between the understanding of different people at head office level in IT and MIS division about the practices of MIS in the bank.

One of the employees of the IT division said,

“Actually, knowledge level of user’s differs in many ways like users of remote branches, district branches, zonal office, and circle office, head office who used information systems in a different way based on their responsibilities. He also explained that they have a misunderstanding which is mainly because of education level, training, experiences, and learning process. Mind setting of the users also differs in branch level and head office level.”

Again employees of the ABL are not highly satisfied on their pay structure which mainly played important role in improving their direct involvement for improving practices of MIS in the bank.

Another employee of IT division explained his opinion in following way:

“Our pay structure is not suitable considering other private banks in Bangladesh. Again, we have served more than our business people, but there are no recognition or benefits for extra services which discourages employees of IT division to serve better or better practicing of MIS in the bank.”

So employees’ involvement in ABL has different form which impacts on the practices of MIS in ABL.

5.1.2.3 Infrastructure of the Bank:

There is no specified structure of IT & MIS division of ABL and no designated position for technical people. Officers recruited as IT specialist from CSE or engineering background treated as senior officer. This division managed under the GM (ICT & MIS). This division performs its activities under the following sections:

- T 24 online operation
- Network administration

- Database administration
- Operating System Administration
- Help desk

Other than above mentioned sections, IT & MIS division performs few offline jobs under different systems i.e.

- Human Resources Systems;
- Payroll Systems;
- Provident fund management systems;
- Inter branch transaction reconciliation;
- Foreign Bank A/C reconciliation A/C (Nostro A/C);
- Statement of affairs
- Loan classification

These systems managed by using internal software and prepared consolidated report after manual collection of data from many remote branches. In this bank another two departments; one is foreign remittance and another known as MIS department.

But the MIS department of the bank has only produced Credit Information Bureau (CIB) report, Schedule Bank Statistics (SBS) -2 & 3 reports but not consider others systems like:

- Human Resources Systems;
- Payroll Systems;
- Provident fund management systems;
- Inter branch transaction reconciliation;
- Foreign Bank a/c reconciliation A/C (Nostro A/C);

- Statement of affairs
- Loan classification

They have limited idea about the MIS concept and application. One management level employee Mr. Enamul Maola, AGM of IT & MIS division said:

“Our many of the employees cannot understand even what’s stand for MIS and they understand only MIS means just sending reports from the branch level to head office through circle office and zonal office. The main reason behind this, we have no central MIS systems. We need to develop MIS infrastructure to the free flow of information from head office to branch level and vice versa. ”

Functions of the division:

The bank performs its IT operation under the following heads:

- Web site management
- E-mail management
- IT infrastructure development and management
- Online banking management and Implementation
- Performing online clearing activities through the Bangladesh Automated Clearing House (**BACH**)
- Electronic Fund Transfer (**EFT**)
- Society for Worldwide Interbank Financial Telecommunication (**SWIFT**)

5.1.2.3.1 Website and Web mail:

i) Web site:

www.agranibank.org is the Bank's website address. All updated information relating to the Bank and its products, services including recent financial and other non-financial information is available on it. Anyone can directly access to the site at once around the clock. For management of web site one technical user (senior officer, IT) responsible for updating currently available information and decision of the top management.

This site is managed under the administration of IT & MIS division. Though the organization has currently available IT graduates, the site is designed by Vendor Company. Evista' &'Data craft have jointly designed the system. During the designing of the systems, Vendor Company took assistance from IT staffs and head of IT for finalizing design specification. Management cannot rely on internal IT staffs for designing website or any other innovative IT work in this bank.

Responsible IT officer for website Administration Mrs. Kaniz Fatema, Principal Officer of ABL said,

“Top management has not offered or involved us for any type of innovative IT works or developing any systems. But we can do as like as vendor.”

But they expect some special benefits for developing such types of systems, e.g. at least some financial benefits.

On the other hand, one management people explained in this way:

Project Director of online banking implementation department Md. Jalal Uddin, AGM of ABL stated “Our IT people are not sufficiently skilled in developing any type of systems and those are skilled have their target to leave off the organization as we are not able to give honorable financial and nonfinancial benefits.”

So, explanation between IT staffs and management have different claims on each other. This is possible only because they have no specific guidelines for IT staffs about regular works and special tasks.

Responsibilities of IT officer regarding the website:

- Updating information about the Company, management, products, services etc.
- Adding or deleting pages or a section on the website
- Changing information like announcement of different circulars of the bank approved by the top management, Citizen Charter, or CSR Activities of The Bank.
- Checking the site status in the black listed site
- Checking back end database of the website

In designing a website, the bank tries to maintain a standard of international level using vendor company. However, it's few pages till date under construction under considering full phase online implementation. Again, the bank uses only one server for website and email management. They have two servers for each case (One for using and another as backup). The space of the aforesaid server is not enough to

manage currently using mail users and after increasing online branches it will be fully impossible.

In the web site of ABL has some limitation considering competitive environment of online based banking in Bangladesh. Though, the one IT officer is fully responsible for updating information of the website, decision or information updated on the website after a few days from taking decision by top management.

Responsible IT officer for website Administration Mrs. Kaniz Fatema, Principal Officer of ABL said,

“ We do able not circulate the message in website instantly because of lack interest of top management or lack of seriousness of them about instant disclose the message.”

Though, it is a principal task of the top management to ensure free flow information, but in many cases, they have not done it properly.

“Top management sometimes fears about disclosing the message or show their ego problem in delivering the message.” Explained one of the IT officer in the head office level of ABL.

For this reason, many clients or banker informed about decision of management manually, but not showed in the website. Therefore, the bank will not get the actual benefit of Information Systems using in different aspects.

Table -5.2: Reasons for lately updating information on the website.

<ul style="list-style-type: none"> • IT staffs are not willing to show their self-interest about the newly updated information.
<ul style="list-style-type: none"> • IT staffs are waiting for a decision from their superior (immediate boss) or related top management.
<ul style="list-style-type: none"> • Lack of commitment of few top management people
<ul style="list-style-type: none"> • Secretary of MD or chairman or decision making body has no IT education or training on IT for sending mail to web administrator directly by scanning or drafting decision proceedings. Although, this type of proposal may come from IT & MIS division.

Source: The Author (based on observation)

Another Principal Officer (IT) stated:

“In some cases we go to the top management people for taking file of manual decision, but they do not cooperate properly for circulate decisions on the website.”

ii) Web mail:

The ABL website has a web mail option and it has web mail server. In many cases, responsible IT officer send and receive mail from the site mail i.e. ablinstruction@agranibank.org to the top and mid level staffs about strategic and secret message on operational and management related issues of the bank those are not a fact of disclose to all visitors of the site. This also designed by the vendor company known as ISN.

Responsible IT officer for website Administration Mrs. Kaniz Fatema,
Principal Officer of ABL said,

“We have deleted many mails from inbox or sent items from different users because we have not sufficient space for individual users. We delete messages based on importance as a part of their space management activities.”

Responsibilities of the mail server administrator:

- Opening mail ID for bank’s staffs against the request of individual and approval of the head of IT & MIS.
- Space allocation for individual staff of the bank
- Spam protection for each account holder
- Space management

5.1.2.3.2 IS infrastructure of the Bank

Information systems infrastructure includes hardware, software, networks, human resources, and data resources of the organization. From the study researcher found the following results:

i) Hardware resources:

The hardware includes all physical devices and materials used in information processing. Examples of hardware of computer based systems are microprocessor, primary storage such as RAM, secondary storage such as Hard disk, CD, input device such as keyboard, digital camera, output device such as printer, monitor, etc. Bank

now sufficiently developed hardware infrastructure at least for selected branches those will be converted off line systems to online systems within a short period time. Mr. Enamul Maola, AGM of IT & MIS division explained in this way:

“Hardware resources were not sufficient when started our operation online banking in the year 2008 that’s why the bank could not progress on planned activities of manual systems of banking to online activities. At present our bank updated its hardware infrastructure considering current needs of the bank.”

For implementing online banking bank used RISC server of IBM and have facility of future expansion hard disk and RAM. Project manager of Flora systems and local vendor of online implementing of this bank expected this will meet the demand for next 15 year. But among others available server from the following are not sufficient for meeting the current needs space requirements such as a hard disk. In some cases ABL has no backup server.

One of the principal officers of IT division explained this situation in following way:

“With these hardware resources, it is very risky for implementing full phase operations of online banking all over the bank.”

Bank facing problem that all the branches are not equally equipped considering hardware acquiring for banking operations. As for example, a branch of the rural area is not well equipped like a branch of the urban area. Even they have not target yet to implement online banking and centralize information systems in all the branches at a time.

DGM and Head of IT & MIS division of ABL Mr. Kazi Alamgir explained the situation in such a way:

“We are unable to implement centralized MIS in all the branches throughout the bank because we have some sort of hardware and human resource shortage in rural areas and few cases in urban areas.”

So this bank is now in a sound position in hardware resources just for selected branches and this is not vulnerable as their target to ensure competitive advantage over competitors (NCBS & PCBs) through the selected online implemented branches in the country.

AGM and Project director of online implementation of ABL Mr. Jalal Uddin Ahmed said:

“We already implemented 60 branches under online banking and our target at least 200 branches in the 2012 and these branch operation will be the strategic tools for achieving competitive advantage in the banking sector of Bangladesh.”

Table-5.3: Status of IT Platform

1. Name of the bank	: Agrani Bank Ltd.
2. No. of total Branches	: 868
3. No. of computerized Branches (with internal LAN):	426
4. No. of computerized Branches (standalone computer):	442
5. No. of PCs	: 2657
6. No. of Printer	: Laser-280; DOT-1600; and other (Line) -3
7. No. of Servers	: 28
8. No. of UPS	: 2160
9. Data center	: 01
10. Disaster Recovery (DR) site	: 01

Source: The Author (based on document review, December 2011)

Table-5.4: Available server

S.N.	Server Name	Live	Back up
1	RISC for Online banking	√	√
2	SWIFT	√	√
3	BACH (PBM)	√	√
4	BACH (Application)	√	√
5	BEFTN	√	√
6	Mail	√	×
7	Web		×
8	ATM	√	×
9	Remittance management	√	×
10	Test Server	√	×

Source: The Author (constructed based on document review, December 2011)

ii) Software resources:

Software is a single computer program or a group of programs that serves a particular purpose. ABL has multi task and done through different software. ABL mainly depends on outsourcing for software development, but some simple software developed in-house. Now they developed online banking software known as core banking software from Vendor company Temenos (International company, parent country- Switzerland) and Flora systems (Local company). Before developing the core banking software bank used branch-banking software from Beximco computers, Infinity technology Int. Ltd., Daffodil computers, Flora systems ltd., SWIFT, Foreign remittance payment systems (Infinity Technology, Malaysia & Beximco computers ltd.). Even some software in-house developed by the bank like Agrani branch banking software: i. Agrani Solution (AS400) ii. ABL soft (PC based); Agrani Zonal office

solution; agrani head office solution (personnel systems, payroll, reconciliation – local/foreign, ID, central accounts, etc.), clearing house software, balance of payment software, T&T bill collection software, pension payment software, online remittance payment system. So many cases there was no need of on the job or off the job training for operating the software just needed a learning instruction. Most of the in-house developed software is PC based and used by specific employee. The researcher found in the ABL:

“Most of the IT Employees of the head office level, mainly act as a user of the systems rather than developer of the systems. They have actually done technical, business task which is possible by well trained business people. Only few employees are technically sound and able to track technical problems and take necessary steps with the consultation of immediate boss. They are not act as a systems designer and bank always depends on the vendor for in-house development of the software or outsourcing.”

At present many software of the bank is using web based like BACH, T24, EFT etc. This is unique software and users’ needed in depth training and all users have to have same type skills and commitment to perform the task. It is so difficult to perform above mentioned software without any basic IT knowledge. The bank has available software resources and after full phase implementation of T24 software many specialized software will not be used.

This situation explained Mr. Kazi Alamgir, DGM and Head of IT & MIS division of ABL in the following way:

“We have sufficient software for managing our banking operations, whether online branches or offline branches. We have PC based software

for offline branches and core banking software for online branches, but we have no centralized MIS for all branches and I am sure that it will be changed in near future. ”

iii) Networks:

By network, one can send information to remote computers and receive information from them. Local Area Network (LAN), Wide Area Network (WAN), Internet, Intranet, Extranet have become essential to the successful business and electronic commerce. The network consists of computer, communications processor such as modem, and other devices interconnected by communication media and controlled by communication software. ABL has LAN facilities in maximum branches. Except remote area branches bank used branch-banking software with the help of LAN. Now it is implementing online banking via WAN. But it has no intranet or extranet facilities. In maximum cases bank used broadband connection but in branch level, sometimes it faces the problems of connectivity and low bandwidth, thus the online branches cannot continue their business activities. ABL has 868 branches. Out of these 426 branches are computerized and they internally connected through LAN. AGM and Project director of online implementation of ABL Mr. Jalal Uddin Ahmed said:

“We have no different types of problem of networks. Now we are implementing online banking facilities in selected branches and we ensure network facilities before implementing core banking software in selected branches except common problems of network disruption all over the country.”

In the head office level two IT people are responsible for managing networks in every branch those have online facilities, but sometimes they are not able to solve the

problems because of unplanned activities of the government and irresponsible behavior of vendor or ISPs.

iv) Data resources:

Data must be managed effectively to give benefit all stakeholders of the organization. Data are typically organized, stored and accessed by varieties of ways. Data management of the bank is very important task considering cost, time and security. As the ABL faces a transition period from manual systems to computer based systems in many cases data are haphazard and one desk could not identify the task of another neighbor's desk.

Database:

Data can be centrally stored in a server and various users can access the database from any computer, which is linked to the server. Different database developed by bank by using Oracle, My SQL, FoxPro but at present in T24 software used only Oracle language.

Procedure:

Procedure is operating instructions for the people who use the information systems. Sometimes it is termed as manual. Those people who develop a system, provides the procedure. It helps end user for smooth running of the system and error handling, if any occur. AGM and Project director of online implementation of ABL Mr. Jalal Uddin Ahmed explained in following way about the procedure of the data management:

“Most of the cases ABL depend on the Vendor Company for systems development, sometimes bank faces problem in error handling of the

systems after delivery the systems, even we have not a sufficient expert or technical person for managing the systems”.

Thus, in troubleshooting of the server, bank relies on Vendor Company, which may require a sufficient time to solve problems but this create risk for the bank.

5.1.2.3.3 Online Banking (Core Banking)

Online banking is one of the important tasks of the ICT & MIS division of the bank. They have a strategic plan to get full pledge benefits of online banking. With this aim, they have started their project of online implementation. This process has started in August 2008, after completion of all procedures tendering agreement sign with TEMENOS international company (Switzerland) and Flora systems local company commencement of work in January 2009. Actually, they start project in July 2009. Though, the vendor stated in proposal work will be completed before the one-year, but only one branch start online banking in July 2010 which was the pilot project.

Project manager Mr. Jalal Uddin Ahmed explained the progress of online banking in the following way:

“ABL has developed one data center, one oracle based database, and network connection for upgrading online banking systems of the bank. Again, ABL has developed one disaster recovery center outside the bank. By June 2011, bank has started only 33 branches in full phase online operation out of 867 branches around the country. In order to establish a large-scale data communication network across 100 locations in the country which includes Head Office, 7 Circle Offices, 40 AD branches, including 10 Corporate branches and 52 Zonal Offices, implementation of a fully integrated core banking solution is continuing and expected to

be completed by 2012. During this time, all of their 40 Authorized Dealer branches, including 10 corporate branches will come under online banking.”

Another employee of the online implementation department explained the benefits of the newly developed systems as bellow:

“The customers of the branches in the online system will get the facility of phone banking, internet banking etc. besides opportunity for making their banking transactions with any of the branches.”

However, researcher found the following aspects about online implementation in the ABL:

“ABL revised target in December 2012 may not possible to implement online banking in targeted branches during the period as their master plan changes very frequently.

There are some reasons behind for not implementing their decision timely:

- i. Lack or required Infrastructure*
- ii. Parallel implementation of online banking is time consuming as it is continued at least 15 days before cutoff manual operations.*
- iii. Shortage of data entry operators.*
- iv. IT graduate & IT specialist (CSE or Engineering background) work as a data entry operator.*
- v. Shortage IT knowledgeable people in branch level*

- vi. *Online implementation at branch level needed full support from the head office thus the requirement of IT specialist increased temporarily, again if the organization recruited IT workers again may be idle in the future.*
- vii. *Project manager online banking implementation loaded with different types of works other than online banking and lead to reducing commitment in doing his specified duties efficiently.*
- viii. *In many cases IT workers perform mixed type of duties even doing overtime frequently in every month but lack sufficient personnel like data entry operator, IT trained workers in any discipline, hardware supportive technical persons individual IT expert like a programmer or software engineer or hardware engineer show low standard performance and overall productivity is not satisfactory.*
- ix. *Bank relies on the vendor company even for maintenance of hardware, central server, ABL has no such types of efficient IT experts so they have to do the task proficiently.”*

There are mainly two teams in the core banking section under IT & MIS division. One is business team and other is technical team. Technical team supports all types' technical activities from data entry, word processing to customization of vendor given software with the help vendor consultant on given criteria of the business team.

The business team performs their activities under the five functional departments are i) retail banking ii) Loan and Advance iii) Treasury functions iv) Trade finance or Foreign exchange and v) MIS. This team checks or rechecks the systems before launching, which is designed by a technical team based on the strategic level business

decision for branch and corporate level using e.g. interest rate, bank charge, commission, etc. Though both the team have to have proper communication and coordination needed for real time benefits of online banking but they have implied conflict about their superiority. IT expert considers business team holding same or superior positions, but they have no primary level education in IT using while business team make a question before them about their expertness and why management depends on the vendor for the development any systems? Practically shortage of efficient IT experts and arrangement of IT training is the key reason for failure of the planned implementation of online banking of the bank.

Again, in the implementation process of online banking team faces different type problems like after cutover of manual process in a few cases not matching figure in assets and liabilities & Owners' equity. Users (banker) face problems in using the software. As they are habituate in using local software (Bexibank), they are not mentally prepared to accept the changes. Bexibank software was mainly LAN based, not real time updated the transactions, but currently installed software, which is an international standard (T 24), is a web-based software. User considered it as a complex software or not user friendly like bexibank but accept its need in future. In some cases Bank also faces problems in connectivity of internet, electricity load shading etc.

For using this software branch level all users, have to be trained efficiently. But, many of them not interested to take training and if they bound to take this don't show interest to learn something through training. In manual or LAN based processed only one or two officers used to posting transactions after completion of office work as it was an offline information system. Now the system is online so all activities will

perform on desk work basis means all users use the systems individually and responsibly to do this instantly for the real time data transfer of the transactions and for giving benefits to all users, clients and others.

Author of the present study also found the following aspects about vendor role and explained in such a way:

“Vendor arranges a training program in the online banking implementation department and expected all IT people (CSE or Engineering graduate) would understand the training to maintain the software after their completion period of services but unfortunately a few IT people understand the thought given by the trainer of Vendor Company. Therefore, this may make risky to the bank in the near future to handle and maintained software with existing IT experts and it is not reasonable in cost, time and efficiency depend on Vendor Company for a long time on the above-mentioned purposes.”

Again, Vendor provides suggestion in creating teams of online implementation mixing both groups IT and banking knowledgeable (business) people for perfect changes of customization features, and getting customized MIS reports.

One of the employees of online implementation department business team explained the progress of online implementation in following way:

“Vendor Company not very much hesitates. They thought this is not only problematic for vendor company, but also bank is responsible in the same way. They could not develop infrastructure in a proposed time, which was delayed more than one and a half year from proposed time for developing infrastructure.”

Again a few branches which are already online have to be modified again as few tasks has not been computerized when it is implemented. As for example, principal branch has been online implemented as a pilot project and as a first branch of this project. However, this will be modified again as its cent percent task not performed as web based from pilot branch online implementation. So, this is not an example of an efficient project implementation process or time & cost saving process.

5.1.2.4 Application of MIS in ABL:

The practices of MIS in different organization differ based on the IT infrastructure of the organization. Banking organization also has different dimensions of practicing of MIS in NCBs or PCBs.

DGM of MIS division of ABL Mr. Kazi Alamgir explained the level of application of MIS in ABL in following way:

“At present this bank has some specific format for bringing data from branch level to head office level. Data are generally transferred from 868 branches to 54 zonal offices, zonal office to 10 circle offices, circle offices to head office. After that, head office prepares a consolidated report through MIS. But at present, the bank uses information systems in discrete format and there is no central MIS used for collection of data, processing, executing information like core banking software. In every month bank collect more than 100 reports from the branch, but in head office level only 10 to 12 MIS report prepared depending on extracting information from all reports for decision making purposes.”

He also added about the MIS practicing status of ABL by following statement:

“PCBs are more efficient as their system, user more efficient. Actually, size is the main problem, as the size of our public bank is many times larger than the private banks, so data collection from source to top timely and accurately is very chaotic for us. But we have used information systems as like as PCBs.”

Another key person of IT and MIS division and Project director of online implementation of ABL Mr. Jalal Uddin Ahmed explained the practicing scenario of MIS in following way:

“In respect of current scenarios, MIS gives now first priority for data analysis, planning, decision making, and also for smooth administration. Other than online banking, bank uses offline format to collect, process, updating information systems for banking operation. Head office prepares a consolidated report of MIS depends on the branch, zonal or circle offices’ report. In every month bank collect more than 100 reports from the branch level.”

Again he added the comment by comparing MIS practicing of ABL with PCBs:

As the number of branches of our bank near about 900 while many PCB no. of branches lower than 100, so using and full utilization of MIS in PCBs is better than us. But, we and all NCBs are trying to implement the MIS in each level. Actually, data collected from branch to head office level timely and accurately are very chaotic for us. But we have used information systems as like as PCBs.

Again the management people of the head office level have different thoughts about the practicing of MIS user understanding of MIS. Mr. Enamul Mowla explained:

Now the bank has some specific format for bringing data from branch level to head office level. Data generally transfer from 874 branches to 54 zonal offices, zonal office to 10 circle offices, circle offices to head office. After that, head office prepares a consolidated report through MIS. But at present bank use information systems in discrete format and there is no central MIS used to collect data, processing, executing information like core banking software. In every month bank collect more than 100 reports from the branch, but in head office level only 10 to 12 MIS report depending and extracting information from all reports for decision making purposes.

Again he added explanation of ABL status with other PCBs in Bangladesh:

PCBs are more efficient as their system, user more efficient. Actually, size is the main problem, as the size of our public bank is many times larger than the private banks so data collection from source to top timely and accurately is very chaotic for us. But we have used information systems as like as PCBs.

DGM of MIS division of ABL Mr. Kazi Alamgir identified gap between needs and application MIS in ABL in the following way:

“In considering IT infrastructure bank has some sort of shortage and have to be fulfilled. Our MIS only based on the report and a format basis of Bangladesh bank guidelines and we use our internal purposes. We prepare reports separately, but needed to develop specific format.”

He also added:

Actually main problems of the bank at present trained and expert manpower. Again bank has lack of proper MIS.

He recommended by following way:

“Now the bank has to be recruited MIS expert. Again at end user level, MIS people means graduate from any discipline at least with IT knowledge. Organization need to arrange training program and employees have to be bound to take such training.”

Mr. Enamul Mowla, management level people of the ABL identified gap between needs and application MIS and explained:

“In considering MIS applications of the bank has some sort of shortage in different aspects and have to be fulfilled. ABL MIS systems actually in limited forms and no centralize IS but we have followed Bangladesh bank guideline and we use our internal purposes. We prepare reports in a discrete format which is time consuming and not ensure efficiency of the systems.

He also added:

“ABL mainly faces challenges of efficient users of the systems designer and systems users. Actually, this happened because of a lack of IT trained, educated or IT skilled people in the bank.”

He again added:

“At present ABL has to be recruited MIS expert for IT department and end user from any discipline with IT literate for branch level branch. Have to arrange an in-depth training program and employees have to be bound to take such training.”

Another key person of IT and MIS division and Project director of online implementation of ABL Mr. Jalal Uddin Ahmed explained the practicing scenario of MIS in following way:

“Now the bank is a stable position on IT infrastructure and considering IT infrastructure. But the bank has some sort of shortage like IT expert, central MIS software, and some cases hardware capability. These shortages have to be full filled.”

He again added:

“Actually main problems of the bank at present trained and expert manpower. Again bank has lack of proper MIS systems.”

He again added:

“At this moment the bank has to be recruited MIS expert and for end user level any discipline with IT literate. Have to arrange training program and employees have to be bound to take such training. Develop an awareness program for using the MIS rather than manual systems. Central MIS systems have to be developed.”

5.1.3 Data from the Branch Level:

5.1.3.1 Support of corporate Executives:

The author of the present study, found in branch level employees that they are not concerned about the support of corporate executives, but they know newly developed policy of the bank. They think these are the positive initiative of the bank, which is the contribution of corporate executives. Though they are not able to measure the support level of corporate executives but they are satisfied. Employees of the branch level in ABL, also believe that current practices of MIS in our bank is the result of foresight of corporate executives.

Manager of foreign exchange Branch stated:

“Our employees don’t what actually MIS stands for but they are practicing newly developed systems of the bank. Employees of the branch level not satisfied in using systems because they think corporate people always supportive to implement new systems but not the financial matter.”

They don’t know about the knowledge of corporate people, but some cases make a comment based on guessing and past activities of the policy making.

Another employee of the branch said:

“Employees’ of the bank always cooperative to the top management.”

5.1.3.2 Employees Involvement

Employees’ participation is very much important to the bank to boost up the practicing level of MIS. It was found that employees those who have knowledge about IT and IS, try to participate in the systems, but those who have not, try to avoid it. Thus, proper practices of MIS and the employee participation in the systems mainly depends on the academic background, IT knowledge, training on the systems, corporate motivation etc. even it differs in branch level. MIS

practices in ABL have no remarkable example, but ABL has taken outstanding steps for implementing MIS in all levels of the bank whether branch or corporate office or head office. Most of the employees of the bank consider MIS means reporting systems from root level to top management about the required information of the bank.

Their consideration about MIS mainly for sending and receiving data or creating data availability for systems users of ABL. Practice of MIS also differs in branch to branch because of the understanding level of MIS.

Mr. Nazrul Islam explained:

“Meaning of MIS may not understand by all users, but everyone has at least considered MIS as computer based reporting systems. Again, the meaning of MIS in user level differs based on their working area, understanding and education level. Few branch managers have some misunderstanding about MIS practices in ABL while maximum has no such type’s problems.”

He also added:

“As it is a NCB, it has some vision with the govt. vision. Country is now digitized and our bank is also committed to do this. Now our bank touches about 80 branches in online, so it already uses information systems and try to implement in full scale. At present there is no way of doing and getting competitive advantage other than using MIS in top to bottom level.”

Mr. Habibur Rahman added about the MIS practicing status of ABL by following statement:

“We have faced problems of implementing MIS in each level of the bank because of the size of the bank. As the bank size is ten times larger than leading PCBs in Bangladesh in considering the number of branches of the bank. But we have used IS for data collection from source to top level timely and accurately very chaotic for us. But we have used information systems as like as PCBs.”

At branch level most of the officer could not understand about the meaning of MIS but considered it as technical things while few employees have knowledge about using IS or MIS because of training or experiences.

Shirin Akhter, DGM Washa Br. Said:

“Our many older employees don’t know about MIS even they neither have any special training on it, nor they have any commitment to learning about the systems. Originally, banks technical works have done by newly recruited fresh graduates from different discipline with simple IT knowledgeable person.”

Generally, younger have tried to adjust with the systems as they know IS will have a vital role in future for ensuring success in the career but older employees have not such types of target.

Another branch manager explained about the MIS concept:

“Branch level users need not know about the system's importance, but they have to know systems, application thus employees have not interested to learn in depth meaning of MIS.”

Actually, at the branch level IT or IS based works are performed only few employees in ABL. Again, some branch manager explained it a different way:

“We always got ready-made systems and top management understands what my requirement is, so they provide us user friendly systems, thus we have to know about the use of MIS rather meaning or development of MIS.”

All other employees have performed manual or traditional works or give support to the IS users. Even in a few cases, they are feared to use MIS. One of the principal officer Ramna corporate branch level said:

“I fear to touch the mouse but my son who is four years old can use the computer. “

Officer tries to explain MIS or IS or IT not for them but for younger. Thus, they don't know about the broader meaning of MIS. Usually misunderstanding of IT and MIS among the users of the systems because of lack of technical knowledge or less used of IS in ABL. But in management level and manager in branch level have no remarkable misunderstanding between these concepts.

Thus, practices of MIS mainly depend on above mentioned factors.

5.1.3.3 Infrastructure of the Bank:

In branch level of ABL are stable enough to conduct IT based business transactions but they have not any rigid structure for application of MIS. The researcher found different aspects about practicing MIS or any other information systems. From the top management view around 12% (twelve percent) branches are online while others 50% branches are fully computer based but till date a remarkable number of branches are manually operated

Manager of any branch holding top most position in the branch level and grasp the right to operating branch efficiently by using any systems given by the top management level. The researcher found different dimensions of practices of

MIS in branch level with his observation and through in-depth interviews with branch manager and others key person on the branch.

5.1.3.3.1 Website and Web mail:

Web site and web mail both are important tools for modern IT based communication in every bank at least at the branch level because sometimes branch in charge may not get access to communicate with the top management directly at that time he or she can take help from the given information from the website or through e-mail communication. All updated information relating to the Bank and its products, services including recent financial and other non-financial information is available on it. Anyone can direct access to the site at once around the clock.

Generally, a branch manager has not faced any problem in using website or web mail other than the problem itself of the website or web mail.

Though one branch manager and AGM of ABL Mr. Hibjul Alam explained the status and needs of web mail and web site in the following way:

“We have depended on web mail and website for different updated information, but sometimes updated information have not available on the web thus we have faced problems for taking instant decisions”

Another branch manager explained it a different way:

Though the information is available on website, but we have not faced any problem regarding the website or web mail as we depend on communication on mobile phones or Land phone or hard copy of circular.

Again Mr. Md. Habibur Rahman AGM of Ramna corporate Branch states:

“As the traditional process is time consuming so there is no better alternative other than web mail communication or information disclosed in the web site.”

The researcher also found in some case manager disclosed their information about password by e-mail as some of them is not well trained using web mail and even some people have no idea about the risk of sharing password among others.

5.1.3.3.2 Information Systems Infrastructure of the bank:

i) Hardware resources:

In branch level bank frequently faces problems in hardware because many users cannot understand if simple trouble shoots with accessories. Many users have not and only one or two users have such type training. If the trained employee absent in the branch for any reason, then the problem may create complexities. These type problems, mainly in the remote area branches, but sometimes in urban area also.

Mr. Md. Habibur Rahman, Manager, Ramna Corporate Branch of ABL explained the hardware status and its requirements in following way:

“Now we have sufficient hardware for operation, but for green banking means paperless banking we have not positioned in competition and in near future bank will face tremendous competition. So for taking competitive advantage bank have to increase hardware infrastructure in future.”

Another Branch manager of ABL has given a simple statement:

Maximum hardware became expert in our bank in many branches, thus the Problems occur frequently. So it is a strong urge to update hardware infrastructure.”

The researcher found Out of 10 (ten) branch managers 7 (Seven) are agreed to change the current infrastructure for ensuring smooth operations in the future competition, while 3 (Three) are agreed that existing are sufficient but in future may create problems.

Again, some managers do not try to understand regarding updates of the whole systems of the bank as the online banking systems of ABL in the process of implementation but their expectation is updated systems for their branch only.

ii) Software resources:

In considering software, ABL in a favorable position as the bank already crossed the preliminary level and stepped to the final level in systems development. The researcher found the bank has no problems of software acquisition other than development of central MIS but they have problems with users and developers of the systems as the ABL fully depend on outsourcing.

The researcher also found in the ABL:

“Many branches have no IT employees and few branches those have IT employees act as a user of the systems rather than the designer of the systems. Even these technical people designated as a general employees and doing regular works as like as other business people.”

At present ABL have used many web based software like BACH, T24, EFT etc., which is unique software and users' needed in depth training to smooth operations of the systems.

Mr. Hibjul Alam, AGM & Branch Manager, Corporate branch, Laldighirpar, Sylhet explained:

“We have sufficient software for managing our banking operation, whether online branch or offline branch, but we have faced some problems regarding software due to shortage of training & IT people.”

Mr. Md. Habibur Rahman, Manager, Ramna Corporate Branch of ABL explained about software infrastructure of the bank in the following way:

“We have now different software for preparing reports used in branch and head office level. All this software has used are user friendly and we have T24 software which is a world standard software of online banking implement in few branches. But we have not used centralized or standard software of MIS.”

But he stated about the problems of subordinate regarding using software of the bank in the following way:

As a branch manager we are facing different problems of software in case of using. Actually, problems not regarding software rather users of the bank. But in user level many users not habituate in using the software because of experiences, lack of training, education, and technical knowledge. Not all users, but those are young and newly recruited trying to gather knowledge of using computer and information systems.”

iii) Network:

ABL has 868 branches. Out of these 426 branches are computerized and they internally connected through LAN. About 100 branches already implemented online banking. Mr. Hibjul Alam, AGM & Branch Manager, Corporate branch, Laldighirpar, Sylhet explained about the networks of the different branches in the following way:

“Sometimes a branch faces problems of network disruption and hampered the online banking activities but this type of problems not only for my branch, but also all other branches of the different banks because the problems aroused from ISPs.”

All most all the branch managers share the same views about the networks of the branch and made comment they have a common type of network problems which is not manageable by the corporate level of the bank because this is actually an external problem for the bank.

iv) Human Resources:

Employees are the life blood of the service organization as the organization success or failure mainly depends on the service pattern of the employees of that organization. Positive service pattern means quick response, prompt service, efficient service etc. which leads to achieve customers’ loyalty to the organization.

The researcher found ABL tremendously faces crisis of efficient human resources regarding serving with online banking or with computerized systems rather than manual banking. Though the bank tries to fill this blank with newly recruited people but older people totally avoid to accept the change of IS based

banking.

Mr. Md. Habibur Rahman, Manager, Ramna Corporate Branch of ABL explained the HR situations of the ABL in following way:

“We have not faced tremendous problems in using our employees. Every year bank recruited employees from both areas from business and from IT. In branch many workers are near about retired other than them all are interested to use MIS or any type of computerized systems. The bank has technical users and end users. Technical users design the systems and end users use the systems. But in every case, the bank suffered from lack of expertise.”

Another branch manager and AGM of ABL Mr. Hibjul Alam explained the status in following way:

“We have no problems of newly recruited employees, but we have problems of older employees because they are not habituate in using IS and it is tougher to adjust them with the newly developed systems.”

Another branch manager Mr. Shawkat Hossain explained:

“Though we have a large proportion of business experiences employees, but they have deficiency by using IS but we are not suffering for end users but we are facing problems of shortage technical person at branch level.”

Another branch manager explained:

“Now we are hopefully getting IS educated people in the newly recruited process. Most of the cases they have IT knowledge with a non technical

degree (Other than CSE) or IT diploma with a non technical degree or MIS degree or completely business degree but IT knowledge with a non technical degree are the maximum proportion.”

All branch managers emphasized on recruitment process for general users with IT or Information systems knowledge with academic graduation from business and non business discipline other than computer science and engineering. Again, they emphasized on IT people will be recruited from computer science and engineering as like existing systems.

v) Data resources:

In case of banking business transactions data must be managed effectively to benefit all stakeholders of the organization. Data are typically organized, stored and accessed by varieties of ways. The researcher found generally there is no special grievances among the branch manager because the system is developed centrally and data stored centrally and branch are only users and they practically not found any problems.

5.1.3.3.3 Online Banking (Core Banking)

ABL has taken incredible steps in implementing online banking among NCBs in Bangladesh. But its position not so satisfactory in a competitive environment among NCBs, PCBs and FCBs because of its number of branches very much larger than the other two categories of the Bank.

In regards implementation of online banking within the ABL different branch manager have different views explained in following way:

Mr. Md. Nazrul Islam, Manager & DGM, Amin Court Br. Dhaka stated:

“No doubt, for surviving and getting competitive advantages in the banking industry, we cannot consider any things other than online banking.”

Again Mr. Shawkat another branch manager said:

“Online banking is the key factor for ABL to come back again in competitive position”

Another branch manager Shirin Akhter DGM of Washa branch explained:

“Online banking plays a vital role in smooth transactions and lowering cost while maximizing customers satisfaction, branch Manager but we have been facing problems of experienced and skilled employees.”

Another manager of online implemented branch explained the benefits and shortcomings of the newly developed online banking systems,

All the customers of the online banking branches in the online system will get the facility of phone banking, internet banking etc. but others will not get such types of benefits. As the number of branches is around 900 but only 100 are online, so in one bank two types of services are provided which is not fair. Again, it is not possible to implement all the branches online in a short period of time. We are also facing problems serving customers as we have fewer employees are skilled in branch to provide services to the customers.

5.1.3.4 Application of MIS at ABL

Mr. Habibur Rahman, branch manager of ABL identified practices of MIS in ABL in following way:

“The bank tries to sufficiently develop IT infrastructure based on needs of banking business, but the bank has some sort of shortage like IT specialist, unique MIS software, and some cases hardware capability. Again bank has a remarkable lacking in user level in using MIS, even a computerized systems. ”

He also added:

“Actually main problems of the bank at present trained and expert manpower. Again bank has lack of proper MIS.”

For the purpose of solving this existing problem of the ABL, he added following recommendation:

“At present, Our bank need to recruited MIS expert and for end user level any discipline with IT literate. Have to arrange a mandatory training program for existing user and may give some financial and nonfinancial benefits for training employees.”

Another branch manager Mr. Salam explained:

IS systems of ABL actually in limited forms and no centralize IS but the bank has followed Bangladesh bank. The bank prepares a report in a discrete format which is time consuming and not ensure efficiency of the systems.

He also added:

“ABL mainly faces challenges of efficient users of the systems designer and systems users. Actually, this happened because of a lack of IT trained, educated or IT skilled people in the bank.”

Another key branch manager Mr. Shirin Akhter of WASA branch explained the gap between needs and application of MIS in ABL following way:

“At the present, the bank has needed a stable IT and HR infrastructure for competing with PCBs because PCBs has already developed a uniform infrastructure of MIS. But unfortunately ABL has not achieved it because of the size of the bank, generation of the bank, and policy of the bank. Though ABL now changed its IT infrastructure and recruited IT literate people in every year but this is not sufficient for competing with PCBs in the stiff competitive industry.”

She also added:

“This can be done only by using strategic decision of the bank in policy making about old employees of the bank those have not adjusted with the current changed systems.”

5.2 Mercantile Bank Ltd. (MBL)

This part is designed to describe another case study on the practices of MIS in the banking sector of Bangladesh. This case is from PCBs. In presenting this case the logic followed in the previous case will be followed so that reader can compare the main issues of explanation on practices of MIS. The key issues are characterizing the different aspects based on collected data from the period of May 2011 to April 2012. All the evidence was collected by applying research design described in the research methodology chapter (Chapter -Three). This part also presented as like as previous section (ABL) in exception of branch level data. In branch level, observation and in-depth interview conducted in two phases: a) Phase –One (Before implementing T24 software for online banking) b) Phase – Two (In the process of implementing T24 software for online banking). Data presented sequentially based on research questions and objectives of the study.

Researcher selected mercantile bank as a representative of the private commercial banks (PCBs) based on access priority basis which is a leading commercial bank with 76 outlets strategically located in almost all the commercial areas throughout Bangladesh. This bank also pioneer in introducing information systems among the PCBs in the banking sector of Bangladesh. Mercantile bank already used online banking but now MBL introduced centralized database for online banking by implementing T24 software all over the branches.

5.2.1 Background of the MBL:

Mercantile Bank Limited emerged as a new commercial bank to provide efficient banking services with 65 outlets strategically located in almost all the commercial areas throughout Bangladesh and to contribute socio-economic development of the

country. The Bank commenced its operation on June 2, 1999. The Bank provides class banking rather than mass banking with a broad range of financial services to its customers and corporate clients.

i) Corporate Body:

The Board of Directors consists of eminent personalities from the realm of commerce and industries of the country. Mercantile Bank Limited is governed by a Board of Directors consisting of 22(twenty two) members headed by a chairman. The Bank administrated by the Managing Director & Chief Executive Officer; Managing Director is assisted by deputy managing directors and directors. Board of Directors, the apex body of the Bank, formulates policy guidelines, provides strategic planning and supervises business and performance of management while the Board remains accountable to the company and its shareholders. The Board is assisted by the Executive Committee and Audit Committee.

ii) Employees of the bank:

In MBL, Bank considers their employees are resource, an asset, that provides competitive advantage to the organization, and on whom organizational success is leveraged. To establish the perfect strategic HR, MBL has developed the linking human resources to strategic goals and objectives in order to improve business performance and develop organizational culture that foster innovation, flexibility and competitive advantage. Each year, MBL recruits new employees, fresh and experienced to meet the customers' ever-increasing demand and support the ever changing business scenario. The employees of the Bank are given on job training and are sent to different training programs/seminars, workshops home and abroad. The Training Institute of the Bank continuously arranges various courses, workshops, and

seminars on different aspects of banking. Bank doing such types activities mainly for improving participation in the banking activities and newly developed IS.

Slogan of the bank is “Would make finest corporate citizen” and the bank serves the people through following thirty three divisions with the direct participation of the employees of the bank:

- i. Office of Chairman
- ii. Office of MD & CEO
- iii. Office of AMD
- iv. Office of DMD
- v. Training Institute
- vi. Board Audit Division
- vii. Board Division
- viii. Corporate Banking Division
- ix. Credit Administration, Monitoring, Recovery & Compliance Division
- x. Credit Risk Management Division
- xi. Internal Control & Compliance Division
- xii. Card Division
- xiii. IT Division
- xiv. General Services Division
- xv. International Division
- xvi. Risk Management Division
- xvii. IT Business Team
- xviii. Financial Administration Division
- xix. Treasury Front Office

- xx. Treasury Back Office
- xxi. General Banking Division
- xxii. Public Relations Division
- xxiii. Marketing Division
- xxiv. Branches Division
- xxv. Research & Planning Division
- xxvi. Agriculture Credit Department
- xxvii. SME Financing Division
- xxviii. Share Department
- xxix. Consumer & Retail Banking Division
- xxx. Human Resources Division
- xxxi. CSR Desk
- xxxii. Mobile Banking Division
- xxxiii. NRB Division

iii) IT infrastructure:

Bank started its operation with the help of IT from the commencement of the bank in 2nd June, 1999. At present bank have 87 branches. Though the bank's all branches are computerized perform online banking but they have no centralized database rather distributed database at present. IT staffs of the bank recruited from two areas one from science and engineering background (like graduation from computer science and engineering, physics, applied physics, mathematics, statistics etc.) another from non science (Business or humanities or social sciences subjects) with diploma in IT. Mainly science graduated worked in head office but others are in the branch level.

These staffs again have given training on the job and off the job on specific IT management related issues like:

- Database Administration
- Hardware maintenance
- System Administration etc.

In the mean time, they also got training on banking activities. At present MBL has taken a project of implementing online banking with centralized database using T24 software. Temenos international company of developing customized banking software for this bank known as T24 software.

5.2.2 Data from Head office Level:

From the study of the MBL author of the present study identified few key points about the practices of MIS. Author has found all of the employees in head office level of IT division have similar idea about the difference between IT and MIS. They know how IT is distinct from IS.

SVP & Head of business team in IT division of MBL Mr. Md. Shafayet Wahed explained about the concept of MIS:

“Information technology is the supporting tools for using Information Systems.”

Observation found that the employees of MBL are more informative and dynamic in understanding IT & IS, and MIS. Only few have narrow idea about these concepts because of their lack of foresight beyond their desk work.

5.2.2.1 Support of corporate executives:

Mercantile Bank Limited (MBL) incorporated as a public limited company on May 20, 1999. Subsequently, it commenced business on June 02, 1999 with a vision for being finest corporate citizen. MBL's corporate body consist of 14 (Fourteen) members consisting chairman and MD & CEO. MBL is the output of some visionary entrepreneurs' dream of contributing directly to the economy by catering various banking needs to all segments of people living home and abroad. Since the MIS practicing level and improvement of practicing of the bank directly depends on support of corporate executives, MBL corporate body always prioritizes it. Senior management team also support in improvement of MIS practicing in the organization.

SVP & Head of IT, Engr. Md. Rafiqul Hoque Bhuiyan explained:

“We are concern about the best practices of MIS and we have taken every time required steps for implementing MIS in our bank.”

The above statement indicates how the senior management committed to practices of MIS in their bank.

Another top management people of the bank stated the bank policy in following way:

“MBL commenced its business operation with online banking which was not possible many PCBs in Bangladesh. It has some visionary leaders who contributed regularly.”

Corporate executives of MBL are modern business and technology knowledgeable people; they have sufficient academic and technical knowledge which also support to improved practices of MIS in the bank.

Corporate people are fully satisfied on their job and they also satisfied on the coordination and cooperation level of their subordinates which lead to the increase of their commitment and support.

SVP Head of business team in IT division of MBL Mr. Md. Shafayet Wahed explained:

“Our employees are cooperative and obedient to the management and they are responsible on their duty.”

From the study of the MBL, researcher identified corporate executives of the bank has very much supportive in developing policy which supportive for best practices of MIS in the bank.

5.2.2.2 Employees' involvement and MIS:

MBL has sufficient employees to serve customers satisfactorily based on the current needs of the bank and every year recruited based on the requirements and new branch opening. Out of this new recruitment one of the important proportions is IT people (Core IT and graduate from any discipline with IT diploma). Actually IT people those who knowledge about IT while business people played important role in branch level for providing better services to the customers and banks. In this bank there are two types of users:

End users are people who use an information system. In MBL, end users are two types i) business orientated and ii) IT orientated with business knowledge. They can be data entry operators, executives and managers. In this bank, generally banker are the users of the information systems and they use most of their time in communicating

and collaborating in teams and creating using and distributing information. Bank has more than 1700 employees, and out of these more than 150 are the IT people.

Technical users are people who design, develop and troubleshoot information systems. They include system analysts, software developer, hardware engineer, network engineer, database developer, software project manager and so on. All of the IT people are the technical user of the bank who are responsible for troubleshoot information systems and specify the systems requirements for different division and branches of the bank. These users are committed on doing their jobs and perfectly doing their responsibility but many of them are little bit dissatisfied on benefits provided by the banks.

Mr. Dipak Kumar Chakraborty, AVP of IT division of the MBL explained the user of the MBL:

“We have sufficient human resources of technical users as well as business people who efficiently served our bank known as end users.”

Again he explained about the IT people of the MBL,

“In MBL there are two types of IT people i) one group is pure IT means graduated from computer science and engineering (CSE) who are responsible for designing the systems and troubleshooting the systems and generally worked in head office level or in IT division ii) another group are actually hybrid people like graduation from any discipline and with extra degree like post graduation in IT or IS or MIS or PGD in IT or IS or MIS etc. and mainly worked in branch level and responsible for trouble shooting the systems in branch level, identifying the problems in the

systems, communicating with the head office level, day start of the bank and day close and some cases doing some business task.”

Author found technical users of the MBL committed to their works but they have little ambition for getting benefits in case promotion, up gradation, incentive determination because they think that benefits of them should be extra than regular employees as they are technical people and many cases they have to do extra works for the bank.

Head of IT and SVP, Engr. Md. Rafiqul Hoque Bhuiyan explained about the thinking of technical user:

“Our few IT employees are not satisfied on their works because they are thinking about their career. Most of the cases they think their career path is limited and in some cases they shift their jobs from IT area to business are within the bank and also outside the bank.”

Table – 5.5: Scenario of technical users in MBL

Types of offices	No. of office in December 2013	Total Employees	IT staffs	Percentage of IT staffs on total
Head office and Branches	86	1814	185	10.20%

Source: The Author (construction based documents review of MBL)

Employees’ participation in practices of MIS in MBL is good enough and they have knowledge about IT, almost all the employees of the bank have taken training about using systems, all employees aware about information sharing. Lastly researcher has found no noticeable difference among the understanding of different people in head office level in IT and MIS division about the practices of MIS in the bank. Practices of MIS in all banking organization are not same. It has differences in application between inter group or

intra group of the banking sector of Bangladesh. Inter group MIS application means NCBs, PCBs, and FCBs application while intra group application means within the NCBs or within the PCBs or within FCBs. Practices of MIS in MBL may differ from other PCBs in the banking sector. This study mainly focused on MIS practices in MBL considering different dimensions.

SVP & Head of IT, Engr. Md. Rafiqul Hoque Bhuiyan explained the level of practicing MIS in MBL in following way:

“MBL now using MIS for collecting data from branch level to head office level. After the collection of data using pre format structure by different division or section of MBL process and store data for making information readily available to the users of branch level or head office level. In every months bank collect many types of reports from the branch and few reports prepared in head office level depending and extracting information from all reports for decision making purposes.”

He also added about the MIS practicing status of MBL by following statement:

“Bank success may not be considered at present without use of MIS.”

SVP Head of business team in IT division of MBL Mr. Md. Shafayet Wahed explained the practicing scenario of MIS in following way:

“MIS now considered as filtering information and used as DSS. Bank prepare the report in every sub section, section, branch, division on different aspects like deposits, credit, recovery, classified etc. which are accumulated and finally prepare a consolidated report which store on database and user used data on the basis of their requirements.”

He also added:

“We are now thinking about DSS rather than only MIS which is one step advance. This is only because of importance of the MIS in MBL.”

Again he added the comment by comparing MIS practicing of MBL with PCBs:

“We are not thinking about NCBs rather PCBs. We want to be leader among the PCBs by using MIS in all of the bank.”

Dipak Kumar Chakraborty, AVP of MBL in IT division said:

“For making data available to the end users of the bank for lower level, mid level or top level MBL have developed the systems for collecting, processing, storing information. MBL also give priority IT division only for smooth using the IT and IS in each level of the bank.”

Author of the study concluded from the observation findings about the practices of MIS in MBL in following way:

MBL now uses different types of IS like payroll systems, electronic attendance systems, PF systems etc. bank also develop core banking software for online banking. All these are pre stage of central MIS systems of the bank. Once upon a time bank expecting papers less banking and top management will rely on computer for strategic decision rather than subordinates of them.

Most of the employees of the MBL in head office level try to use all types of IS efficiently.

He also added now the employees of MBL could not thinking about traditional customer servicing rather using IS. Employees of the MBL have also satisfied by using MIS because it not only minimize the time of customers but also for the employees. They can reuse the data without drafting again just by linking with the server.

Mr. Dipak Kumar Chakraborty, AVP of IT division of the MBL explained the user of the MBL:

“MIS now plays a vital role in for management level people. In MBL we have prepared all types of report using IS such as annual report, providing necessary data to top management based on the query of them which is possible only because of using MIS. Management can take any decision at any time based on providing information to the top management.”

He also added:

“Just after a short period of time MBL will use MIS for taking decision by management people without assisting their subordinates.”

He also explains the risk of using MIS in banking organization and his organization MBL by the following statement:

“MBL has no general risk of using MIS as we have maintained backup for storing of data and we try to ensure correct data inputting in bottom level.”

Author of the study found from the observation in the MBL:

“About four fifth employees in the head office level believe MIS can give advantages to managerial people of the bank, assist to ensure operational efficiency, also supporting factors to increase customers’ satisfaction.”

Management level people of the MBL also expecting by using MIS they will get competitive advantages.

5.2.2.3 IT Infrastructure of the MBL:

MBL also has no independent organogram in IT division. But there is a proposed structure in IT division where officers recruited as IT specialist from CSE or engineering background treated as officer. This division managed under SVP (ICT).

This division performs its activities under the following sections:

- i. T 24 online operation
- ii. Network administration
- iii. Database administration
- iv. Operating System Administration
- v. Help desk

Bank has no specialized MIS department but bank has MIS section under financial administration department by following Bangladesh bank instructions which produce Credit Information Bureau (CIB) report, Schedule Bank Statistics (SBS)-2 & 3 reports. At present MBL try to develop some new systems and already implemented few of them with the consideration of developing centralize systems like:

- i. Employee attendance systems
- ii. Human Resources Systems;
- iii. Payroll Systems;
- iv. Provident fund management systems;
- v. Inter branch transaction reconciliation;
- vi. Foreign Bank a/c reconciliation A/C (Nostro A/C);
- vii. Statement of affairs
- viii. Loan classification etc.

MBL now emphasized on the MIS application in all level of the organizations. They try to ensure leading position in implementing information systems because they consider MIS is the driver of the bank's success in the modern digital world.

Leader of the IT business Team & SVP of MBL Md. Shafiet Wahed explained the practices of MIS in the MBL in following way:

“We are thinking about DSS not only the MIS and our top management will rely on systems not the subordinates for any type of instant decision making of the bank”.

In above comment SVP highly emphasize on practices of information systems in his bank and future prospect of them in case of using information systems in the banking business.

They have different ideology about MIS but consensus understanding about use of information systems in decision making and smooth operational activities.

Head of IT and SVP, Engr. Md. Rafiqul Hoque Bhuiyan stated:

“All IT members of MBL fully aware of creating environment for banking transactions to proper use of information systems in every aspects of banking business.”

All the employees of MBL have at least minimum understanding of MIS and IT people create opportunities for MBL employees to get proper benefits of using information systems.

Functions of the IT division of MBL:

There are different types of functions perform this division under five heads which are as follows:

Banking Software:

i) Implementation of banking software in different branch ii) Banking software support iii) User accounts and security maintenance for banking software iv) Operational risk analysis v) Systems improvement vi) Head office server operation vii) Data back up and disaster recovery issues viii) Disaster recovery plan ix) Provide user training x) Reconciliation software support xi) Consolidation module at FAD xii) Branch opening issues xiii) Proactive monitoring of incidents and systems.

Hardware:

i) Hardware maintenance ii) Server related issues iii) Maintain power backup units (UPS) iv) Prepare new builds for servers & desktops v) Provide user training vi) Backup and disaster recovery issues vii) Maintenance

Agreement Issues viii) Proactive monitoring of incidents and systems ix) User support & incident Log maintain

Network:

i) LAN ii) WAN iii) Maintain and Implementing network security such as firewall, encryption iv) Web site management v) E-mail management

Internal Software:

i) Internal software development and support ii) SMS banking implementation and support iii) Monitoring CTR & STR, Nikash, SBS 2 & 3, weekly related issues
iv) Grameen phone bill data transfer v) User support and incidental Log maintain
vi) Foreign exchange return vii) Triplicate report to Bangladesh bank

Gateway interface:

i) Debit card Interface ii) SWIFT maintenance

5.2.2.3.1 Website and Web Mail:

i) Website:

www.mblbd.com is the Bank's website address. All updated information relating to Bank, its products, services including recent financial and other non-financial information are available in it. Any one can directly access to the site at once around the clock. Another intranet site is used by bank for internal use of the bank, generally any type internal circular are announced in this site. Assistant officer IT is a technical officer who is responsible for updating currently available information and decision of the top management. At present bank has only one server of the website of 1 GB

space but after development of the current infrastructure bank will set two server (one for main another for backup).

This site is managed under the administration of IT division. Even site is designed by IT officer of that organization. Management can rely on internal IT staffs for designing website or others innovative IT works for the bank.

Responsible IT officer for website Administration Mr. Jobayer Ahmed, Officer of MBL said,

“We can do everything from website development to change and update and not wait for the Top management decisions rather we consider requirement for the organization. We are committed for servicing of website to the users.”

One employee of the IT section explained the needs of website in following way:

“As we are live in the digital world, we are committed to serve the customers and users by providing instant decision and updated information about the bank’s policies and others. In this case website plays a vital role for disclosing information instantly to the customers and users. We have considered website as a part of customer caring.”

Again another employee of MBL said:

“We have an intranet site for disclosing internal or secured information among the users (employees) of the organization known as internal site of the organization. This site designed for communicating internal information among the employees of the MBL”.

Responsibilities of IT officer regarding website:

- i. Updating information about the Company, management, products, services etc.
- ii. Adding or deleting pages or section on the website
- iii. Changing information like announcement of different circular of the bank approved by The Top management, Citizen Charter, or CSR Activities of The Bank.
- iv. Checking the site status in the black listed site
- v. Checking back end database of the website

Responsible officers of website management of MBL always conscious about updating message and circulating instant decisions of the top management and they have not faced any problems in communicating.

ii) Web mail:

Bank's website has web mail option and it has web mail server. It has 500 MB space for main server and 500 MB for backup server. In many cases, responsible IT officer send and receive mail from the site mail i.e. [http://: webmail.mblbd.com](http://webmail.mblbd.com) to the top and mid level staffs about strategic and secret message on operational and management related issues of the bank those are not fact of disclose to all visitors of the site. This also designed by the IT officers of the bank themselves. IT officer (mail server administrator) managed the web mail server efficiently for benefits of the bank and its staffs and he explain his responsibilities in following way:

“We are responsible for opening mail ID for bank's staffs against the request of individual and approval of head of IT; Space allocation for individual staff of the bank (depends on designation); Spam protection for

each account holder and also Space management, Server security ensuring, Firewall management of the server.”

In designing website bank tried to maintain standard of international level with their technical specialists rather the vendor company.

Head of IT and SVP, Engr. Md. Rafiqul Hoque Bhuiyan stated:

“However it’s pages can added and updated based on the bank requirements some radical change may come in website after online implementation by Temenos.”

Mail server administrator (IT officer) has no access to the account of the user. After creating mail ID by the officer one fake password is given to the user and user have to change the password for security purposes. Administrator can’t delete the mail from user inbox or outbox or elsewhere.

Researcher found few key points from the observation of the website and web mail of MBL are:

“In their website has no remarkable limitations considering competitive environment of online based banking in Bangladesh. One IT officer is fully responsible for updating information or decisions in website instantly just after taking the decisions from top management. So clients or bankers get updated information instantly.”

One employee of the IT department explained why their status of website and web mail is distinct from others:

“Our IT staffs are always aware to implement the management decisions whatever the newly updated information; In many cases doing the works

based on authority decision but not waiting for decision from their superior (immediate boss) or related top management; Top management people are cooperative; Secretary of M.D. or chairman or decision making body have IT education or training on IT for sending mail to web administrator directly by scanning or drafting decision proceedings; Staffs are always ready to minimize time.”

5.2.2.3.2 Information Systems infrastructure of the bank:

From the study of the MBL head office and branch level researcher found the following results of the information systems infrastructure:

i) Hardware resources:

The hardware includes all physical devices and materials used in information processing. These resources were not sufficient when started their operation in the year 1999 but at present they have sufficient hardware resources, again the bank at present upgrade their hardware resources for implementing core banking software at all branches for real time transactions. For implementing online banking bank will be used RISC server of IBM and have facility of future expansion hard disk and RAM. Data Soft Systems BD Ltd. is the local vendor with Temenos, International co. of online implementing doing the job perfectly for real time transactions among the branches of the bank.

Mr. Dipak Kumar Chakraborty, AVP of IT division explained in this way:

“We have not faced any problems related to hardware resources and we are fully sufficient at present for managing our different branches and head office by hardware infrastructure considering current needs of the bank.”

One branch manager made a comment like:

“Before facing any difficulties by any branch of the MBL, head office searching regularly to update IT infrastructure of the MBL so, we have not any feelings about wants for hardware.”

Md. Rafiqul Hoque Bhuiyan, SVP and Head of IT division of MBL explained the needs of hardware for smooth operation of information systems of the in the following way:

“ We have already implemented online banking in all of our branches through distributed database and we are in the process of implementing online banking through centralize database of temenos but we are not facing any difficulties of hardware for upgrading online banking systems of the MBL.”

Table 5.6-: IT infrastructure of MBL

<ul style="list-style-type: none"> ▪ Name of the bank : Mercantile Bank Ltd. ▪ No. of total Branches: 75 ▪ No. of computerized Branches (with internal LAN): 65 ▪ No. of computerized Branches (standalone computer): 65 ▪ No. of PCs : 1488 ▪ No. of Printer : Laser-280; DOT-1600; and other (Line) -3 ▪ No. of Servers : 74 ▪ No. of UPS : 1562 ▪ Data center : Not Available at present (01 will be by march 2012). ▪ Disaster Recovery (DR) site : Not Available at present (01 will be by march 2012).

Source: The Author (from document review of MBL)

Table - 5.7: Available server of MBL

S.N.	Server Name	Live	Back up
1	RISC for Online banking	Running	Running
2	SWIFT	2	2
3	BACH (PBM)	1	1
4	BACH (Application)	1	1
5	BEFTN		
6	Mail	1	1
7	Web	1	1
8	ATM	2	2
9	Remittance management		
10	Test Server	1	
11	Mobile Banking	2	2
12	FAD	2	2
13	SMS banking	1	1
14	Antivirus	1	1
15	HR	1	
16	Nostro and Vostro A/C	1	1
	Total – 32	17	15

Source: The Author (from document review of MBL)

Total servers in head office are 32 and 42 in branch level.

ii) Software resources:

Software is the key resources for getting proper benefits of information systems. MBL now used different types of software for managing their information resources and daily activities of the bank. Bank mainly depends on outsourcing for specialized software development but some PC based simple software developed internally by the IT people of the bank. Now they developed online banking software known as core banking software from Vendor Company, Temenos (International Company, parent country- Switzerland) and Data soft Bd. Ltd. Before developing the core banking software bank used online banking but in distributed format and banking systems developed by Leads Corporation. BACH & EFT developed by Data edge, foreign remittance payment systems & Exchange house systems developed by Infinity Technology Bd. Ltd. Even some software in-house developed by the bank like Bill collections, Hardware inventory, FC return, Duplicate, Triplicate, Loan Classifications Systems. Again a little numbers of software developed by internally with the guidelines of Bangladesh bank. Most of the in-house developed software is PC based. All this technical software are used in branch level by IT people (knowledge about IT and Business). Bank has available software resources and after full phase implementation of T24 software many specialized software will not be used.

Mr. Mohd. Shamim Ahmed Joarder IT officer and software trouble shooter of the MBL who is worked in IT division of the head office level explained the software requirements of the MBL:

“Our MBL always future oriented for using information systems that’s why we have tried to implement customer and user oriented customized software for operation and decision making purposes of the bank.”

Another employee of head office level explained:

“We have not any problems of software rather we are improving our existing software based on requirement and we are implementing online software though we have already an online banking systems.”

iii) Networks:

Networks of the MBL managed by IT department. Bank has LAN and WAN facilities in every branch. Now it is implementing online banking T24 software via WAN. Again it has intranet facilities. In maximum case bank used broadband connection but in branch level sometimes it faces problems of connectivity and low bandwidth thus the online branch cannot continue their business activities. Now they developed their facilities and this change at least for five years. Bank’s new data center setup in process which will be completed by March 2012. For managing networks IT people graduated from CSE taken the responsibilities and responsibilities are the followings:

- i. Solving LAN problems for branch and brokerage house (75 branch and 6 brokerage house)
- ii. Communicate with local Vendor for solving WAN problems
- iii. Antivirus support
- iv. Internet support

The following network devices are used for managing networks:

- i. Core Router
- ii. Core firewall
- iii. Core switch
- iv. Server firm switch
- v. UTM device

Though bank has commitment for better managing the networks researcher found it has still some problems:

- i. Lack of skilled manpower of IT in branch level (in few cases)
- ii. Connectivity problems
- iii. Power failure

But last two problems actually national problem and first one is tried to solve by the bank.

iv) Data resources:

Data must be managed effectively to benefit all stakeholders of the organization. Data are typically organized, stored and accessed by varieties of ways. Data management of the MBL is so much formal like other PCBs but they have distributed database at present and new project already taken for developing centralize database and real time online banking systems. So bank will have not any problem for data management for ensuring financial security of the customers and also bank. Data will be stored centrally a server and various users can access the database from any computer, which is linked to the server. Now MBL used oracle for developing database for T24 software.

5.2.2.3.3 Online Banking (Core Banking)

Online banking is one of the important tasks of the ICT division of this bank. They have a strategic plan to get full benefits of online banking. With this aim, they have started their project of online implementation. Now they have a pilot project, after completion of all procedures tendering Agreement signed with TEMENOS international company (Switzerland) and Data Systems Bd. Ltd., local company commencement of work in the year 2011. In the meantime, Bank developing one data center, one Oracle based database, and network connection. Again, they developed disaster recovery center in a different place other than bank considering security factor. By 2012, bank will complete for setup data center and disaster recovery center.

Bank rely on Vendor Company just for set up central server and implementing software but other supporting tasks will be performed by the bank's IT staffs.

Mr. Md. Shafayet Wahed, SVP and head of IT business team of MBL said:

“We will do everything in time. Our employees are fully capable to solve any type of problems and Vendor Company has to satisfy us in every aspects of developing online banking infrastructure of the bank. We share our problems to them and they satisfied us thus our systems will be more customized.”

In MBL there are also two teams in IT division. One is business team and other is technical team. Technical team support all types' technical activities of the bank while they considered key aspects to help vendor consultant on given criteria of the business team on line banking up gradation.

Business team performs their activities under different functional department like i) retail banking ii) Loan and Advance iii) Treasury functions iv) Trade finance or Foreign exchange and v) MIS etc. This team checks or rechecks the systems before launching, which is designed by technical team based on strategic level business decision for branch and corporate level using e.g. interest rate, bank charge, commission etc.

In MBL business team and IT team works combined for better performance of the bank without any conflicts as Vendor suggest creating a team of online implementation mixing both groups IT and banking knowledgeable (business) people for perfect changes of customization features, and getting customized MIS reports.

MBL has not faced any problem in cooperating between the groups of IT and Business.

Head of IT and SVP, Engr. Md. Rafiqul Hoque Bhuiyan explained the status in following way:

“We have the competition and cooperation for implementing any modern technology and systems but we have no conflicts. We want to ensure leading position in IT based operation in banking business and all of us have same phenomenon.”

MBL shifting its online banking services from distributed database to central database mainly for taking strategic benefits, entering into fast service platform, cost advantages in banking sector of Bangladesh.

5.2.2.4 Application of MIS in MBL:

SVP & Head of IT, Engr. Md. Rafiqul Hoque Bhuiyan explained the application of MIS in following way:

“In MBL, at present have no general problems of the bank in related to IS infrastructure, HR infrastructure, network infrastructure but have some specific limitations in using IS.”

He added:

“In MBL, at present have no general problem of the bank in related to IS infrastructure, HR infrastructure, network infrastructure but has some specific limitations in using IS.”

He also added:

MBL has limited problems of trained and expert manpower. Again bank has central MIS.

He recommended by following way:

“At present bank has to develop central MIS, ensuring coordination among the divisions and given training to all employees about understanding and using MIS in every aspect of the banking activities.”

SVP Head of business team in IT division of MBL Mr. Md. Shafayet Wahed identified gap between needs and application MIS and explained:

“We have tried to find out gaps in market and try to capture such types in shortest possible time. Our IT infrastructure have to be expanded, a large number of ATM booth (Fixed as well as mobile booth) have to be setup.

Dedicated networks have to be ensured and attractive motivational package have to be introduced for ensuring operational efficiency among the employees using MIS of the bank. MIS systems of MBL actually in discrete form but need to develop a central MIS.

He added:

“MBL already recruited MIS expert for IT department and end user from any discipline with IT literate for branch level branch. But bank have to arrange in-depth training program and employees have to be bound to take such training.”

Head of operation of MBL explained:

“MBL need to develop an awareness program for using MIS rather than manual systems. Central MIS systems have to be developed.”

Researcher found has no remarkable gap between needs and application of MIS but needs cooperation among the sub systems for taking operational efficiency.

5.2.3 Data from Branch Level:

5.2.3.1 Support of corporate executives:

Researcher found that branch level employees of MBL belief that corporate executives are committed to the organization who directly supported to develop new systems for the organization. They think their corporate executives not only committed but also dynamic. Employees of the bank explained that corporate executives of MBL fully supportive to improve the practices of MIS. Employees of

the branch level in MBL, also believe that all the changes in the bank actually contribution of corporate policy maker.

Mr. Md. Abul Bashar, Manager, Elephant Road Branch & SVP explained:

“ We have not need to understand what fact behind MIS or IS because we got ready systems from the IT division and got guidelines from using systems and in every branch level of MBL has technical people who trouble shoot the systems. Our employees think this is error free systems as the corporate people provided after checked it.

Researcher found in branch level of MBL, all employees have more or less same idea that their corporate executives are supportive in every prospective matter. Success in practicing MIS in MBL mainly contribution of corporate level executives' initiative, policy making etc. These are the actually outcome of their knowledge, training, experiences, commitment to the bank etc.

5.2.3.2 Employees involvement:

Employees are the key stake holder of the systems. What will be practicing level of MIS mainly depends on the real involvement of employees of the bank. Branch level employees of the bank also realize this. Thus branch manager of MBL emphasized on employees participation in their systems. Few employees have misunderstanding but not misusing of IS as they no application systems according top management guideline. Manager of MBL in all branches know about use of systems and what differentiate between MIS and IT.

Operation manager of MBL Green road br. said:

“Information system designer should know about design whereas expert should know all sectors of MIS and will be a hybrid person.”

He also added:

“Systems designers create detailed design documentation for the development and integration of computer systems to meet the needs of businesses and individuals. He works with analysts on the feasibility of a conceptual design by taking technical specifications prepared by the analyst and designing system components to meet the set requirements, draw up detailed design documentation including charts and diagrams that indicate the various components involved, prepare instructions for programmer implementation, talk with other team members to ensure functionality according to systems specifications and develop solutions as problems or issues arise, design monitoring and performance measurement processes.”

Practices of MIS in different banking organization vary because of size, user environment and MIS environment, even it differ in branch level. MIS practicing in MBL has no remarkable differences but MBL has taken outstanding steps for implementing MIS in all level of the bank whether branch or corporate office or head office. Practices of MIS also differ because of understanding level MIS.

Researcher found the following scenario:

“Generally MBL has 2-3 IT knowledgeable employees in each branch but they do not know about business of banking, they prepare

infrastructure smooth for operations, support decision etc. Thus other non technical employees have little ambition to learn about MIS or its practicing but they need to understand and practice MIS in each level of the bank.”

MBL try to develop latest technology for implementing MIS and providing better and customized banking services to the customers.

Another branch manager explained about the practicing of MIS in MBL in following way:

“We are now thinking about application of MIS in every aspect of the banking activities. As for example bank already introduce electronic attendance systems. After login his or her computer by the users from the MBL network systems send it to the central server and branch Manager or top management people can easily track who is absent or present or who late comer. Bank now thinks to implement MIS in each area of the banking operations.”

But with the change of the overall bank employees need special types of changes to cope with the recent change of the bank. One executive officer Choudhury Mohommed Riazuzzaman, Subid Bazar Branch explained:

“Employees of the branch just use the banking and office software packages to provide core banking services and are very rarely concerned about MIS. Two officers take care of IT related matters, one of whom was appointed as IT officer but both of them came from different background and nearly novice with no related training.”

He also added:

“Because the head office IT specialists who came from engineering backgrounds cannot understand banking procedure. On the contrary the bankers don’t understand the IT, which creates a huge gap that hinders proper application of the system.”

In banking organization more experts are needed so that load can be distributed to all. Training facilities should be increased. This is the thought of the IT officer about MIS in banking organization.

SVP and branch manager Mr. Alamgir explained:

“MIS considered as replacement of key person of the management level those who provide key decisions information for taking important decisions of the bank generally immediate subordinate of top management.”

SVP and branch manager of Green road branch of MBL explained:

“MIS worked in the banking organization just as a strategic tool to take prompt decision with minimization of data duplication.”

MIS saves time & decreases hazards of the customer. It also increases the reputation of the bank. Through MIS customer can get service within seconds. MIS provides information about various products & services frequently by taking sales & service strategy which are backed by MIS.

Choudhury Mohommed Riazuzzaman, Executive Officer, Subid Bazar Branch stated

MIS report is created through data from field level. Wrong collection of data can mislead the management level wrong scenario of the bank and negatively affect the decision.

Researcher found in MBL few employees have very little or no knowledge about MIS. If they prepare the report may create problems but branch manager ensure those are expert in using systems will not participate in preparing reports.

5.2.3.3 Infrastructure of the Bank:

In branch level of MBL now they are strong enough to conduct IT based business transactions and it has all the branches are under online banking umbrella and try to develop all the parts business activities in information systems procedures. Researcher found different dimensions of practices of MIS in branch level:

5.2.3.3.1 **Website and Web mail:**

Mr. Imrul Kabir Chowdhury branch manager of MBL explained about infrastructure of web site and web mail:

“We have not face any problems regarding website because it is always ready for us but in case of web mail few problems faced by employees but after giving message to the IT division solve it within hour.”

Another branch manager explained it different way:

“Though the information is available on website but we have not faced any problems regarding website and web mail because of our need fully known by top management.”

Again Mr. Md. Dilip kumar, AVP of MBL states:

“As the traditional process is time consuming so there is no best alternative other than web mail communication or information disclosed in web site.”

Researcher also found no complexity in web mail and website of MBL in branch level.

5.2.3.3.2 Information Systems Infrastructure of the Bank:

i) Hardware Infrastructure:

Hardware is the tangible part of a computer system. Available and workable existing hardware encourages an employee to work hard and better using this hardware. To ensure better performance every employees have to have all types of hardware facilities.

A.S.M Fahmi, SVP of the Sylhet Branch stated that,

“There is one personal computer for each employee except some cash level employees. But the hardware infrastructure need to be more developed. The number of pc in the bank may be increased and there may be a printer attached with every pc so that employees do not suffer from lack of printer. If we had a web camera it would be better.”

IT Officer Rokibul Hasan stated that,

“Obviously, but the current condition is better than past. About 5 years ago there was only one computer in the bank but at present hardware resources are sufficient in branch level. In near future hardware resources have to be updated with the development of the total infrastructure of the bank.”

In order to be a successful banking organization a bank must have sufficient hardware to support the bank's activities, MIS implication, profit maximization etc. Mercantile bank is in average position in hardware infrastructure that means hardware must be developed in near future in order to face competition in the market effectively.

To get proper output from the employees, a bank must have sufficient hardware to allow the employees to perform various computer related tasks effectively. Mercantile Bank is one of the leading PCBs in Bangladesh. The bank has sufficient hardware for employees. The hardware acquiring policy of the bank is also satisfactory.

ii) Software Infrastructure:

Programs along with supporting components are called software. Software infrastructure is the top-level design of the performance characteristics needed to meet the database and software application requirements. MBL has no problem in considering software infrastructure. It is among the top banks but not in best position. At present the bank is using PCBANK 2000 software, it is also developed by the experts of the bank.

Imam Kabir Chowdhury, SVP and branch manager saidt

“But real time banking is not possible at present all over the branches of the bank. Their software infrastructure is in below average level which is information to be worried in the present competitive market. But within shortest possible it will be solved.”

AVP Mr. Faruk of Banani Br.stated:

“Yes, there are some problems. As there is not enough training facility, employees face problem to run the software.”

The employees are also not interested to learn about software which is not for their responsible task. As a result they face problems while using the software of the bank.

Few of the employees can't cope up with new software because of their mental acceptance and fear. Because they think that they will not be able to adjust with new software and perform better, that is why they resist on implementing new software and the advancement of the bank hampers.

Lack of knowledge, back dated software, lack of education, lack of help from IT Officer. But in case of Mercantile Bank the subordinate level employees do not suffer problem in using software because the software they use is primitive type software that is why employee can adjust with this software, their IT Officer is very friendly, they provide proper training to their employees.

iii) Network Infrastructure:

The network is important for a bank to communicate with the head office and other branches. If the network of a bank is poor, then there will be lack of communication and misunderstanding will arise, decision taking will be time consuming, more time will be needed to solve problems, consumer satisfaction will decrease, employees will not able to work effectively, reputation of the bank will decrease, data transferring will be hampered and sometimes data can be lost and can't reach the server or main branch or to the consumer etc. The network structure of Mercantile Bank is satisfactory according to the statement of the interviewees in Sylhet Branch. They have available internal resource to support the network.

A.S.M Fahmi, Officer of Subid Bazar Branch said,

“MBL have very good network infrastructure. We have T&T and two private networks.”

Networking sometimes hampers because of external problems. The national networking infrastructure is not so good. Thus, despite the bank has a strong network it is hampered by the national network. Rural areas branches comparatively suffer higher from this problem than the divisional branches.

“Banks internal network is good but in case of external networking, the bank faces a problem because of the backwardness of the national network.” stated responsible IT Officer of Banani Br.”

There is a connectivity problem which is all over the country. In some cases, few branches face very problems in network disruptions. Their bank is not out of the national environment.

iv) Human Resources:

Strong human resource is one of the most important elements for the development of a bank. To get better performance from all of the employees, the human structure should be strong. A perfect number of human resource reduces pressure on some few employees. MBL has a perfect number of employees for their given desk.

Mr. Md. Imam Kabir Chowdhury, SVP and branch manager of MBL explain:

“We have not faced any problems regarding human resource but for taking competitive advantages we need some expert technical resources of the bank.”

Only newly recruited employees interested in using the system and they maintain banking needs of IT users.

Another employee in the branch level explains regarding shortage of expert employees in following way:

"Salary has a good impact employee to attract the highly qualified employees. If a bank offers high salary than other bank, the experts of the other bank will want to migrate to the high salary offering bank or new job seekers will also be attracted. This is a special technique to attract the qualified employees."

Rokibul Hasan, IT Officer of the bank stated that,

"The bank does not face any problem of lack of expertise employees. The bank offers a high salary for the employees, so there is no salary problem."

Bank has technical users and end users. Technical users design the systems and end users use the systems. Some interviewees stated that in both cases, bank suffering from lack of expertise.

v) Data Resources:

In case of banking business transactions data must be managed effectively to benefit all stakeholders of the organization. Data are typically organized, stored and accessed by varieties of ways.

Data management is an important function of the bank. If data of banking transactions are not kept properly, at the time of making a financial decision there may arise a problem, if data are not kept with high security then it may threaten the bank. The absence of data management policy will increase the tendency of fraud among the

employees. So it is clear that a bank must have a good data management policy. Comparatively to Nationalized Commercial Bank the PCBs are good in data management. Head office needs data of every moment, for this there need proper data management.

Manager of Gulshan Branch:

"Data management policy is better. Everyday data are sent to the head office. At the evening time, data are stored within a pen drive and manager take the pen drive with him so that data are safe if there are any accident in the branch, such as firing. These data on pen drive are fully secured; we are very alert about this. Sometimes data may be wrongly presented because of the unethical activities of the bankers. But in nowadays it is reduced, because after storing data by a banker, it is rechecked by other two bankers."

Data can be kept in the data warehouse in the head branch. In the warehouse, all data of all branches are kept. Mercantile Bank has a data warehouse in the main branch.

5.2.3.3.3 Online Banking (Core Banking):

Core banking is a general term used to describe the services provided by a group of networked bank branches. Bank customers may access their funds and other simple transactions from any of the member branch offices. To access a financial institution's online banking facility, a customer having personal internet access must register with the institution for the service, and set up some password for customer verification. The password for online banking is normally not the same as for telephone banking. MBL has taken incredible steps in implementing online banking. Online Banking has

so far been activated with 41 Branches of the Bank from January 01, 2006. But its position is not so satisfactory in a competitive environment with Foreign Commercial Banks.

Manager of Green road branch stated that:

“We are using online banking efficiently in banking transactions and lowering cost while maximizing customer satisfaction. Sometimes we are facing problems with inexpert employees.”

Researcher found MBL has no problems regarding online banking, but the bank at present has not real time banking but after implementing core banking software this problem will be solved. Employees are satisfied with their online banking. Day to day activities is easily performed through online banking. Online banking is now available customers both deposit and withdrawals, Cheque Deposits and transfer in CD, SB, STD, Loan accounts and Monthly Savings Scheme".

5.2.3.4 Application of MIS in MBL:

The bank needs expert employees. The expert employee is the key thing for increasing a firm's performance and profitability. But getting expert employee is not so easy. Every organization tries to get expert people employed in their own organization. Salary structure, training program, use of MIS also influences getting expert people.

From the observation of the researcher, it has found that all employees of MBL are not expert and they have a lack of knowledge about MIS. They have skipped many

question because they have not understood, but they can use IS because of experiences.

"PCBs are more efficient as their system, the user more efficient. The Mercantile Bank Limited has 79 branches across the country at the hot spots of trade and commerce. Locker facilities are also available at some selected branches. They have set up 42 ATM up to May 10, 2012, booths in large cities. However, they are very limited in the number. Bank authority has collaboration with DBBL to use their ATM booths. But these numbers are not sufficient to be in the competitive situation. Comment of an employee of Bazar Branch of the MBL."

Shakhwat Hossain, AVP explained the gap between needs and application of MIS in MBL in following way:

"Most of the private banks are using MIS for their day to day banking performance. Although some of the private banks are in the initial step of using MIS. There is no numerical ranking in our country of the PCBs based on only MIS. Mercantile Bank is now in a good position in using MIS."

5.3 Summary

This chapter presented data collected through in-depth interview, observation, and documented review. Data presented in the form of quotation, text, and tabular form on the basis of data presentation techniques of qualitative research. The next chapter will analyze the collected data based on the selected method which discussed in chapter –Three.

PART –TWO
ANALYSIS OF THE STUDY

CHAPTER - SIX

DATA ANALYSIS

6.0 Introduction

This chapter is designed to analyze the descriptive findings (Chapter-Five) by supplying relevant theory and propositions. These theories and propositions are reviewed and organized in (chapter-Two) for developing various perspectives on the practices of MIS in the banking sector.

In organizing this chapter, two issues were considered. First one is the theoretical discussion about the model and propositions in (chapter –Two) and the other is the chronological order of the comparative case study (chapter – Five). The former is used to divide this chapter into different sections and later is applied within each section. Thus, within each section the reader can see both the theory and comparative picture of the data relating to that theory. In order to simplify the presentations, attempts are made, in most cases, to develop a matrix containing theory and data. Each of the matrices is discussed in detail considering magnitude of the data. The analysis of the data presented on the basis of magnitude. There are four types of outcome are: *Unsatisfactory or not sufficient, Natural or Usual, Reasonable, Satisfactory or up to the mark.*

This chapter is divided into four sections are: Corporate executives and practices of MIS; employees' involvement and practices of MIS; IT infrastructure and practices of MIS; and finally gap between needs and application of MIS. Again, each section divided again into two subsections (one for ABL and another for MBL).

6.1 Corporate executives and practices of MIS

This section describes and analyses the descriptive findings on the corporate executives' supports and role in practicing improvement of MIS in the bank. It actually evaluates who are the executives, what is their role, how they supportive in the practices of MIS in their organization. Support of corporate executives in practices improvement of MIS in bank discussed from the theoretical aspects and explanation given by users considering some key issues of corporate people and MIS. The discussion in this section begins with the corporate people and MIS in ABL (6.1.1) and followed by the corporate people and MIS in MBL (6.1.2) and finally the summary of the chapter (6.5) which includes the rationale for the next chapter. Further details on each of the sections are provided at the beginning of each section, mainly to minimize repetition of the information.

6.1.1 Corporate executives and MIS in ABL

This subsection is designed to analysis the corporate executives surroundings and application of MIS in ABL. It is thought corporate executives of the organization have commitment to develop organization and cope with any type of changes in the competitive environment which depends on some of the unique factors of corporate executives. Theoretical discussion about corporate executives deals with in chapter two (2.2). The conceptual framework of corporate executives supports and improved practices of MIS (Figure-2.1, chapter –two) explained about factors of corporate executives' support. Factors of corporate executive support include a link between the firm and executives' vision, executives' technological know –how, executive's job satisfaction, and cooperation of employees to management.

The findings on the corporate executives' supports in ABL are organized in the Table-6.2, while surroundings factors of corporate executive supports organized in the Table - 6.1. The findings of corporate executives' support in ABL provide general support to the conceptual structure of MIS identified in chapter two, but it requires further analysis to assess the level of impact of corporate executives' support on the practices of MIS in the banking business. In the discussion relevant theories are applied to explain the findings and necessary comments on the theories are made. The discussions in this section consist of the framework of the corporate executives and practices of MIS.

Table – 6.1: Factors influencing corporate executives' supports to the organization in ABL

Factors	Status
Relationship of Firm's and executive vision	Satisfactory
Executives' technological Know-how	Satisfactory
Executive Job satisfaction (Partially measure)	Natural
Subordinate cooperation	Natural

Source: The Author

The findings of the corporate executives' support on improved practices of MIS in ABL provide general support on corporate executives' commitment to improved practices of MIS discussed in chapter two. Discussion also supports the factors of corporate executives' commitment that explain the theory in different sections of chapter two about the MIS and corporate executives. Description gives outline about the support of corporate executives on IT infrastructures of ABL in head office level and branch level as *satisfactory* and *natural* respectively. Again, the support of corporate executives on employees' involvement in IS practices of ABL in head office level and branch level as *reasonable* and *natural* respectively.

Table -6.2: corporate executives' supports on improved practices of MIS in ABL

Factors	Head office level	Branch level
Support to development of IT Infrastructure	Satisfactory	Natural
Support to develop EI	Reasonable	Natural

Source: The Author

6.1.1.1 Firm's and executives' vision

Theory suggests that corporate level people are key factors that creates an environment for taking the time required policy for the organization. Thus, they have an important role in developing IT infrastructure or self motivated employees and their involvement in the application of IS in the organization (Doll 1985). Thus, corporate executives' support is very much important to improve practices of MIS (Wetherbe & Whitehead 1977; Buss 1983, McFarlan 1981). But the support level of corporate executives directly depends on firm and executives' vision (Ross and Feeny, 1999; Maruca, 2000). But descriptions not sufficiently explain that how corresponding of firms and executive vision maintain at the level of corporate executives' support to improve practices of MIS in ABL. Description explain how ABL corporate people are visionary and what is the firm's strategic vision and in which way they try to improve practices of MIS.

From the following statement of one branch manager of ABL, reflects what is a firm and executive vision in ABL:

Manager of Ramna corporate Branch explained:

“Our corporate executives always concern about the challenges of the bank and we are always aware about stiff completion with PCBs and FCBs. Our IT based operations in all branches and online banking in every important branch are the outcome of our visionary executives.”

Another statement gives clue about the vision of the firm:

“ABL has always pioneered in every case in their strategic group. It first introduced and used computer among NCBs. Again started IT based operation and online banking systems firstly among NCBs.”

Executive vision and organization's vision has positive relationship which supports to develop and practices MIS in ABL.

6.1.1.2 Executives' technological know-how

Corporate executives of the ABL are modern business and technology knowledgeable. Though all of them not from IT background but their academic background is sufficient for understanding IT impacts and its role in the banking business. The theory suggests, executives' knowledge and experience help to change the organizational structure (Nelson, 1973; Miller 1980). Thus executives' own knowledge about IT also influences to support of corporate executives to improve practices of MIS in ABL. Though descriptions not clearly explain how their knowledge about IT supportive for corporate executives for improving practices of MIS in ABL, Data description showed that academic and technical knowledge both are important for supporting corporate executives for improved MIS practicing in ABL.

One branch manager explained:

“All of the corporate people not from IT background but their academic background competent in understanding IT impacts and its role in the banking business.”

6.1.1.3 Corporate executives' job satisfaction

Corporate executives' self satisfaction on the job and the organization is another key factor of creating commitment to the organization. Short and long-term incentives lead job satisfaction of executives, which ultimately influence corporate people to increase commitment to the organization (Guay & Larcker 2003; Dalton & Rajagopalan 2003; Tosi et al. 2000; Kaplan 1997, 1999; Buck & Shahrin 2005; Oxelheim & Randoy 2005).

Description not explained about the job satisfaction of the member of the corporate body. But from the observation and in-depth interview on top management people it was found by the researcher, all top management people other than member of corporate bodies are not fully satisfied with their financial benefits which may influence the dedication level of corporate people to the organizational change and development.

6.1.1.4 Subordinate cooperation

Subordinate cooperation to top management many cases increases the spirits and commitment of the corporate people for supporting to the organization and facing challenges in organizational change. It is a system process that creates a spirit of cooperation within an organization and taps the creative contributions of each member in corporate body (Potocki and Bocato 1995; Galbraith 1973; Wainer and Rubin 1969).

Description not supported directly that employees' cooperation induces the corporate executives to develop organizational favorable policy in ABL. But description clearly identified from observation and in-depth interview in the head office level and branch

level employees that employees are cooperative to management level people at any matter but they have little claim about the policy of the organization.

AGM and Project director of online implementation of ABL Mr. Jalal Uddin Ahmed focusing employees by his statement:

“Our employees are cooperative and obedient, but the policy of the organization not supported in some cases to motivate employees.”

The above statement indicates employees are cooperative based on the requirements of the organization, but they are not self motivated.

6.1.1.5 Corporate executives support in improving practices of MIS in ABL

Theory suggests that corporate executives' supports have direct impact on improving practices of MIS (Doll and Ahmed 1983) while other studies (Ashill et al., 2006; Reeves and Hoy, 1993; Natalisa and Subroto, 2003) have reported mixed findings on the relationship between management commitment and improved practices of MIS. But, Data description clearly identified that corporate executives' supports have direct impact on improving practices of MIS in ABL.

6.1.2 MIS in MBL

This subsection is designed to analysis the corporate executives surroundings and application of MIS in MBL. Theoretical discussion about corporate executives and conceptual framework of corporate executive support and improved practices of MIS discussed in chapter two (2.2).

The findings on the framework of corporate executives' support in MBL are organized in a Table -6.3 and support level of corporate executives in MBL is organized in a Table -6.4. The findings on the different factors on corporate executives support on MBL provide sufficient support to the conceptual structure of framework of corporate executives support in chapter two, but it also requires further analysis to assess the level of impact of corporate executives' support on improved practices of MIS in the banking business as well as in MBL. By considering the different relevant theory discussion was made to explain the findings and necessary comments on the theories. The discussions in this section consist of framework of corporate executive support and support level of corporate executives on improved practices of MIS. The discussion begins with the firm's and executive vision followed by the executives technological know-how, executives' job satisfaction, subordinate cooperation, and finally corporate executives support in improving practices of MIS in MBL, supports in decision making.

The findings of the corporate executives' support on improved practices of MIS in MBL organized in a figure- 6.4. The findings provide general support on corporate executives' commitment to improved practices on MIS discussed in chapter two. Description sufficiently explained that support on corporate executives on IT infrastructures of MBL in head office level and branch level as *satisfactory* and *reasonable* respectively. Again, support of corporate executives on employees' involvement in MIS practices in MBL in head office level and branch level as *reasonable* and *reasonable* respectively.

Table – 6.3: Factors influencing corporate executives’ supports to the organization in MBL

Factors	Status
Relationship of Firm’s and executive vision	Satisfactory
Executives’ technological Know-how	Satisfactory
Executive Job satisfaction (Partially measure)	Reasonable
Subordinate cooperation	Reasonable

Source: The Author

Table- 6.4: corporate executives’ supports on improved practices of MIS in MBL

Factors	Head office level	Branch level
Support to development of IT Infrastructure	Satisfactory	Reasonable
Support to develop EI	Reasonable	Reasonable

Source: The Author

6.1.2.1 Firm’s and executives’ vision

From the theoretical aspects it is very much important that corporate executives’ support depends on the harmonization of firm’s and executives’ vision (Ross and Feeny, 1999; Maruca, 2000). Description perfectly explain that how corresponding of firms and executive vision support level of corporate executives to improve practices of MIS in MBL. Descriptions explain how MBL corporate people are visionary and coordinate with the firm’s strategic vision. From the following statement of one branch manager of MBL, reflects what is a firm and executive vision in MBL:

“We are always concerned about our bank and try to adopt with any type of technological change. We have some visionary leaders who contributed regularly.”

From the observation and in-depth interview researcher found defined relationship with firm's and executives' vision. Next section discussed about technological know-how of corporate executives'.

6.1.2.2 Executives' technological know –how

The theory explained corporate peoples' knowledge and experience is the key factor to induce corporate people's commitment for improved practices of MIS (Nelson, 1973; Miller 1980). Description support MBL corporate people have such type of knowledge and provide support to the executives' commitment for improving practices of MIS in MBL. Data description showed that academic and technical knowledge both are important for supportive corporate executives for improved MIS practicing in MBL.

Researcher found that all employees of MBL academic and technical knowledge sufficiently match with their requirements and corporate people has satisfactory knowledge for managing or committing for managing practices of MIS.

6.1.2.3 Corporate executives' job satisfaction

Commitment to the job depends on self satisfaction of the job, whether a person an executive or lower level employee. Thus job satisfaction is a determinable factor that creates a commitment of executive in the organization development (Kaplan 1997, 1999; Buck & Shahrim 2005; Oxelheim & Randoy 2005). The description of this part not clearly explain about the level of job satisfaction and how much supportive it for improvement of their commitment. Description have not sufficiently explained about the job satisfaction of the member of the corporate body.

All top management people are satisfied on their financial benefits which may influence the dedication level of corporate people to manage improved practices of MIS.”

6.1.2.4 Subordinate cooperation

Supportive cooperation of the employees to the management people induces spirit of cooperation of the top management people as they are dedicated to each other (Wainer and Rubin 1969). Description not supported sufficiently that employees' cooperation induces the corporate executives to develop organizational favorable policy in MBL.

SVP and Head of business team in IT division of MBL Mr. Md. Shafayet Wahed explained:

“Our employees are cooperative and obedient to the management and they are responsible for their duty. It impressed our top management to work better for the organization. ”

6.1.2.5 Corporate executives support in improving practices of MIS in MBL

Based on the theoretical discussion in the chapter two, corporate executives' support is the key has a direct impact on improving practices of MIS in the organization (Doll 1983). Explanation in the previous section showed mixed findings on the relationship between management commitment and improved practices of MIS.

6.2 IT Infrastructure

This section describes and analyses the descriptive findings on the IT infrastructure of the banking sector of Bangladesh. IT infrastructure has discussed from different aspects like hardware resources, software resources, network resources, data resources, and support personnel. The discussion in this section begins with the IT infrastructure of ABL (6.2.1) and end with MIS infrastructure of MBL (6.2.2).

6.2.1 IT infrastructure of ABL:

This subsection actually designed to analyze the discussion about IT infrastructure of the ABL. It is thought that the bank have to have strong IT infrastructure for improved practices of MIS. Theoretical discussion of the conceptual framework of IT infrastructure dealt with in chapter two (2.3) and issues related to ABL also discussed in previous chapter (5.1.2.3 & 5.1.3.3). The study focused different factors of IT infrastructure of the bank.

The findings of the different factors relate to IT infrastructure are organized in Table -6.5. The discussion begins with the hardware resources, software resources, data resources, network resources, IT workers, and ends with support personnel of ABL.

Table – 6.5: IT infrastructure of ABL

Factors	Branch level	Head office level
Hardware Resources	Unsatisfactory*	Not sufficient
Software Resources	Satisfactory	Satisfactory
Data resources	Reasonable	Reasonable
Networks Resources	Reasonable	Reasonable
Support personnel	Unsatisfactory*	Natural

Source: The Author

* Reasonable in some selected branches and not sufficient in others but considering future all are fully insufficient.

6.2.1.1 Hardware resources of ABL

Hardware is the main components of the IS infrastructure of the bank. Sufficient infrastructure is the precondition for smooth operation of the banking business (Rawani & Gupta 1999; Chandrasekhar and Sonar 2008). So organization should develop such types of hardware infrastructure for efficient performance in operational level. The model suggests hardware infrastructure of the bank directly impact on the operation process of the systems which directly impact on the performance of the MIS and overall performance of the bank. The description also clearly explain that ABL hardware infrastructure have not sufficient in operational level of the bank, even unevenly allotted hardware resources in rural and urban branches, online and offline branches. Again hardware is sufficient in considering current needs but considering future needs of ABL hardware is fully insufficient. But descriptions narrowly explain hardware resources limitations in ABL relationship with operation process, performance of MIS, and finally with the performance of the ABL.

Table – 6.5 suggest hardware resources of ABL is Sufficient in some selected branches and not sufficient in others, but considering future all are fully insufficient and head office level it is not sufficient in considering future needs of the bank.

Theory suggests if all components of operational environment not worked well, users of bank will not efficient in operational activities. Thus the operation process will not be effective (Rawani & Gupta 1999). In ABL few branches working well as their hardware infrastructure is good enough while others are not. Again, all branches of ABL not practicing same operational procedures in operational level and all branches are not equally equipped with hardware, thus smoothes IS and MIS practices throughout the bank is questionable?

The question may be asked: why ABL is not practicing unique operational procedures throughout the bank? The reason for this problem may be ABL not in a position at present to develop updated hardware resources or managing other resources like software, human resources in ABL at present.

One top management executive of ABL said:

“Hardware resources were not sufficient when started our operation online banking in the year 2008 that’s why we could not ensure progress on planned activities of converting manual systems of banking to online activities. At present, bank updated its hardware infrastructure considering current needs of the bank. So, in future it will be questionable.”

Another Branch manager of ABL has given simple statement:

“Maximum hardware became expired in our bank in many branches thus the Problems occur frequently. So it is a strong urge to update hardware infrastructure.”

Thus ABL needs to develop hardware infrastructure as soon as possible to ensuring smooth operation in all over the branches and developing unique operational procedure which will ensure better performance of the bank.

6.2.1.2 Software resources of ABL

Software is another key component of the IS infrastructure of the bank. Reliable and user friendly software can support in the smooth operation of the banking business (Nelson et al. 2005; Gorla et al. 2010). So the organization should develop and use such types of software for efficient performance in operational level. The model suggests software also has a direct impact on the operation process of the systems

which directly impact on the performance of the MIS and overall performance of the bank. The description also clearly explain that ABL has no problems regarding software whatever the online or offline branches and bank has no problems in operational level regarding software rather problems in users of the software. Even in future ABL will not face any problems of software even for paperless banking systems.

The theory suggests, if all components of operational environment not worked well, users of bank will not efficient in operational activities. Thus, the operation process will not be effective (Nelson et al. 2005; Rawani & Gupta 1999). But theory, not explain clearly about the users intimacy with the systems may give effective operational results. Though the software is available but users are not efficient in using software, thus operational activities of the bank not ensure effective results in ABL. It implies users' efficiency of the ABL not proves in using the systems.

The question may be asked: why ABL users' are not efficient in using the software? The reason for this problem may be ABL users are not trained nor have knowledge in using IS which is discussed in the next section of this chapter (6.3.1.1).

One branch manager of ABL said:

“We have sufficient software for managing our banking operation, whether online branch or offline branch, but we have faced some problems regarding software due to lack of training & IT people.”

Thus, ABL needs to maintain software and have to focus on users of software in the branch as well as corporate level.

6.2.1.3 Data resources of ABL

Like many other business, data is another key component of banking business. For better operations, transaction data must be managed effectively to benefit all stakeholders of the bank. Data are typically organized, stored and accessed by varieties of ways. Model suggest data resources also impact on the operation process of the systems and ultimate impact on the performance of the systems and performance of the bank. Descriptions clearly explain ABL has problems in data managing. Branch level actually data input into the systems, but managed in corporate level in case of online branches and in offline branches branch stored data according systems given by corporate level. Table – 6.5 suggest data resources of the ABL are managed in a suitable structure, whatever the branch or corporate office under online or offline. Theory suggests banking business actually based on data those are used in operational level, thus free flow of data are expected in any level based on the requirement thus its efficient management is mandatory. But descriptions narrowly explain about occasional problems of error handling in data managing procedure in server of ABL. It implies that the bank has technical problems rather regular in error handling in data managing procedure at server.

The question may be asked: why ABL occasionally faces a few problems in error handling in data managing procedure at server? The reason for this problem may be ABL facing shortage of technical expertise.

Project director of online implementation of ABL said:

“ABL depends on vendor company for systems development, sometimes bank faces problem in error handling of the systems after delivery the systems because we have not a sufficient expert or technical person for managing the systems”.

Since, ABL has no problems in managing data resources, so the operational process of the bank will positively impact on the performance of the bank but needs to improve technical expertise in bank.

6.2.1.4 Network resources of ABL

Networks are the basis of effective communication in real time banking systems. IT is a precondition for modern online or e –banking. Network disruption may hamper the target growth of the organization as the operational activities will not perform smoothly (Shamsuddoha, 2008; Ostlund, 1974; Taylor, 1977). The model suggests network's resources of the bank has a straight impact on the operation process of the systems which directly impact on the performance of the MIS and overall performance of the bank. Description also clearly explain that ABL has no problems regarding networks other than the national problems which are facing all other banks in the industry. Even in future ABL will not face any problems regarding the networks as they have the proper agreement with the vendor. Figure – 6.5 suggest network resources of ABL are sufficient in branch as well as corporate level of the bank. It implies banking industry facing a few problems in network disruption, but it is not individual problems for ABL.

Theory suggests it is mandatory of every branch section of bank have to ensure uninterrupted LAN and WAN networks for smooth operation of banking services (Shamsuddoha, 2008).

One mid management employee of ABL said:

“We ensure network facilities before implementing core banking software in selected branches except common problems of network disruption all over the country.”

So, networks will not be problems for ABL but their target would be uninterrupted networks in all over the bank in 24 hours in a day seven days in a week.

6.2.1.5 Support personnel of ABL

Support personnel actually are the IT workers, those who support in the systems they have direct impact on the operation process of the systems of the bank. Because systems may show some irregularities, but it can be solved by support personnel within shortest possible time for smooth operation and ultimate effect on MIS performance and bank performances. Descriptions clearly explain the about the status of support personnel known as technical users and their role which is discussed in earlier sections.

6.2.2 IT Infrastructure of MBL:

This subsection in fact designed to analyze the discussion about IT infrastructure of the MBL. Theoretical discussion of the conceptual framework of IT infrastructure dealt with in chapter two (2.3) and issues related to MBL also discussed in previous chapter (5.2.2.3 & 5.2.3.3). The study focused different factors of IT infrastructure of the bank.

The findings of the different factors relate to IT infrastructure are organized in Table -6.6. The discussion begins with the hardware resources and the discussion complete with the chronological presentation of different factors in of Table -6.6.

Table – 6.6: IT Infrastructure of MBL

Factors	Branch level	Head office level
Hardware Resources	Satisfactory	Satisfactory
Software Resources	Satisfactory	Satisfactory
Data resources	Reasonable	Reasonable
Networks Resources	Reasonable	Reasonable
Support personnel	Natural	Reasonable

Source: The Author

6.2.2.1 Hardware resources of MBL

Hardware resources are the basis for IT infrastructure of the bank. It has a direct impact on the operation process of the systems. Again operation process has direct impact on the performance of the MIS and overall performance of the bank. Descriptions also clearly explain that MBL hardware infrastructure satisfactory level in operational level of the bank and all the branches are equally equipped. Again, hardware is sufficient in considering current needs, but bank has considered every aspect of the development of hardware for fulfilling future needs of MBL.

Descriptions strongly explain the hardware sufficiency of the MBL and its relationship with operation process, performance of MIS, and finally with the performance of the MBL.

Theory suggests sufficient infrastructure is the precondition for smooth operation of the banking business (Rawani & Gupta 1999; Chandrasekhar and Sonar 2008).

Table – 6.6 suggest hardware resources of MBL are fully sufficient and evenly in all branches and head office level and not problems in considering future needs of the bank.

One branch manager made a comment like:

“Before facing any difficulties by any branch of the MBL, head office searching regularly to update IT infrastructure of the MBL so, branch have not any feelings about wants for hardware.”

Thus MBL have not any problems regarding hardware, but have to strategically plan about future.

6.2.2.2 Software resources of MBL

Of course software is the lifeblood of the systems. So the bank has software sufficiency as well as hardware for smooth operation of the banking business (Nelson et al. 2005; Gorla et al. 2010). So the organization should develop and use such types of software for efficient performance in operational level. The model suggests software has a direct impact on the operation process of the systems which positively support to the performance of MIS and overall performance of the bank. Descriptions also clearly explain that MBL has no problems regarding software in any branches and head office level of the bank. Even in future MBL will not face any problems of software for paperless banking systems.

The theory suggests, if all components of operational environment not worked well, operation process of the bank will not be effective (Nelson et al. 2005; Rawani & Gupta 1999).

One branch manager of MBL said:

“We have sufficient software for managing our banking operations because top management always concern about the systems requirement of the branch and we got systems from the top before approaching our problems.”

Thus, MBL needs to maintain software and have to focus on users of software in branch as well as head office level for smooth operation in future.

6.2.2.3 Data resources of MBL

Data are typically organized, stored and accessed by varieties of ways. Model suggest data resources also impact on the operation process of the systems and ultimate impact on the performance of the systems and performance of the bank. Descriptions clearly explain MBL has no problems in data managing. As the bank under the online infrastructures all these data stored in a central server and these data easily accessible from host computer from any branch or head office level.

Table – 6.6 suggest data resources of MBL are managed in a suitable structure, whatever the branch or head office level. Theory suggests banking business actually based on data those are used in the operational level, thus the free flow of data are expected in any level based on the requirement thus its efficient management is mandatory. It implies that the bank has not any problems regarding data management.

One IT people said:

“MBL has no general risk of using MIS as we have maintained backup for storing of data and we try to ensure correct data inputting in the bottom level.”

Since, MBL has no problems in managing data resources, thus the operational process of the bank positively impact on the performance of the bank.

6.2.2.4 Network resources of MBL

Network resources of the bank have straight impact on the operation process of the systems which directly impact on the performance of the MIS and overall performance of the bank. The description also clearly explain that MBL has no problems regarding networks other than the national problems which are facing all other banks in the industry. Again in the future, MBL will not face any problems regarding the networks as they have the proper agreement with the vendor.

Theory suggests it is mandatory of every branch section of bank have to ensure uninterrupted LAN and WAN networks for smooth operation of banking services (Shamsuddoha, 2008). Table – 6.6 describes network resources of MBL are sufficient in the branch as well as in the head office of the bank.

It implies, according to the theoretical explanation MBL has not problems network for smooth operations of the bank, but their target would be uninterrupted networks in all over the bank in 24 hours in a day and seven days in a week.

6.2.2.5 Support personnel of MBL

Support personnel mean technical people of the bank those who support in the systems and they have a straight impact on the operation process of the systems of the bank. Descriptions clearly explain the about the status of MBL support personnel known as technical users and their role, which is discussed in an earlier chapter.

6.2.3 *IT infrastructure and practices of MIS:*

Considering data description discussed in the previous chapter and above analysis total scenario of 'IT Infrastructure' of the selected case presented in the Table -6.7. Figure depicted IT infrastructure of ABL in branch level not up to the mark, but in head office level position is satisfactory while MBL is far better in branch level and up to the mark in head office level based on current needs.

Table – 6.7: IT infrastructure of ABL and MBL

Case	Branch level	Head office level
ABL	Natural	Satisfactory
MBL	Reasonable	Satisfactory

Source: The Author

6.3 Employees Involvement in IS and practices of MIS

This section describes and analyses the descriptive findings on the EI in the IS application and role in improved practices of MIS. It actually evaluates who are the employees, what would be their role in involvement in IS and finally, how they supportive in improved practices of MIS. EI in practicing improvement of MIS in bank discussed from the theoretical aspects and explanation given by users considering some key issues of employees in the bank. The discussion in this section begins with the employees' involvement and MIS in ABL (6.3.1) and followed by the employees' involvement and MIS in MBL (6.3.2) and finally the summary of the chapter (6.3.3) which includes the rationale for the next chapter. Further details on each of the sections are provided at the beginning of each section, mainly to minimize repetition of the information.

6.3.1 *Employees Involvement in ABL:*

This subsection is in fact designed to analyze the discussion about employees' involvement in IS of the ABL. Theoretical discussion of the conceptual framework of Employees Involvement (EI) dealt with in chapter two (2.4) and issues related to ABL also discussed in previous chapter (5.1.2.2 & 5.1.3.2). The study focused different factors of employees' involvement of the bank and status of employees' involvement of the bank. The findings of the different factors relate to employees' involvement are organized in Table -6.8 and status of employees' involvement are organized in Table - 6.9. The discussion begins with the academic knowledge of the employees and followed by training, IT knowledge, information sharing, power sharing, the systems friendliness, and status of employees' involvement in ABL.

Table – 6.8: Factors influencing employees' involvement in ABL

Factors	Operational level	Management level
Academic knowledge of employees	Unsatisfactory	Reasonable
Training of the employees	Natural	Natural
IT knowledge	Unsatisfactory	Natural
Information sharing	Unsatisfactory	Natural
Rewards and Pay	Unsatisfactory	Unsatisfactory
Power sharing	Natural	Natural
Systems friendliness	Natural	Natural

Source: The Author

6.3.1.1 Academic qualifications of the ABL employees

Academic qualification is one of the important personal characteristics of the employees that affect the level of involvement in the IS of the organization (Lucas 1973, 1975; Mock 1973). Though the model suggests educational qualification determine the employees' level of involvement in MIS practicing, description not clearly explain how educational qualification may affect the employees' involvement in MIS practicing in the bank.

Table – 6.8 suggest Educational qualification of ABL users' vary from different level of the bank. At the operational level most of the employees educational qualification not up to the mark rather unsatisfactory. Thus, all employees of the ABL are the part of the system, but not a user of the systems. Only all newly recruited employees are direct users of the systems as their educational qualification is better than others. Again, in management level employees' educational qualification is reasonable. It implies that ABL cannot consider the qualifications of employees to increase the system's performance.

Theory suggests all employees who are part of the system should have satisfactory or reasonable educational qualification to improve practices of MIS.

But, most of the old ABL employees have not standard general education. Thus, they fear the systems and maintain distance from using the systems and those are using the systems inept in using systems. The question may be asked: why ABL is not considering above standard qualification of users? The reason for this problem may be ABL not consider the qualification of users in the utilization of the systems.

One top management executive of ABL said:

“Our all employees are not qualified enough to understand and utilize the systems regularly. Most of the old employees’ educational qualifications not support to work with the modern banking business and information systems.”

Though the older employee's educational qualification not suit with current banking business transactions of ABL, but present recruitment policy, consider the required educational qualification of the employees of ABL. Thus, this factor will not create any hindrance on the performance of the systems and overall performance of the bank.

6.3.1.2 Training level of ABL employees

Considering the demand of servicing organization in a knowledge-based society, the development of human resources means encouraging the employees to acquire new skills and to accept the occupational mobility (Tripon & Blaga, 2010). Through the different types of training organization can increase awareness about the importance of continuous learning, the degree of motivation to broaden knowledge and develop individual skills (Blaga & Tripon, 2011). The model suggests training of the employees in IT and other IS functions directly impact on the practices of MIS in the bank. But description clearly explains that ABL employees have not taken sufficient training to use the systems and some cases training not effective to get effective output from the systems. Sometimes theoretical training and practical orientation don't match. Thus, training systems would not provide a positive outcome. But description is not sufficient to explain how employees’ training determines the use

process of the systems, while descriptions narrowly define the training relationship with use of systems and improved practices of MIS of the ABL.

Table – 6.8 suggest that training taken by ABL users' is natural, means as usual in operational and management level but strategic level people has sufficient training to understand IT, MIS and managing systems of the bank.

Theory suggests operational and management level employees need satisfactory training on MIS and non MIS activities to cope with the changed banking environment (Ali et al. 2004) and ABL not beyond modern banking environment of the world. Again management level people also need to participate in development program of the bank. But, most of the old ABL employees are not interested to take training on MIS or IT because they think this is not for them but for younger. Thus, they participate only when they bound to participate not for learning, otherwise they skip it. Thus, they fear the systems and maintain distance from using the systems and again, those are using the systems inept in using systems. The question may be asked: why all ABL users not trained satisfactorily on using MIS? The reason for this problem may be ABL not consider training is the key factor to improve practices of MIS.

One of the senior level employees said:

“Our most of the old employees not taken training on MIS and a few have taken training at a time passing rather increasing efficiency. Only newly recruited employees perform all MIS works in the ABL.”

6.3.1.3 IT knowledge of ABL employees

In the competitive service industry organizations have to have competitiveness in providing services to the clients (Chang 2005; Boulding et al. 2005). The banking industry is the key service industry in the world which competitiveness mainly depends on the knowledge about the business, systems, and capability of the service provider to understand the needs of the customers. Technology based systems may give organization substantial competitive advantages (Khanam et al. 2005). In banking industry IT knowledge is the basic criteria of the service provider. Without it, nobody can able to satisfy customers because prompt service, customized service, and quick decision cannot be taken without application IT and IS (Reinartz et al. 2004; Dibb and Meadows 2004; Chen and Chen 2004; Ryals and Payne 2001; Kale 2004). The model suggests IT knowledge of users directly impact on the EI on IS and improved practices of MIS. But the description plainly explains that ABL users have not satisfactory knowledge of IT to use the systems and some cases IT training not effective for the users of ABL. Description showed only 30% users of the ABL are the computer users and trained, but many of them are not trained to use any type of systems. But descriptions showed newly recruited employees have basic knowledge of IT and computing.

Table – 6.8 suggest IT knowledge of ABL users' is not satisfactory in operational level people while management level people has natural according to their requirements.

Theory suggests operational level employees need satisfactory IT training to perform operational level activities smoothly to cope with the changed banking environment (Ali et al. 2004). Again few management level employees have IT and MIS

knowledge to use the systems efficiently. But some management level employees have not such types of knowledge. It implies that ABL users at all levels have not clear understanding about IT, MIS application or strategic use of MIS. The question may be asked: why all ABL users have not sufficient IT and MIS knowledge? The reason for this problem may be in ABL operational level employees are traditional rather modern. Again management level has very limited knowledge as they are promoted from lower level to mid management level based on the service experience but not based on knowledge and expertise.

One branch manager said:

“Actually, our bank currently performs better than before based on the newly recruited people because of their basic knowledge of using information systems. After retirement of old pool bank will ensure efficient human resources of using information systems, but we have not faced any serious problems in managing branches.”

Since users of ABL have deviation in knowledge of IT which affect use process of the systems of the bank, thus the performance of MIS and overall bank is not satisfactory.

6.3.1.4 Information sharing

In the modern technology, it is now considered that employees' involvement in the organization may improve because of information sharing among the employees through different communication media (Schonberger, 1992; Flynn et al., 1994). Employees can be benefitted and their participation of systems using can be increased because of formal and informal communication about the aspects of systems as well as organizational activities (Lawler et al., 1992). Thus information sharing practices are the important factor of EI.

Theories suggest information about success, failure, importance have to be shared among the employees of the organization but description not strongly supported this issue. Only few branch managers agreed that information sharing about success and failure influence employees to improve their practices or change their practices.

It implies that ABL employees not aware about information sharing. The question may be asked: why all ABL employees have not shared information? The reason for this problem may be in ABL employees are not trained or may not understand about the importance of information sharing for improving practices of MIS.

6.3.1.5 Reward and pay of the organization

Reward and pay is one of the important key factors for increasing EI in the organization and its different systems (Imai 1986; Lawler et al., 1992). Again, all types of compensation approaches are not considered well suited to EI e.g. Individual incentive plans are not supportive of EI, but team incentives can be (Lawler et al., 1992). For improving IS practices, traditional pay systems are viewed poorly for increasing the participation level from employee side but knowledge- and skill-based pay, promotion based on knowledge, team-based rewards, incentives for improvement, and non-monetary compensation considered effective for EI (Imai, 1986; Flynn, 1992; Choi and Eboch, 1998).

Description adequately supported theory about the impact of rewards and pay for improving EI into IS which may affect on overall practices MIS in the bank. In ABL, all most all the employees have raised their grievances about the rewards and pay systems of the bank. It implies that all ABL employees not satisfied with the pay structure and other benefits, systems of the organization. Table -6.8 of depicted

rewards and pay structure of the ABL not satisfactory in operational and management level of the bank. The question may be asked: why all ABL employees have not satisfied with the payment systems and IS of the bank? The reason for this problem may be in ABL policy and corporate executive not supportive for their pay structure or they are not considered pay structure is an important factor to improve EI in MIS practices.

But employees explain differently.

One of the employees of IT division explained his opinion in following way:

“Our pay structure is not suitable considering other private banks in Bangladesh. Again, we have served more than our business people, but there are no recognition or benefits for extra services which discourages employees of IT division to serve better or better practice of MIS in the bank.”

6.3.1.6 Power sharing

Lawler et al. (1992) identified practices for generating employee suggestions and problem solving includes participatory groups increase EI in the organization. In case of using IS, technical employees expect to power sharing practices in developing and practicing IS (Baskerville and Myers, 2002).

Description narrowly support theories about power sharing practices that may improve EI into the IS of the bank. Table -6.8 depicted power sharing practices in ABL at operational level and management level, both are natural or usual. One of the technical employees at head office level stated:

“We have no power for supporting any type of decision for developing IS. Thus we are now avoiding for proposing to develop new IS and bank relies on vendor.”

6.3.1.7 System friendliness

Of course systems, friendliness directly impact on use process and users' performance of the systems (Nelson et al. 2005; Gorla et al. 2010). Systems should be user friendly or trouble free so that employees can easily adopt with the systems. Though the theories not sufficiently explain about impact systems friendliness on EI into the systems, but descriptions narrowly explain level of impact of systems easiness on the EI into the systems and overall practices of MIS in ABL. But the descriptions given outline that ABL uses two type systems: one is a traditional offline banking and another is online banking. Traditional systems are not considerable factor as it will close down with a shortest possible time. In case of online banking (real time banking) ABL not fully considered existing old employees' capabilities rather considered the future needs of the bank in developing systems of ABL.

Theory suggests systems should be designed considering the user capability of using systems, thus they accept any type of change in the existing systems (Nelson et al. 2005; Gorla et al. 2010).

Table – 6.8 suggest system using at operational level not trouble free while management level people facing limited trouble design or determine systems specification thus they used systems as trouble free. It implies that systems are not user friendly in operational level or mid management level. The question may be asked: why all ABL developed systems is not fully user friendly? The reason for this problem may be in all users of ABL is not a considerable factor to run the systems. Old employees of the organization will be retired within shortest possible time and newly recruited employees are efficient in using IS. Thus old are not considered in designing systems of the bank.

One AGM of IT division, said:

“Just some selected employees perform IT or IT related activities of the whole branch and generally newly appointed recruited employees helping the branch manager to do the task as they have some IT or information systems knowledge before appointment. Thus, all employees don’t know about systems, friendliness.”

Though user friendliness affect to the systems performance, ABL not considered all employees capabilities in designing systems.

6.3.2 Level of EI and improved practices of MIS in ABL:

Theory suggests EI’s effect on employee job practices, satisfaction and performance, which, in turn, are thought to influence organizational performance. Employee involvement or employee participation has a positive effect on both satisfaction and performance (Miller and Monge, 1986; Cotton et al., 1988; Wagner, 1994). The theory explains employees participation in IS practices and cooperation to corporate people both come from job satisfaction of the employees.

The findings on the employees’ involvement or participation in improved practices of MIS in ABL organized in Table - 6.9. The findings provide general support on employees’ participation on improved practices on MIS discussed in chapter two. Description sufficiently explained that employees’ participation on using IS in ABL at head office level and branch levels as *natural* and *unsatisfactory*. Again, cooperation of employees to top management in ABL at head office level and branch level both are *reasonable*.

Table -6.9: Employees' participation on improved practices of MIS in ABL.

Factors	Head office level	Branch level
Cooperation to top management	Reasonable	Reasonable
Participate in IS using	Natural	Unsatisfactory

Source: The Author

6.3.3 Employees Involvement in MBL:

This part designed to analyze the discussion about employees' involvement in IS of the ABL. Theoretical discussion of the conceptual framework of Employees Involvement dealt with in chapter two (2.4) and issues related to MBL also discussed in previous chapter (5.2.2.2 & 5.2.3.2). Factors of the employees' involvement in IS already discussed in the previous subsection of ABL. Similar factors are considered for analysis of employees' involvement in IS of the MBL.

The study focused different factors of employees' involvement of the bank and status of employees' involvement of the bank. The findings of the different factors relate to the employees' involvement are organized in Table -6.10 and status of employees' involvement are organized in Table -6.11. The discussion begins with the academic knowledge of the employees and followed by training, IT knowledge, information sharing, power sharing, the systems friendliness, and status of employees' involvement in MBL.

Table – 6.10: Factors influencing employees’ involvement in MBL

Factors	Operational level	Management level
Academic knowledge of employees	Reasonable	Satisfactory
Training of the employees	Reasonable	Reasonable
IT knowledge	Reasonable	Satisfactory
Information sharing	Natural	Natural
Rewards and pay	Satisfactory	Satisfactory
Power sharing	Natural	Natural
Systems friendliness	Reasonable	Reasonable

Source: The Author

6.3.3.1 Educational qualifications of the MBL employees

Educational qualifications determine the user capability of using IS, thus it is one of the important indicators of EI into the systems and performance of the bank (Lucas 1973, 1975; Mock 1973). The model discussed in the chapter also suggest that educational qualifications of an individual positively correlated with IS using in the bank. Described in the previous chapter about this issue, not clearly explain how educational qualification may affect EI into the systems and ultimately on improved practices of MIS in the bank.

Table – 6.10 suggest Educational qualification of MBL employees’ not tremendously varied among the different level of the bank. At the operational level almost all employees’ have educational qualifications reasonable or standard in the banking industry. Thus, employees of the MBL not facing tremendous problems in using systems because of their general education allow basic knowledge of using systems and understanding banking. Again educational qualification in management level employees’ of MBL also satisfactory and up to the mark even in a few cases

excellent. It implies that MBL recruitment policy for entry into the bank is average or above average considering educational qualification requirement of the banking industry.

Theory suggests all employees who are part of the system should have above average educational qualification to understand the systems and operate with the systems and almost all the MBL's employees have the standard general education. Thus the MBL has not mentionable problems at various levels at the bank.

One top management executive of MBL said:

“Our all employees’ have educational qualifications up to the mark. Thus the bank not facing any problems regarding using any systems and their performance is well.”

Since the old employees of MBL educational qualification match with the system requirements and to understand the systems, thus, this factor will not create any hindrance on the performance of the systems and overall performance of the bank.

6.3.3.2 Training level of MBL employees

Training creates people perfect for his job and ensures efficiency of any individual (Tripon & Blaga, 2010). The model suggests training of the users of IT and other banking functions directly impact on employees' involvement and proper practicing of MIS of the bank. Descriptions also clearly explain that MBL employees have taken training that reasonable for running the systems in operational level. Again, not all employees trained in operational level mean at branch level. Only those are technical persons in the branch have taken training for using systems efficiently. Descriptions also sufficiently explain how employees' training determines the use process of the

systems, while descriptions narrowly define the training relationship with the use of systems and improved practices of MIS.

Table – 6.10 suggest that training taken by MBL users' is reasonable in operational, but in management level people has reasonable training to understand IT, MIS and managing systems of the bank. Ali et al. (2004) discussed, why operational and management level employees need satisfactory training on MIS and non MIS activities to cope with the changed banking environment. Only technical people take training related using the MIS in MBL. The question may be asked: why all MBL users not trained on using MIS? The reason for this problem may be MBL not consider MIS training is the key factor to increase operational efficiency of the firm.

One of the senior level employees said:

“In MBL, each branch only few selected employees are IT knowledgeable employees, but they do not know about the business of banking, they prepare infrastructure for smooth operations, support decision, etc. Thus other non technical employees have little ambition to learn about MIS or its practicing but they need to understand and practice MIS in each level of the bank.”

At MBL, all employees at the branch have to be trained for minimizing dependency on each other between two groups are business people and technical people.

6.3.3.3 IT knowledge of MBL employees

The banking industry is the key service industry in the world which competitiveness mainly depends on the knowledge about the business, systems, and capability of the service provider to satisfy customers successfully (Reinartz et al. 2004; Chen and

Chen 2004; Ryals and Payne 2001). The model suggests IT knowledge of employees directly influence to the EI in IS and ultimate impact on improved practices of MIS of the bank. But description clearly explains that MBL employees have satisfactory knowledge of IT to use the systems for providing services to the customers based on the current needs, but they are reasonable IT knowledge while management level people of MBL have satisfactory knowledge of IT & MIS. But descriptions clearly showed all the employees of MBL have basic knowledge of using computers.

Table – 6.10 suggest IT knowledge of MBL users' is not perfectly adequate in every level of the bank according to their requirements. In management level they have satisfactory knowledge in IT but in operational level few of them not have sufficient knowledge of IT but their requirements may be advance knowledge which has not everyone.

Theory suggests operational level employees need satisfactory IT training to perform operational level activities smoothly to cope with the changed banking environment (Ali et al. 2004). Again management level employees have IT and MIS knowledge to use the systems efficiently. But all operational level employees of MBL don't have advanced knowledge and training in IT & MIS. It implies that MBL users at all levels have not clear understanding about IT, MIS application or strategic use of MIS. The question may be asked: why all operational level users have not sufficient IT and MIS knowledge? The reason for this problem may be in MBL all operational level employees have not taken sufficient training as the management policy only IT people will get advanced training on IT & MIS.

One top management executive of IT division said:

“In MBL there are two types of IT people i) one group is pure IT means graduated from computer science and engineering (CSE) who are responsible designing systems and troubleshooting the systems and generally worked in head office level or in IT division ii) another group are actually hybrid people like graduation from any discipline and with extra degree like post graduation in IT or IS or MIS or PGD in IT or IS or MIS etc. and mainly worked in branch level and responsible for trouble shooting the systems in branch level, identifying the problems in the systems, communicating with the head office level, day start of the bank and day close and some cases doing some business task. Thus others users in branch level are not efficient using IT or MIS and they depend on IT people.”

Since users of MBL have deviation in knowledge of IT which affect use process of the systems of the bank, thus the performance of MIS and overall bank may not achieve in future. Thus bank's needs to change policy to develop hybrid people rather technology or business oriented.

6.3.3.4 Information sharing

Information sharing plays an important role to increase EI and support to the best practices of MIS. Though the theories moderately support the factor of but description not supported sufficiently about the role of information sharing on EI. In MBL, employees considered, it is the part of their responsibility to share all types of information. It implies that MBL employees aware about information sharing. Table - 6.10 depicted MBL information sharing in operational level and management level are natural.

6.3.3.5 Reward and pay of the organization

As a private organization MBL considered reward and pay is key indicators of employees' satisfaction which lead motivation to participate in the systems (Imai, 1986; Flynn, 1992; Choi and Eboch, 1998). Theories explain this factor as strong factor for influencing people. The description also adequately supported theory about the impact of rewards and pay for improving EI into IS which may affect on overall practices MIS in the MBL. In MBL, all most all the employees considered, it is a key factor for employee motivation, but only few of them showed grievances about their rewards and pay. Figure -6.10 of depicted rewards and pay structure of the MBL is satisfactory in operational and management level of the bank.

6.3.3.6 Power sharing

Though the some theories explain about the power sharing impact on employees' involvement, but a data description of MBL case not focused it satisfactorily. In case of using IS, technical employees expect to power sharing practices in developing and practicing IS (Baskerville and Myers, 2002). Description narrowly support theories about power sharing practices that may improve EI into the IS of the bank. Table-6.10 depicted power sharing practices in MBL at operational level and management level both are natural or usual.

One of the technical employees at head office level stated:

“Top management always takes any type of decision with the participation of our representative for ensuring benefit of the systems.”

6.3.3.7 Systems friendliness of MBL employees

Systems friendliness means how easily users can adjust with and use the systems and easy access into the systems directly impact on use process and users' performance of

the systems (Nelson et al. 2005; Gorla et al. 2010). The theory has not explained sufficiently about systems, friendliness and its impact on EI and practices of MIS in the organization, but descriptions supported it has impact improved practices of MIS. The description given outline that MBL has two types of users one is technical another is non technical. Both are performing well in their respective places, but one is not better in another place.

Table – 6.10 suggest system using at operational level, management level is trouble free. It implies that systems using in MBL reasonable in every level.

MBL creates specialization on using systems by technical and non technical people. But it may create problems in case of unavailability of technical people in branch level. Thus MIS people (hybrid knowledge) may be the best solution in smooth operation at branch level.

6.3.4 Level of EI and improved practices of MIS in MBL

Based on the theoretical explanation employee's participation in IS practices and cooperation to corporate people both come from job satisfaction of the employees. The findings on the employees' involvement or participation on improved practices of MIS in MBL organized in Table - 6.11. The findings provide general support on employees' participation on improved practices on MIS discussed in chapter two. Description sufficiently explained that employees' participation on using IS in MBL at head office level and branch levels both are *satisfactory*.

Again, cooperation of employees to top management in head office level and branch level as *reasonable* and *satisfactory* respectively.

Table- 6.11: Employees' participation on improved practices of MIS in MBL.

Factors	Head office level	Branch level
Participate in IS using	Satisfactory	Satisfactory
Cooperation to top management	Satisfactory	Reasonable

Source: The Author

6.4 Comparative analysis of ABL and MBL

From the analysis of the theory and data description of two banks it has found, factors influencing improved practices of MIS in banking sector showed dissimilarity among the PCBs and NCBs. Theory suggests improved practices of MIS in the banking organization depends on some key factors. Among them corporate executive supports, IT infrastructures of the firm and employees participation on information systems are very much important (Doll 1985; Ashill et al. 2006; Natalisa and Subroto 2003; Wetherbe, & Whitehead 1977; Brancheau et al. 1996; Wastell et al. 1994; Deming 1986; Flynn et al. 1995; Jack et al. 2001; Kathuria and Davis 2001).

Support of the corporate executives and level of support of corporate executives to improve practices of MIS in the banking sector is reasonable but not perfectly matches with the ABL and MBL. Again, factors influencing corporate peoples' commitment also differ bank to bank. In considering corporate executives support to develop IT infrastructure and employees' involvement in IS for improving practices of MIS, MBL (representative bank of PCBs) showed one step advance than ABL (representative bank NCBs). Corporate executive support in ABL at head office level and branch level for improvement of IT infrastructure is satisfactory and natural, but for improving employees' participation at head office level and branch level in both cases are natural. But for MBL, in every cases, one step advance, i.e. reasonable, but support for IT at head office level satisfactory.

In considering IT infrastructure of the firm, MBL again one step advance than ABL. But considering bank size ABL not far behind from MBL. In head office level, both banks are same positions in IT infrastructure, but branch level ABL position not so good.

Table – 6.12: Comparative scenario of practices of MIS

Factors	ABL	MBL
Support of corporate executive	Satisfactory	Satisfactory
IT infrastructure	Reasonable	Satisfactory
Employees Involvement	Natural	Reasonable
Overall practices of MIS	Natural	Reasonable

Source: The Author

Again employees’ involvement or participation in IS of these the banks also different. Reason behind the employees’ involvement in using IS of these banks discussed in previous section (6.1.2.2 and 6.2.2.2). But participation levels are different in PCBs and NCBs. MBL is one step forward in respecting EI than ABL as factors influencing employees’ participation of MBL in an advanced position. Table -6.12 showed employees involvement is as usual in ABL but in MBL that is in standard level. Table -6.12 also depicted no one component of improved practices of MIS in both the bank is excellent or few components has under satisfactory means up to the mark position. But for smooth practicing of MIS requires every component in each bank same type of position at least up to the mark. Thus practices of MIS differ bank to bank and ABL part is mostly common or natural while MBL practicing is reasonable and need to develop.

6.5 Summary

This chapter provided an analysis of the descriptive findings of the comparative case study. It has employed theories relating to the MIS practices in different service organization. Application of theories has shed some light on the explanatory power of each of the components of the framework of MIS practices.

Support of corporate executive has analyzed for the purpose finding impact on improved practices of MIS. All these factors relating to the support of corporate executives do have an impact on improved practices of MIS and can provide some explanation of the outcome, but appear to be inadequate to broaden our understanding on the level of impact in improving practices of MIS.

IT infrastructure of the firm has analyzed by using theory discussed in chapter two to find out impact on improved practices on MIS. All these factors relating to stable IT infrastructure such as hardware resources, software resources, network resources, data resources, human resources etc. do have an impact on improved practices of MIS and can provide some explanation of the result and appear to be reasonable but not appropriate in measuring level of impact in improving practices of MIS.

Another important component of the framework of MIS practices is employees' involvement or participation in the systems. Employees' participation analyzed for the purpose of measuring impact on the sound practices of MIS. There are few factors that influence employees' participation in the systems as well as organization. All these factors relating to employees' participation do have an impact on smooth practices of MIS. These factors also provide some explanation on the outcome, but appear to be inadequate to broaden our understanding on the level of impact in improving practices of MIS.

Finally, this part mainly focused on the analysis of the data discussed in chapter – five based on theoretical discussion discussed in chapter –two. Though the practice level of MIS is different between the banks, the reasons behind the narrow practices of MIS and techniques of overcoming problems also discussed in different section in this chapter. In the next part, implications of the research will be discussed logically.

PART –THREE
IMPLICATIONS & CONCLUSIONS

CHAPTER - SEVEN

IMPLICATIONS OF THE STUDY

7.0 Introduction

This chapter is designed to examine the implications of the study on the theories and also on the practice. Theories on MIS application in different service organizations and MIS application in the bank are also relevant because of the very nature of this study.

Attempts have been made to consider more than one theory related to the factors of MIS application in different aspects of the organization. The discussion of this chapter will show that each theory is suitable for specific findings, but appears to be not satisfactory in every aspect of MIS application. An attempt is being made to suggest possible modifications of the chosen theory where appropriate and in some cases new theoretical arguments also put forward.

In practical terms, a number of implications for users at all levels (Operational level, Management level, and corporate level) in the bank who involved in using, designing and development, maintaining of the MIS and also making policy in favor of sound practices of MIS. Moreover, there are some valuable insights for the studied bank and new researchers also put forward.

In organizing this chapter, two issues were considered are as follows:

The discussion of the chapter begins with theoretical implications (7.1) and followed by practical implications (7.2) for the users of the systems of ABL, MBL and the new researchers and finally, the summary (7.3) of the chapter together with a brief introduction of the next chapter.

7.1 Theoretical Implications

This section is designed to examine the theoretical implications of the comparative study. The nature of the research suggests theories relating to scope, corporate executive support, information technology infrastructure, employees' participation in information systems deserve attention in considering the implication of this study. Although there are many theories relating to the field of MIS application, attention were made to concentrate on a few relevant theories (see chapter two). The discussion begins with the models related to the support of corporate executives (7.1.1); IT infrastructure (7.1.2); employees' participation into IS (7.1.3) and also the proposed model (7.1.4).

7.1.1 Theoretical implications on Ashill et al. model

There was a clear evidence on corporate executives support on improved practices of MIS (McIvor and Humphreys, 2004; McIvor et al., 2006; Jiao et al., 2008; Doll 1985; Head 1978; King 1978; McLean and Soden 1978; Wetherbe & Whitehead 1977). Manfreda and Stemberger (2014) explained how the corporate people role is very important to support the development of IS practices in all phases of the organization. Doll (1985) presented how support of corporate executives important for improving practices of MIS in the business organization. Wetherbe & Whitehead (1977) and cash et al. (1983) explained about the needs of corporate executive support for IS practice in the organization. Participants of the in-depth interview session also explain the needs of corporate executive support for improved practices of MIS as the organization policy and development depends on the commitment of corporate

executives. Thus, the study directly supported Ashill et al. model of corporate executive support on improved practices of MIS.

Ashill et al. Model:

The model describes in chapter –Two in a figure- 2.1: Framework of corporate executives supports in the practices of MIS. Rationale for the choice and developed this model described in chapter two. Although term corporate support used different authors, Doll(1985) explained about the role corporate people in the improvement of IT infrastructure or self motivated employees and their involvement in the application IS in the of business organization. But, Ashill et al. (2006) given outline how support or commitment of corporate executive in an organization to adapt with the new changes determined by a few factors like strategic goals of the firm, executive’s job satisfaction, knowledge about changes, and cooperation of employees.

But, in Ashill et al. (2006) model not considered one of the important issues that can increase the commitment of the executive which is experience and learning curve. But in case of organizational performance, impact of experience and learning curve impact directly considered many of the organization experts (Kathuria and Davis, 2001). Again in developing countries, executive support for development, IT infrastructure or IS practices merely depends on his knowledge rather practical experience (Buss 1983, McFarlan 1981). So this factor would be considered for development of the model of executive support for improving MIS in the organization.

Again in case of banking organization, it is not possible to support by executive to develop and implement new systems without prior knowledge, experiences (Ostlund, 1974; Taylor, 1977).

Necessity of the modification of Ashill et al. (2006) model has explained by Taylor (1977) and (Buss 1983, McFarlan 1981) in their study. They put forward the concept of learning and experience curve effect on employees' commitment. Examination of participants' views also support the modification of the model. Author of the study considers this modification which will not create any confusion in the field of corporate executive support. It also important here is that the model of corporate executive support in this study mainly for technical field. Thus, proposed modification is necessary in corporate executive support for improving practices of MIS in the banking operation.

Modified model of Ashill et al.:

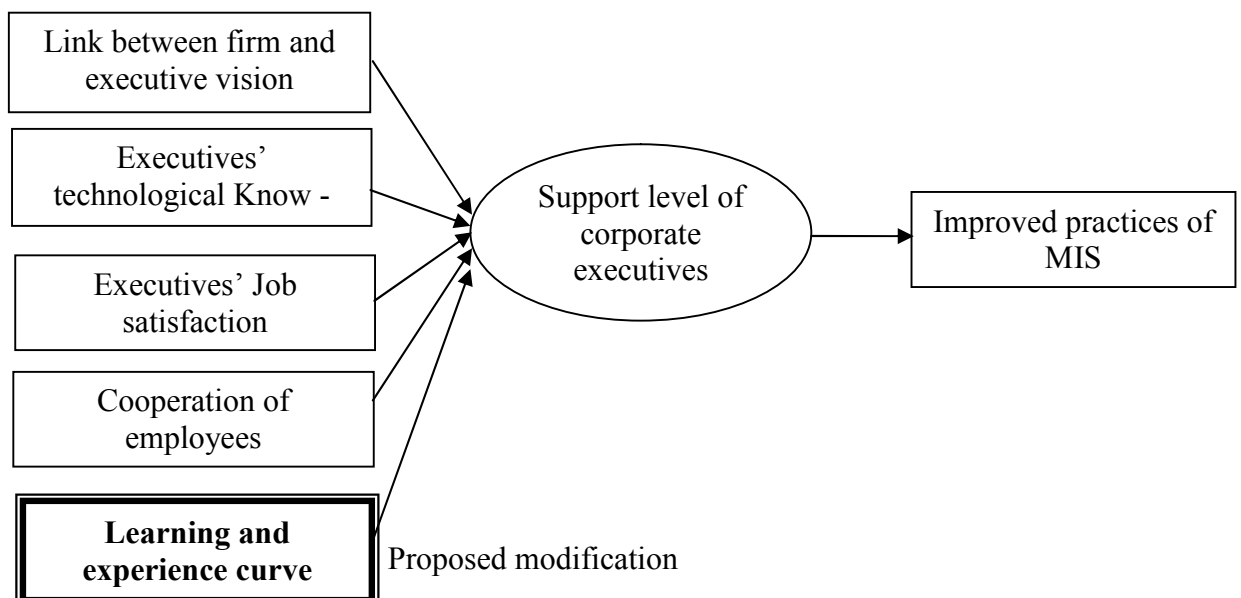


Fig-7.1: Framework of corporate executives support in practices of MIS with proposed modification.

Source: The Author

Above modified model shows that all these factors individually and combined responsible for improving corporate executive support to the organization.

7.1.2 Theoretical implications on Keen model

Another important factor of improved practices of MIS is IT infrastructure. It also has clear evidence. IT infrastructure is the shared IT resources that provide a foundation for communications interchange across the entire organization and for the development and implementation of present and future business applications (Byrd and Turner, 2000). Wonderful IT infrastructure has played significant role in ensuring better practices of MIS in business organization. Again IT is a potential enabler of change, it is also a potential constraint (Benjamin 1993; Broadbent and Butler 1995; Davenport 1993; Earl 1994; Earl and Kuan 1994), mainly when the firm's IT infrastructure is inappropriate or inflexible (Brancheau et al. 1996; Wastell et al. 1994). Thus, IT investment in different dimension has a direct impact on improved practices of MIS.

There are few factors related to developing IT infrastructure of the firm explained by different researchers. Factors that support to develop IT infrastructure of the firm are financial base and technical human resource base (Keen 1991, Weill and Broadbent 1998), commitment of corporate executives, and strategic plan of the organization (Floyd and Wooldridge 1990, Dos Santos et al. 1993). Participants also explain that base of IT infrastructure which depends on IT investment capability of the firm, organization policy, and support level of corporate executives which discussed in chapter –five.

Keen Model (1991):

The model described in chapter –Two in a figure- 2.2: Framework of IT infrastructure in the practices of MIS. Rationale for the choice and development of this model described in chapter two. Although the importance of IT infrastructure for smooth practices of MIS explained by different researcher in different ways, but the basis of a strong IT infrastructure explained more or less uniform way. Keen model (1991) explained about the factors related to strong IT infrastructure. These are capability of the firm such as financial capability and technical capability, strategic plan of the firm, corporate executives' commitment. These are the factors also explained as a basis for strong IT infrastructure by Floyd and Wooldridge 1990; Dos Santos et al. 1993; Keen 1991; Weill and Broadbent 1998.

Though importance of each factor differently explained by different researchers such as IT infrastructure depends on IT investments (Brynjolfsson and Hitt 1996, Hitt and Brynjolfsson 1996, Bharadwaj 2000), corporate executives and their involvement may be a critical factor in determining the success of IT development efforts (Lucas 1975, Willoughby and Pye 1977), strategy as a contingency variable (Vitale et al., 1986), which examined information assets and opportunities and how they were incorporated into a firm's strategic planning process (Benson and Parker 1985; Ives and Learmonth 1984; Lucas 1984; McFarlan and McKenney 1983; Porter and Millar 1985). Author of the study considers existing (Figure-2.2 in chapter two) model will not create any confusion for development of IT infrastructure. Thus the existing model is necessary for development of IT infrastructure for improving practices of MIS in the banking operation.

7.1.3 Theoretical implications on Lawler et al. (1995) Model

There was also clear evidence of Employees Involvement's on improved practices of MIS (Wagner 1994; Dachler and Wilpert 1978; and Locke and Schweiger 1979). Again, Wagner (1994) explained how the effects of employees' participation statistically significant in organizational change like new system development. Cotton et al. (1988) and Lawler et al. (1995) explained about the factors that influence the level of employees' participation into the systems as well as in the organization.

Recent research has found impact through a rigorous examination on employees' participation in practices of newly implemented systems in the organization. Author of the study found through observation and in-depth interview with participants that employee participation in IS directly influences the level of practices of MIS while employees cooperation depends on a few factors which are discussed in chapter -five.

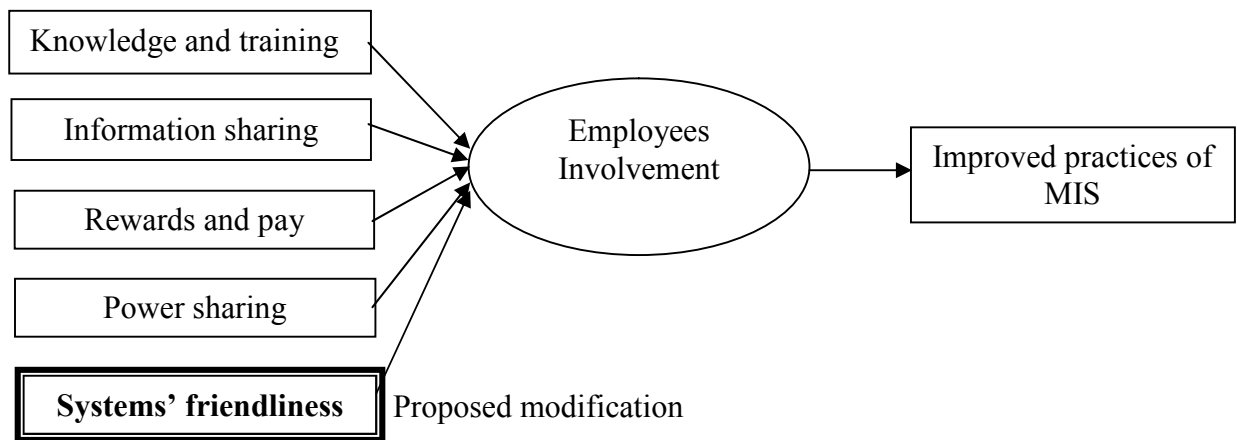
Lawler et al. (1995) Model:

The model described in chapter –Two in a figure- 2.3: Framework of Employees Involvement' support in practices of MIS. Rationale for the choice and developed this model described in chapter two. Although term employees' participation used different authors, Lawyer et al. (1985) explained about the factors affecting employees' participation into systems of the organization. Lawyer model describes factors are Knowledge and training; Information sharing; Rewards and pay; Power sharing etc.

But in the lower model (1995) model not considered one of the important issues is system friendliness which influence employees to participate or not to participate.

Again, model explained knowledge and training of the employees where knowledge indicates academic as well as IT knowledge. Lawyer model supported by; Choi and Eboch, 1998; Poole and Jenkins, 1991; Poole and Jenkins, 1991; Imai, 1986; Saha, 1987). Baskerville and Myers (2002) explained that systems friendliness considered as key factors to enhance employee participation in the systems. Though it is a technical aspects but organization may be considered the issue.

Again, in case of IS development, it is important to consider every aspect of the systems otherwise systems expectation will not be full filled (Baskerville and Myers 2002; Ahituv & Neumann 1986; Ajayi & Fadekemi 2007). Necessity of modification of Lawyer et al. model explaining Ahituv & Neumann (1986) and Ajayi & Fadekemi (2007) in their study. They put forward the systems friendliness' effect on employees' participation in systems. Examination of participants' views also support the modification of the model. Author of the study considers this modification which will not create any confusion in the field of IS development or employee participation into IS. It also important here is that the model of employees' participation is the prime factor of smooth practices of MIS in the organization. Thus, proposed modification is necessary in employees' participation for improving practices of MIS in the banking operation.

Modified Model of Lawyer et al:**Fig-7.2: Modified framework of Employees Involvement in the organization.****Source: The Author**

Above modified model shows that all these factors individually and collectively responsible for improving employees' involvement or participation in systems.

7.1.4 Proposed model for improved practices of MIS

The main focus of the study, how can improve practices of MIS? From the observation, in-depth interview, and document review, Author of the study found few gaps in theory of MIS and practice in banking organization. Based on analysis of the theory of MIS, corporate executives, IT infrastructure, employees involvement given by different theorist, author of the present study found individually all the theory are fully partially applicable for improving practices of MIS in any service organization like banking organization. From the above discussion and arguments, all these theories role and importance explained by the researcher and academicians. All of them explained these are in discrete form, but no one explained the combined effect of above mentioned factors.

Author of the present study found from the theoretical analysis and data analysis that corporate executive support, strong IT infrastructure support, and finally employees' involvement have combined effect on improved practices of MIS in the organization. So, the findings of the study based on collected data fully supported with minor modification in factors influencing component of the proposed conceptual framework of the practices of MIS (Figure – 2.4; see chapter two).

Thus, improved practices of MIS in the organization directly related to the integration of corporate executive support, IT infrastructure of the firm, and finally employees' involvement in IS.

Proposed Model:

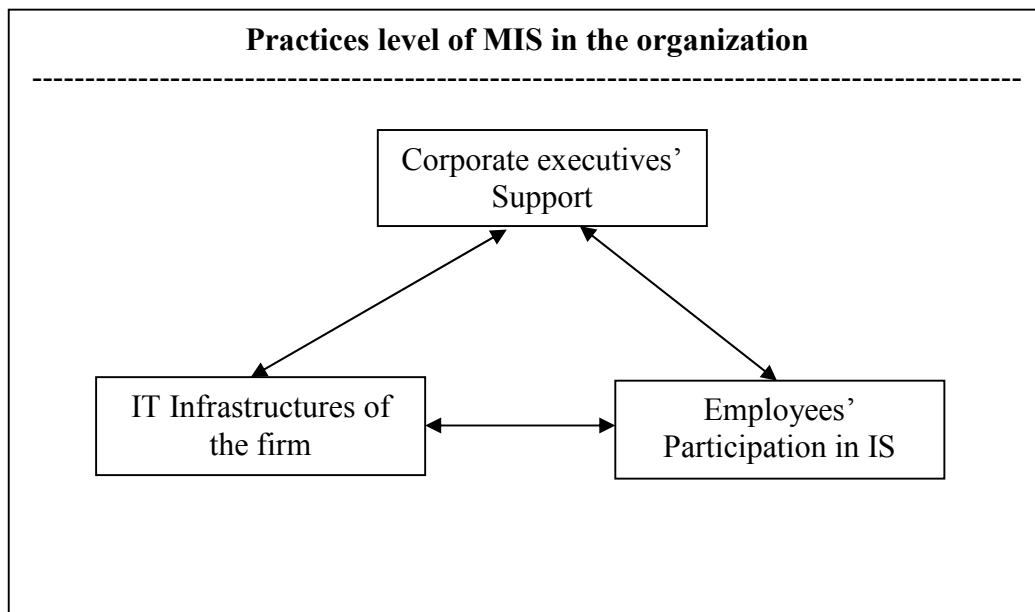


Figure-7.3: Proposed model of improved practices of MIS in the banking sector.

Source: The Author

Author of the present study explained this model from the total approach where each of the component of the model are dependent each other for better improvement of the

practices of MIS in the banking organization. The following figure shows all of the factors of each component that may affect the total performance of systems practices in the banking organization.

COMPONENT	FACTORS
Corporate executives' Support	<ul style="list-style-type: none"> • Link between firm and executive vision • Executives' technological Know • Executives' Job satisfaction • Cooperation of employees to top • Learning and experience curve effect
IT Infrastructures of the firm	<ul style="list-style-type: none"> • Capability and technical capability • Strategic plan of the firm • Corporate executives' commitment
Employees' Participation in IS	<ul style="list-style-type: none"> • Knowledge and training • Information sharing • Rewards and pay • Power sharing, etc. • Systems' friendliness

Figure-7.4: Component of the proposed model and modified factors of individual component for improving Practices of MIS in the bank.

Source: The Author

Though the Bangladesh is a developing country, but like other developed nation banking sector has great importance for the proper economic development of

Bangladesh (Sayeed et al. 2002). Though this sector faces tremendous complexities in Bangladesh but it has huge prospects. Many researchers agreed on this situation that all the complexities will be solved within a shortest possible time and all banks will reap the benefits of IT truly and totally, if and only if they pay adequate attention to technological progress as well as efficiencies (Chandrasekhar and Sonar, 2008). But, all the banks practice MIS partially and there is a huge deviation in expectation and practice of MIS in different banks (6.4 in chapter six). The next phase will discuss about the practical implications of the study.

7.2 Practical Implications

The findings of the study have a number of implications for top level executives of the bank those who involved in the key decision-making process of the bank and also for those who are contemplating the MIS application in the bank. However, all these practical implications must be considered in the light of the limitations of the study that are covered in the next chapter (8.2). The implications of this study can be organized in three ways. First the implications for users of the bank (7.2.1), then for the studied bank (7.2.2) and finally for new researchers in this field (7.2.3).

7.2.1 *Implications for users*

The study focused on practicing scenario of MIS in the banking sectors of Bangladesh. So main stakeholders of the study, those are working with MIS in the bank. In the bank, all the bankers, whatever their positions are the users of the system based on their requirements. The study found a huge gap between expectation and current practice of the bank, according to the theoretical explanation discussed in

chapter two and participant views in chapter five while chapter six focused on findings from analysis of that issue. Study findings also help to the users for minimizing their problems such as corporate will take initiative how can they improve their support level, employees will aware to improve their position which help them to be efficient in their position and will one step advance in career development. Thus, this study has practical implications for users of the bank.

7.2.2 Implications for Studied bank

The bank will reap the advantage of this study. As the study conducted on the bank and the participant of in-depth interview and observations are the bankers and the systems, so study results are more logical and empirical. Findings from this study will help to the bank for taking proper initiatives just for improving practices of MIS and minimizing the gaps for the purpose of getting competitive advantages. Another important issue for the bank study findings is more practical and theoretically proved. So, studied bank may take the results as a positive and as a part of their internal research.

7.2.3 Implications for the new researcher

Since this study conducted based on the scientific research design and study results also theoretically supported, new researcher in the field of IS can be benefitted from the findings of this study. Again, they can be started their new research based new idea generated through this study, but not proved considered limitations of this study.

7.3 Summary

This chapter is focused on examining the implications of the study on the theories and also on the practice. Theories related to the factors of MIS application in different aspects of the organization were analyzed and made comments where modifications are necessary based theory and data support. Modifications also made on chosen theory where appropriate and in some cases new theoretical arguments also put forward. Model also developed based on the final modification which was not explained in any previous research in the field of IS. In practical implications also considered users at all levels (Operational level, Management level, and corporate level) in the bank who involved in using, designing and development, maintaining of the MIS and also making policy in favor of sound practicing MIS and for the studied bank and new researchers. Next chapter will discuss about concluding remarks of the study.

CHAPTER - EIGHT

CONCLUSIONS

8.0 Introduction

The overall objective of the study was to examine the practices of MIS in the banking sector of Bangladesh. The main aims were i) current MIS practices and needs of MIS practices in the banking sector of Bangladesh; ii) to identify the factors that affect the practice level of MIS in the banking sector of Bangladesh iii) to consider implications of these findings for the theories of MIS application.

In order to achieve these ends literatures of MIS application were reviewed in chapter two and identified a few factors in MIS application based on the theories of MIS and relevant explanation on these theories. A comparative research model was designed (chapter three) to collect data on the practices of MIS from the two banks (one from NCBs and another from PCBs). The descriptive findings on both the case study were presented in the chapter five in this dissertation. Then the relevant theories were applied to explain the findings in chapter six. Having applied the theories, pre and current factors of the practices of MIS in NCBs and PCBs was analyzed giving attention to the outcome of data (chapter –Six). A proposed model of practices of MIS and four hypotheses was developed on the basis of the analysis of the findings.

The implications of findings both for the key theories of MIS and also practical purposes were considered in the previous chapter.

Now the questions are: what conclusions can be drawn from the study and what suggestions can be made for future study in the field of MIS practicing? The rest of the chapter will focus on the answering above questions.

The discussion begins with the conclusions which include central conclusion and additional conclusions. It is followed by discussion of the limitations of the study and finally chapter close with the some views of future research implications of the study.

8.1 Conclusions

This section is designed to outline the conclusions that are drawn from this research. The discussion begins with central conclusions (8.1.1) and ends with the additional conclusions (8.1.2).

8.1.1 Central Conclusion:

On the basis of data description and analysis of these data, the central conclusion of the study is: Practices of MIS in the banking sector not unique and improved practices of MIS depend on three critical issues and their interactions, which are supportive of corporate executives, Status of IT infrastructure, and level of employee participation in IS. Considering these factors, framework of practices of MIS has developed which has developed as a main model for this study.

MIS framework or model consists of three different components, each of which direct relationship with improved practices of MIS of the bank. The model in this study mainly used to analysis the impact of three components of the practices of MIS. In the broad proposition of the proposed MIS model discussed and analyzed under three components. Again, each dimension consists of few other factors which have direct impact on individual improvement of that component. Main basis of this model actually interactions among the component and their relationship on the improved practices of MIS.

The model shows, corporate executives' support has positive impacts and determine the level of IT infrastructure and employees' participation in the systems while employees' participation has a positive impact on the level of corporate executive cooperation and use of IT and finally sound IT infrastructure of the firm determine by the corporate executive supports and employees' participation in the systems. So, improved practices of MIS in the bank depend on level of interactions among the components as they are interdependent variable.

Each of the components has the same type of impact in both cases, though NCBs and PCBs both are not in the same position in the current practices of MIS in the bank.

This model actually analyzed the level of impact considering all factors are equal.

Despite the current limitations of the model, it can analyze each of the factors and sub factors' impact individually on the practices of MIS in the bank. This model provides distinctive insight into process of practices of MIS in the bank. From the practical point of view, the bank uses this model as a comparative framework and to improve practicing level in the bank.

Turning to another central conclusion based on the analysis, this research hypothesized that:

- i. Adequacy of each type of component of the MIS has related type of impact on the practicing level of MIS in the bank.
- ii. Level of integration among the components MIS practicing has related type of impact on the practicing level of MIS in the bank.

Discussion related to the process of development of these two variables, mainly discussed in the chapter –five and support by the analysis in chapter six which is empirical foundations of this study.

A comparative study provides the empirical foundations of the conclusion, which raises the issue of the potential generality of the findings. The researcher has adopted some mechanism to enhance the potential quality of the findings and the main mechanisms are: interaction of theory and data during data collection and data analysis, application of theory and the use of a multiple data collection method.

Chapter three of this dissertation described multiple method and interaction of theory and data during field work. A separate chapter –six designed to apply different theories and model in this dissertation. The main purpose of this analysis not only findings from the ABL and MBL but also to assess the need for developing a theoretical framework. Moreover characterization of different components of the model made it possible to illustrate the realities of the practices of MIS in the bank.

8.1.2 Additional conclusions:

The discussion in this section begins with the understanding level of MIS, scope of practicing of MIS, and final results of the practices of MIS in ABL and MBL.

On corporate executive support, this research identifies is the level of support of corporate executives to improve practices of MIS in the banking sector is reasonable but not perfectly matches with the ABL and MBL. Again, factors influencing corporate peoples' commitment also differ bank to bank. In considering corporate executives support to develop IT infrastructure and employees' involvement in IS for improving practices of MIS, MBL showed one step advance than ABL. But for MBL,

in every cases, one step advance, i.e. reasonable, but support for IT at head office level satisfactory.

On IT infrastructure, this research identifies that MBL again one step advance than ABL representative bank of NCBs. But considering bank size ABL not far behind from MBL. In head office level, both bank is same positions and reasonable in IT infrastructure, but branch level ABL position not so good.

On employees' involvement, this research identifies that employees' involvement or participation levels are different in PCBs and NCBs. MBL is one step forward in respecting EI than ABL as factors influencing employees' participation of MBL in an advanced position. Thus, the practices of MIS in ABL part is mostly common or natural while MBL practicing is reasonable and need to develop.

8.2 Limitations of the study

The present study like many others has its limitations. First, this study was based on a comparative case study. It has captured the users understanding level about meaning, significance, and application of MIS and multiple realities in which the practices of MIS have taken place. Although the MIS model also emerged from theory and data, but it cannot be claimed as a generalized model as data collected from two banks only and considering few theories.

Secondly, the study mainly based on one emerging PCBs and one leading NCBs but not considered any FCBs. MIS application in emerging PCBs doesn't have any complexities because of a small number of branches and located mainly in urban areas while many leading PCBs may not have such types of opportunities. Again NCBs has many types of problems like many branches are located in rural areas and

number of branches are so much high compare with PCBs and FCBs where application of MIS is very tough. Nevertheless, the present study has observed a fair amount of complexity, especially on the practices of MIS. The nature of the complexities may be similar in emerging PCBs and leading NCBs but there is a variation in the degree of complexity.

Thirdly, the size of the studied bank in a PCBs is small in terms of number of users, number of transactions, investment. The size of the bank, especially number of users and branches, number of transactions may have implications for the application of MIS. It reveals from (Rawani & Gupta, 1999) PCBs is pioneers in using IS but the size of the individual PCB is not fully representative in terms of number of users, number of transactions.

Again the size of the studied bank in NCBs is so large in terms of number of users, number of transactions, investment considering other banks in the industry.

Fourthly, this study mainly focused on only one organizational issue, that is, direct factors of the practices of MIS. There are other organizational issues that have a relationship with the performance of practices of MIS and may have an impact on the overall performance of the bank. The other issues like Human Resources Information Systems, Accounting Information Systems, and Financial Information Systems of the bank.

Finally, field work of the study mainly conducted based on the data of observation and in-depth interview from May 2011 to April 2012. Participants mainly contributed on MIS and its related issues based on their current knowledge and practices in the bank. Thus the findings of the study actually based on the participants' contributions and the author's observations in that period. As the study conducted on the practices

of MIS which is changeable, very fast because of technological innovation, thus the findings of the study may not fully practical after a period of time.

In view of the above limitations and also on the basis of the findings of the study, certain recommendations for future research can be made which is the subject matter of the next section.

8.3 Future research directions

On the basis of the findings of this study and also considering its limitations, the researcher can suggest some directions for future research. This will contribute to fair practices of MIS as an area of the study.

Firstly, this research has given special attention to the practices of MIS in the banking sector of Bangladesh. It leaves open the question of the level of impact in practicing MIS. Possible areas of research include the impact of the practices of MIS in the banking sector. It might be measure managerial efficiencies, operational efficiencies and also cost benefit analysis of impact of application of MIS. For example, capital market growth and IT (Ezirim et al. 2009) can provide an insight into the impact of using IT and IS in the banking sector.

Secondly, this study observed that some managers and top management executives are highly efficient in using IS and some are not, thus the commitment of practices of MIS depends on the users' knowledge. Moreover, there were other factors those impacts on the decision making process of the executives. Thus, its possible areas might be included impact of MIS in the decision making environment on the performance of the organization.

For example, (Hatami et al. 2003, Kehinde and Yusuf 2012) can provide a partial insight into the impact of the decision making environment for banking performance.

Finally, this research focused on the MIS framework which incorporates support of corporate executives, status of IT infrastructure, and level of employee participation in IS which have a direct relationship with practices level of the Bank. But the research has not measured the impact of integration among the factors of MIS on the performance of the Bank. Thus it might be possible area to conduct research on: impact of integration among the factors of MIS on the performance of the Bank.

It is hoped that someone will be interested enough to pursue all these potential areas of future research. Nevertheless, it is worth mentioning that the present researcher is a permanent teacher of Shahjalal University of Science and Technology, Sylhet in Bangladesh and is committed to the pursuit of all these issues in the rest of his academic career.

References:

- Adebayo F.A. 2007. *Management Information System for Managers*, Ado-Ekiti: Green Line Publishers.
- Adekeye, A. 1997. The importance of management information systems. *MCB Bank Library Review*, 46 (5):318-327.
- Agarwal, R. and Lucas, H.C. Jr. 2005. The information systems identity crisis: focusing on high-visibility and high-impact research, "*MIS Quarterly*", 29(3):381-398.
- Aharony, A. 1991. '*Analysis of Selected Variables Influencing Patient with Hospitalization*', Unpublished Master's Thesis, Department of medicine, The Ohio State University.
- Ahituv, N. & Neumann, S. 1986. *Principles of Information Systems for Management*, 2nd edition, Dubuque, IA: William C. Brown.
- Ajayi, I. A. & Fadekemi, F. 2007. The Use of Management Information Systems (MIS) In Decision Making In the South-West Nigerian Universities, *Educational Research and Review*, 2 (5):109-116.
- Alavi, M. & Carlson, P. 1992. A review of MIS research and disciplinary development. *Journal of Management Information Systems*, 8(4):18-45.
- Ali, M. M. 2010. E-Business and on line banking in Bangladesh: an Analysis. *AIUB Bus Econ Working Paper Series*, Dhaka, Bangladesh, 3(June):1-26
- Ali, M. M. Mohsin, C. Sifat-E and Yasmeen F.2004. E-Business in the Globalized world with special reference to Bangladesh: An analysis. *Business Review*, 4(1&2):1-13.

- Allen, B. 1982. An Unmanaged Computer System Can Stop You Dead. *Harvard Business Review*, 60(6):76-87.
- Alliger, G. M., Tannenbaum, S. I., Bennett, W. Jr., Traver, H. and Shotland, A. 1997. A Meta-Analysis of Relations among Training Criteria, *Journal of Personal psychology*, 50:41-358.
- Alter, S., 1975. 'A Study of Computer Aided Decision-Making in Organizations' Unpublished Ph.D. dissertation, Massachusetts Institute of Technology.
- Altheide, D. L. & Johnson, J. M. 1994. Criteria for assessing interpretive validity in qualitative research, in *Handbook of Qualitative Research*, Denzin, N. K. & Lincoln, Y. S. (eds). Thousand Oaks, CA: Sage Publications: 485–499.
- Anderson, D. R. (1981). An era of social policy research on children and television, in *Contemporary Psychology: Children and the faces of television*, Review of Palmer, E. P. & Dorr, A. (Eds.), 26(1): 874-875.
- Anderson, P.F. 1983. Marketing Scientific Progress and Scientific Method. *Journal of Marketing*, 47 (Fall):18–31.
- Anderson, P.F. 1986. On Method in Consumer Research: A Critical Relativist Perspective. *The Journal of Consumer Research*, 13 (2):155-173
- Anthony, R.N. 1965. *Planning and Control Systems: A framework for analysis*, Harvard Business School Press, Boston, MA.
- Argyris, C. (1971). Management information systems: the challenge to rationality and emotionality, *Management Science*, 17(6):275-292.
- Armstrong, C.P. & Sambamurthy, V. 1999. Information technology assimilation in firms: the influence of senior leadership and IT infrastructures, "*Information Systems Research*", 10(4):304-327.

- Ashill, N.J., Carruthers, J. and Krisjanous, J. 2006. The effect of management commitment to service quality on frontline employees' affective and performance outcomes: an empirical investigation of the New Zealand public healthcare sector, *International Journal of Nonprofit and Voluntary Sector Marketing*, 11(4):271-87.
- Awad, E.M. 1988. *Management Information Systems: Concepts, Structures, and Applications*, Menlo Park, California: Benjamin Cummins Publishing Company, Inc.
- Babbie, E. R. 1973. *Survey Research Methods*. Belmont, CA: Wadsworth Pub. Co.
- Backer, M. 1991. *Research in Marketing*. London: McMillan
- Baker, G. P., Jensen, M.C. and Murphy, K.J. 1988. Compensation and incentives: Practice versus theory. *J. Finance*, 4:593-616.
- Bakos, J.Y. & Treacy, M.E. 1986. Information Technology and Corporate Strategy: A Research Perspective. *MIS Quarterly*, 10(2):107-119.
- Bariff, M. L. & Ginzberg, M.J. 1982. MIS and the Behavioral Sciences: Research Patterns. *Data Base*, 14(1):19-26.
- Barkin, S.R. 1974. 'An Investigation into some Factors Affecting Information System Utilization', Unpublished Ph.D. dissertation, University of Minnesota
- Baskerville, R.L. & Myers, M.D. 2002. Information systems as a reference discipline. *MIS Quarterly*, 26(1):1-14.
- Benbasat, I. 1974. 'An Experimental Evaluation of The Effects of Information System and Decision Maker Characteristics on Decision Effectiveness', Unpublished Ph.D. dissertation, University of Minnesota.
- Benbasat, I., and Zmud, R. W. 1999. Empirical Re-search in Information Systems: The Practice of Relevance, *MIS Quarterly*, 23 (1):3-16.

- Benbasat, I., Goldstein, D.K. & Mead, M. 1987. The Case Research Strategy in Studies of Information Systems, *MIS Quarterly*, 11(3):369-386.
- Benjamin, R.I. 1982. Information Technology in the 1990's: A Long Range Planning Scenario. *MIS Quarterly*, 6(2):11-31.
- Benjamin, R.L, Rockart, J.F., Scott Morton, M.S. & Wyman, J. 1984. Information Technology: a strategic opportunity, *Sloan Management Review*, (Spring):1-20.
- Berger, P. L. & Luckmann, T. 1966. *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. Garden City, NY: Doubleday.
- Bernard, H.R. 1995. *Research methods in anthropology: qualitative and quantitative approaches*, 2nd edition. London: Sage Publication.
- Black, M. 1967. Induction, *Encyclopedia of philosophy*, Paul Edwards's edition (4), New York: Macmillan.
- Bлага, P., Tripon, A. (2011), 'Study on sustainable development of human resources in a informal framework', in *International Conference Globalization and Higher Education in Economics and Business Administration – Proceedings*, Universitatea Alexandru Ioan Cuza, Iași, pp. 858-862.
- Boland, R. & Hirschheim, R. 1982. *Critical Issues in Information Systems Research* (eds). Chichester,UK: John Wiley and Sons:307-362.
- Bonoma, T.V. 1985. Case Research in Marketing: Opportunities, Problems, and a Process. *Journal of Marketing Research*, 22 (May):199-208.
- Boulding, W., Staelin, R., Ehret, M. and Johnston, W.J. 2005. A customer relationship management roadmap: what is known, potential pitfalls, and where to go, *Journal of Marketing*, 69:155-66.

- Brannen, J. 1992. *Mixing qualitative and quantitative research*. Avebury, Aldershot, UK: Ashgate Publication.
- Brown, H.I. 1977. *Perception, theory and commitment*, Chicago: University of Chicago press.
- Bryman, A. 1984. The Debate about Quantitative and Qualitative Research: A Question of Method or Epistemology. *The British Journal of Sociology*, 35(1):75-92.
- Bryman, A. 1988. *Quantity and Quality in Social Research*. London, Boston: Unwin Hyman publications.
- Bullock, R., Little, M., & Millham, S. 1992. The relationship between qualitative and quantitative approach in social policy research”, in *Mixing methods: qualitative and quantitative research*, Brannen, J. (ed.), Avebury, Aldershot: Ashgate 39-49.
- Burrell, G., & Morgan, G. 1979. *Sociological Paradigms and Organizational Analysis: Elements of the Sociology of Corporate Life*. London: Heinemann.
- Bush, R.R. 1975. ‘Influence of Cognitive Style in a Methodology for Data Base Design,’ Unpublished Ph.D. dissertation, The University of Texas, Austin.
- Buss, M.D.J. 1983. How to Rank Computer Projects. *Harvard Business Review*, 61(1):118-125.
- Calder, B. J. 1977. Focus Groups and the Nature of Qualitative Marketing Research. *Journal of Marketing Research*, 14(3):353-364.
- Calkins, L.N & Welki, A. 2006. Factors That Influence Choice of Major: Why Some Students Never Consider Economics. *International Journal of Social Economics*, 33(8):547-564.

- Carey, J. Galletta, Kim, J. Te'eni, D. Wildemuth, B. & Zhang, P. 2004, The role of Human-Computer Interaction in the MIS curriculum: a call to action, *Communications of the Association for Information Systems*, 9(20):334-355.
- Carnap, R. 1953. Testability and Meaning, in *readings in the philosophy of science*, Herbert Feigl and May brodbeck, eds., New York: Appleton – Century Crofts:47-92.
- Cash, J.I. McFarlan, F.W. & McKenney, J.L. 1983. *Corporate Information Systems Management: Text and Cases*, Richard D, Homewood, Illinois: Irwin: 507-523.
- Chalmers, A.F. 1976. *What is this thing called science?*, St. Lucia, Australia: University of Queensland Press.
- Chan, J. O. 2005. Toward a unified view of customer relationship management, *The Journal of American Academy of Business*, (March):32-8.
- Chandrasekhar,M and Sonar, Rajendra M(2008).”Impact of Information Technology on the efficiency and total factor productivity of Indian Banks” ,*South Asian Journal of Mangement*,Vol.15,No.3,July-September,pp.74-95.
- Chen, Q. & Chen, H.M. 2004. Exploring the success factors of eCRM strategies in practice, *Database Marketing & Customer Strategy Management*, 11(4):333-343.
- Chen, W. & Hirschheim, R. 2004. A paradigmatic and methodological examination of information systems research from 1991 to 2001. *Information Systems Journal*, 14(3): 197-235.
- Chervany, N.L. Dickson, G.W. & Kozar, K.A. 1971. ‘An Experimental Gaming Framework for Investigating the Influence of Management Information Systems on Decision Effectiveness,’ *Management Information Systems Research Center*, Working Paper, University of Minnesota, pp.71-112.

- Chua, W. F. 1986. Radical developments in accounting thought. *Accounting Review*, 61(4):601-632.
- Clemons, E.K & McFarlan, F.W. 1986. Telecom: Hook-Up or Lose Out. *Harvard Business Review*, 64(4): 91-97.
- Clemons, E.K & Kimbrough, S.O. 1986. 'Information Systems, Telecommunications, and Their Effects on Industrial Organization'. *Proceedings of the Seventh International Conference on Information Systems*, San Diego, CA, December 15-17, pp. 99-108.
- Clemons, E.K, Keen, P.G.W. & Kimbrough, S.O. 1984. 'Telecommunications and Business Strategy: The Basic Variables for Design'. *Proceedings National Computer Conference*, July 9-12, IFIPS Press, Las Vegas, pp. 707-717.
- Clemons, E.K. 1986. Information Systems for Sustainable Competitive Advantage. *Information and Management*, 10(11):131-136.
- Cook, T. 2002. Randomized experiments in education: A critical examination of the reasons the educational evaluation community has offered for not doing them, *Educational Evaluation and Policy Analysis*, 24: 175–199.
- Culnan, M. J. & Swanson, E.B., 1986, Research in Management Information Systems, 1980-1984: points of work and reference. *MIS Quarterly*, 10(3), 289–302.
- Culnan, M. J. 1986. The Intellectual Development of Management Information Systems, 1972-1982: A Co-Citation Analysis, "*Management Science*", 32(2):156-172.
- Dahlbom, B. & Mathiassen, L. 1997. The future of our profession, *Communications of the ACM*, 40(6):80-89.
- Davis, G.B. & Olson, M.H. 1985. Management Information Systems: Conceptual Foundations, Structures and Development, 2nd ed., NewYork: McGraw-Hill.

- Davis, G.B. & Olson, M.H. 2000. *Management Information Systems – Conceptual foundations, structure and development*, McGraw-Hill International Editions, pp.5-7.
- Davis, G.B. 1974. *Management Information Systems: Conceptual Foundations, Structure and Development*, McGraw-Hill, New York.
- Davis, G.B. 1984. 'Information systems as an academic discipline', *conference on the Intellectual foundations for Information professionals*, Emporia, Kansas, November, 1984.
- Deci, E. L. 1971. Effects of externally mediated rewards on intrinsic motivation. *J. Personality Soc. Psych.* 18:105-115.
- Deci, E. L. 1975. *Intrinsic Motivation*. Plenum Press, New York.
- Denzin, N. K. & Lincoln, Y. S. 1994. Introduction: Entering the field of qualitative research, in *Handbook of Qualitative Research*, Denzin, N. K. & Lincoln, Y. S. (eds). Thousand Oaks, CA: Sage Publications: 1-17.
- Deshpande, R. 1983. Paradigms Lost: On Theory and Method in Research in Marketing. *Journal of Marketing*, 47 (Fall): 101–111.
- Dhillon, G. 2008. Organizational competence for harnessing IT: a case study, “*Information & Management*”, 45(5):297-303.
- Dibb, S. & Meadows, M. 2004, Relationship marketing and CRM: a financial services case study, *Journal of Strategic Marketing*, 12:111-25.
- Dickson, G. W. 1970. Management Information Systems: Definitions, Problems, and Research, *Society for Management Information Systems Newsletter*, July:1-18.
- Dickson, G. W. 1981. Management Information Systems: Evolution and Status. *Advances in Computers 20*, Academic Press, New York: 1-37.

- Dickson, G. W., Senn, J.A., & Chervany, N.L. 1977. Research in MIS: The Minnesota Experiments, *Management Science*, 23(9): (May):913-923.
- Doll W.J. 1985. Avenues for Top Management Involvement in Successful MIS Development. *MIS Quarterly*, 9(1):17-35.
- Doll, W. J. and Ahmed, M.U. 1983. Diagnosing and Treating the Credibility Syndrome, *MIS Quarterly*, 7(3):21-32.
- Doom, C., Milis, K., Poelmans, S. and Bloemen, E. 2010. Critical success factors for ERP implementations in Belgian SMEs, “*Journal of Enterprise Information Management*”, 23(3):378-406.
- Downey, J. P., Ronnie, M., & David, R. 2009. MIS versus Computer Science: An Empirical Comparison of the Influences on the Students' Choice of Major. *Journal of Information Systems Education*, (Fall):1-18
- Earl, M.J. 1989. *Management Strategies for Information technology*, Prentice-Hall.
- Earl, M.J. and Feeney, D.F. 1994. Is your CIO adding value, “*Sloan Management Review*”, 35(3):11-20.
- Economic review. 2010. Monetary management and financial market development.
- Ein-Dor, P. & Segev, E. A. 1981. *Paradigm for Management Information Systems*. New York: Praeger Publishers.
- Eisenhardt, K. M. 1989. Building theory from case study research. *Academy of management Review*, 14(4):532-550.
- Evered, R. & Louis, M. R. 1981. Alternative Perspectives in the Organizational Sciences: Inquiry from the Inside and Inquiry from the Outside, *Academy of Management Review*, 6(3): 385-395

- Ezirim, C.B., Elike, U. and Muoghalu, M.I. 2009. Capital market growth and information technology: empirical evidence from Nigeria, *International Journal of Business and Economics Perspectives*, 4(1):1-17.
- Fabunmi M. (2003). *Management Information Systems in Education* in Babalola JB (ed.). Basic Text in Educational Planning. Ibadan: Department of Educational Management, Bank of Ibadan, Ibadan.
- Farhoomand, A. 1987. Scientific progress of management information systems. *Data Base*, 18(4) :(Summer):48-56.
- Feng, T. & Zhao, G. 2014. Top management support, inter-organizational relationships and external involvement, "*Industrial Management & Data Systems*", 114(4): 526-549.
- Fitzgerald, B. & Howcroft, D. 1998. Competing Dichotomies in IS Research and Possible Strategies for Resolution, *Proceedings of the 19th International Conference on Information Systems ICIS*, Helsinki, Finland, p.155-164.
- Fransman, M. 1998. Information, knowledge, vision and theories of the firm. G. Dosi, D. J. Teece, J. Chytry, eds. *Technology, Organization, and Competitiveness*. Oxford University Press, Oxford, UK. Pp.147-191.
- Galbraith, J. 1973. *Designing Complex Organizations*, Addison-Wesley, Reading, Mass.
- Galbraith, J. R. 1977. *Organization Design*, Addison-Wesley, Reading, Mass.
- Ghe, W. 1950. *Social science research methods*. New York: Appleton –Century Crofts Inc.
- Gingras, L. 1977. 'The Psychology of the Design of Information Systems,' Unpublished Ph.D. dissertation, University of California, Los Angeles.

- Glaser, B.G. & Strauss, A.L. 1967. *The discovery of grounded Theory: Strategies for qualitative research*, New York: Aldine De Gruyter.
- Goodyear, M. 1982. Qualitative Research in Developing Countries. *Journal of the Market Research Society*, 24 (April): 86-96.
- Gordon, W. & Langmaid R. 1988. A practitioner's and buyer's guide, in *Qualitative market research*. Aldershot: Gower: 20-23.
- Gorla, N., Somers, T. and Wong, B. 2010. Organizational impact of system quality, information quality, and service quality, *Journal of Strategic Information Systems*, 19:207–228.
- Gorry, G. A. and Scorr Morton, M. S. 1971. A Framework for Management Information Systems. *Sloan Management Review*, 13(1):55-70.
- Gottschalk, P. & Taylor, N.J., 2000. Strategic Management of IS/IT Functions: The Role of the CIO, Proceedings of the 33rd International Conference on System Sciences, Hawaii, p. 1-10.
- Griggs, S. 1987. Analyzing Qualitative Data. *Journal of the Market Research Society*, 29(1):15 - 34.
- Guba, E. G. & Lincoln, Y. S. 1985. *Naturalistic inquiry*. New York: Sage.
- Guba, E. G. & Lincoln, Y. S. 1994. Competing paradigms in qualitative research, in *Handbook of Qualitative Research*, Denzin, N. K. & Lincoln, Y. S. (eds). Thousand Oaks, CA: Sage Publications: 105-117.
- Gumesson, E. 1991. *Qualitative methods in management research*. Revised Edition. London: Sage Publication.
- Gupta, U. G. 1998. *Management Information Systems – A managerial perspective*. 1st edition. New Delhi, India: International Thomas publishing Inc.

- Handfield, R.S. & Melnyk, S.A. 1998. The scientific theory building process: a primer using the case of TQM. *Journal of Operations Management*, 16:321-339.
- Harris, C.L. 1985. 'Information Power: How Companies Are Using New Technologies to Gain a Competitive Edge,' *Business Week*, 2916(October 14):108-114.
- Hart, B. 2010. The history of management information systems, *ehow*, online journal, available at: http://www.ehow.com/about_5444925_history-management-information-systems.html#ixzz0vRBg5Ssr, visit date: 02.07.2010.
- Hashim, M., Yousaf, A. Jehangir, M., Khan, S., and Hadi, M. 2012. The impact of Management Information System on the Overall Performance and Efficiency of the Workforce of the Accountant General (Peshawar): A Research Base Study, *International Journal of Academic Research in Accounting, Finance and Management Sciences*, 2(2):167-182.
- Hatami, A., Galaries, R.D., Huang, J. 2003. Exploring the Impacts of Knowledge (Re)Use and Organizational Memory on the Effectiveness of Strategic Decisions: A Longitudinal Case Study, Proceedings of the 36th Hawaii International Conference on System Sciences (HICSS'03), Hawaii.
- Hathaway, R. 1995. Assumptions underlying quantitative and qualitative research: Implications for institutional research. *Research in higher education*, 36 (5):535-562.
- Head, R.V. 1978. Strategic Planning for Information Systems. *Information Systems*, 25(10): 46-54.
- Hempel C.G. 1965. *Aspects of scientific Explanations*, New York: The Free Press.

- Henderson, J.C. Venkatraman, N. & Oldach, S. 1996. . Aligning business and IT strategies. In Luftmann, I.J. (Editor); *Competing in the information age*, New York, USA: Oxford University Press: 21-42.
- Hevner, A. R., March, T. S., Park, J. & Sudha, R. 2004. Design Science in Information Systems Research. *MIS Quarterly*, 28 (1): 75-105.
- Hill, C.W.L and Jones, G.R. 2004. *Strategic Management: an integrated approach*, biztantra innovations in management, New Delhi.
- Hirschheim, R. and Klein, H. K. 1989. Four Paradigms of Information Systems Development. *Communications of the ACM*, 32(1): 1199-1216.
- Hirschman, E.C. 1985. Scientific Style and the Conduct of Consumer Research. *The Journal of Consumer Research*, 12(2):225-239
- Hirschman, E.C. 1986. Humanistic Inquiry in Marketing Research: Philosophy, Method, and Criteria. *Journal of Marketing Research*, 23(3): 237-249.
- Hoon, F. Nah, Zhang, P. & McCoy, S. 2005. Introduction: Human-Computer Interaction Studies in Management Information Systems. *International Journal of Human-Computer Interaction*, 19(1):3 – 6.
- Howard, J.A. & Sheth, J.N. 1969. *The theory of Buyer behavior*, New York: Wiley.
- Huber, G. 1982. Organizational Information Systems: Determinants of their Performance and Behavior. *Management Science*, 28 (2):138-155.
- Hunt, S.D. 1976. *Marketing Theory: Conceptual Foundations of Research in Marketing*. Columbus: Grid Publishing, Inc.
- Hunt, S.D. 1983. *Marketing Theory: The philosophy of marketing science*. Home wood, IL: Irwin Publication.

- Hyman, H.H. 1975. *Interviewing in social research*. Chicago, IL, USA: University of Chicago Press: 414-414.
- Iivari, J. 1991. A paradigmatic analysis of contemporary schools of IS development. *European Journal of Information Systems*, 4(1): 249-272.
- Iivari, J., Hirschheim, R., & Klein, H. 1998. A paradigmatic analysis contrasting information systems development approaches and methodologies," *Information Systems Research*, 9(2):164-193.
- Islam, ABM S. 2005. 'Exchange relationship in B2B marketing: an exploratory research, Unpublished PhD thesis, University of Dhaka, Bangladesh.
- Islam, ABM S. 2005. 'Relationship between advertising agencies and their clients: An empirical investigation', Unpublished M.Phil thesis, University of Strathclyde, Glasgow, UK.
- Ives, B. & Learmonth, G.P. 1984. The Information System as a Competitive Weapon. *Communications of the ACM*, 27(12):1193-1201.
- Ives, B. Hamilton, S. & Davis, C. A. 1980. A Framework for research in computer-based Management Information Systems. *Management Science*, 26(9): 910-934.
- Iyaniwura, O. and Osoba, A.M. 1983. 'Measuring Productivity; Conceptual and Statistical Problems: Improvement of Statistics' in Osoba A.M. (ed.) 'Productivity in Nigeria' *Proceedings of a National Conference* NISER, Ibadan.
- Jenkins, A. M. 1977. 'An Investigation of Some Management Information Systems Design Variables and Decision Making Performance: A Simulation Experiment,' Unpublished Ph.D. dissertation, University of Minnesota.

- Jiao, Y.Y., Du, J., Jiao, R.J. and Butler, D. L. 2008. Operational implications of early supplier involvement in semiconductor manufacturing firms: a case study, “*Journal of Manufacturing Technology Management*”, 19(8):913-932.
- Johnson, B., & Christensen, L. 2008. *Educational research: Quantitative, qualitative, and mixed approaches*. Thousand Oaks, CA: Sage Publications.
- Jones, M.R. 2004. Debatable Advice and Inconsistent Evidence: Methodology in Information Systems Research, in: *Information Systems Research: Relevant Theory and Informed Practice*, B. Kaplan, D. Truex III, D. Wastell, A.T. Wood-Harper and J.I. DeGross (eds.), Boston: Kluwer Academic Publishers.
- Jonscher, C. 1983. Information Resources and Economic Policy. *Information Economics and Policy*, 1(1):13-35.
- Jordan, E. 1993. Executive information systems for the chief information officer. *International Journal of Information Management*, 13 (4):249-259.
- Kale, S. 2004. CRM failure and the seven deadly sins, *Marketing Management*, 13: 42-46.
- Kaplan, B. 2001. Computer Rorschach test: What do you see when you look at a computer? *Physicians & Computing*, 18:12–13.
- Kaplan, B. & Maxwell, J.A. 1994. Qualitative Research Methods for Evaluating Computer Information Systems in *Evaluating Health Care Information Systems: Methods and Applications*, J.G. Anderson, C.E. Aydin and S.J. Jay (eds.), Thousand Oaks, CA, Sage:45-68.
- Kaplan, B. & Shaw, N.T. 2004. People, organizational, and social issues: Future directions in evaluation research, *Methods of Information in Medicine* 43: 215–231.

- Karim, A. J. 2011. The significance of management information Systems for enhancing strategic and tactical Planning, *Journal of Information Systems and Technology Management*, 8(2):459-47.
- Keen, P.G.W. 1980. MIS research: reference disciplines and a cumulative tradition. *Proceedings of the First International Conference on Information Systems*, December 1980, pp. 9-18.
- Keen, P.G.W. 1991. Keynote address: relevance and rigor in information systems research, in Nissen, H., Klein, H. and Hirschheim, R. (eds) (1991) *Information Systems Research: Contemporary Approaches and Emergent Traditions*, Elsevier Publishers, North Holland: 27-49.
- Kehinde, O. and Yusuf, S. 2012. Management Information System as a Catalyst to Organisational Performance in the 21st Century: A Study of Selected Banks in Nigeria, *American Journal of Business and Management*, 1(1): 12-17.
- Kets de vries, M . and d. Miller, *The Neurotic Organization*, Jossey-Bass, San Francisco,1984.
- Khan, A.N.M. S.H. 1991. The Broadening the marketing – A study of the family planning organizations in Bangladesh, Unpublished PhD dissertation, Department of Marketing, University of Strathclyde, Glasgow, UK.
- Khanal, D.J. 2007. Banking and insurance services liberalization and development in Bangladesh, Nepal and Malaysia: A comparative analysis, *Asia-Pacific Research and Training Network on Trade Working Paper Series*, 41(October):1-28.
- Khanam, D. Ahmed, M. & Khan, S.H. 2005. E. Banking: An emerging issues in developing country like Bangladesh, “*Pakistan journal of social sciences*”, 3(3):526-529.

- Khazanchi, D. & Bjorn, E.M. 2000. Is information system a science? an inquiry into the nature of the information systems discipline". *ACM SIGMIS Database* 31 (3): 24–42.
- Kim, S. and Kleiner, B.H. (1996), "Service excellence in the banking industry", *Managing Service Quality*, Vol. 6 No. 1, pp. 22-7.
- King, W. R. 1978. Strategic Planning for Management Information Systems. *MIS Quarterly*, 2(1): 27-37.
- Knight Moore. (2005). Administrative Barriers to Adoption of Distance Education. [Online] Available: http://www.knight-moore.com/pubs/ajde_8-3.html Accessed on 22nd February 2011.
- Kothari C.R. 2004. *Research Methodology: methods and techniques*. 2nd edition. New Delhi, India: New Age International Publishers
- Kozak S. (2005). The role of information technology in the profit and cost efficiency improvements of the banking sector. *Journal of Academy of Business and Economics*, 5(2): 1-18.
- Kozer, K. A. 1972. 'Decision Making in a Simulated Environment: A Comparative Analysis of Computer Data Display Media,' Unpublished Ph.D. dissertation, University of Minnesota.
- Kriebel, C. and Moore, J. 1982. Economics and management information systems, *Data Base*, 14, 1, 30-40.
- Kuzel, A. J. & Like, R. C. 1991. Standards of trustworthiness for qualitative studies in primary care, In *Primary Care Research*, P. G. Norton, M. Steward, F. Tudiver, M. J. Bass & E. V. Dunn (eds.), Newbury Park, CA: Sage Publications: 138–158.
- Lastrucci, C.L. 1963. *The scientific approach*. Cambridge, MA: Schenkman.

- Laudon, K.C. & Laudon, J.P. 2004, *Management Information Systems-Managing the digital firm*, 12th edition, Pearson education, India.
- Leather, D. 1987. The work of the Advertising Research Unit: Part II – Methodology. *Journal of the Institute of Health Education*, 5(1):18-31.
- Leavitt, H. J. & Whisler, T.L. 1958. Management in the 1980's, *Harvard Business Review*, 36(6):41-48.
- Lederer A. L. & Mendelow A. L. 1988. Convincing Top Management of the Strategic Potential of Information Systems. *MIS Quarterly*, 12(4):525-534.
- Lee, A.S. 1999. Inaugural Editor's Comments. *MIS Quarterly*, 23(1), v-xi.
- Lee, A.S. 1991. Integrating positivist and interpretivist approaches to organizational research. *Organization Science*, 2: 342-365.
- Lee, A.S., 2001. Editorial. *MIS Quarterly*, 25(1), 3-4.
- Lichtman, M. 2006. *Qualitative research in education: A user's guide*. Thousand Oaks, CA: Sage Publications
- Lucas, H. C. 1973. A Descriptive Model of Information Systems in the Context of the Organization, *Data Base*, 5(2):27-36.
- Lucas, H. C. 1974. Measuring User Reactions to Computer Operations, *Sloan Management Review*, 15(3):59-67.
- Lucas, H. C. 1974. Systems Quality, User Reactions and the Use of Information Systems, *Management Informatics*, 3(4):207-212.
- Lucas, H. C. 1975. Performance and the Use of an Information System, *Management Science*, 21(8):908-919.

- Lucas, H. C. 1975. The Use of an Accounting Information System, Action, and Organizational Performance, *The Accounting Review*, 50(4):735-746.
- Lucas, H. C. 1976. The Implementation of Computer-Based Models, *Management Accounting*, (February, 1976):49-50.
- Lucas, H. C. 1978. Empirical Evidence for a Model of Implementation, *MIS Quarterly*, 2(2):27-42.
- Lucas, H. C. 1979. The Implementation of an Operations Research Model in the Brokerage Industry, *TIMS Studies in the Management Sciences*, 13(1):139-154.
- Ives, B. and Olson, M. H. 1984. User Involvement and MIS Success: A Review of Research, *Management Science*, 30(5):586-603.
- Lyles, M. A. 1977. 'The Perceptions of Upper Level Management of Organizational Problem Formula- tion,' Unpublished Ph.D. dissertation, University of Pittsburgh.
- Maister, D. 1985. "The Psychology of Waiting Lines", in *Strategy and the fat smoker*, <http://davidmaister.com/articles/5/52> Visit Date: 20th July 2012.
- Manfreda, A. & Stemberger, M.I. 2014. Factors causing the relationship gap between top management and IS personnel, "*Journal of Enterprise Information Management*", 27(2):107-121.
- March, T. S. & Smith, G., 1995. *Design and Natural Science Research on Information Technology*. *Decision Support Systems*, 15 (4):251-266.
- Market Research Society R & D Sub-committee on Qualitative Research. 1979. Qualitative Research — A Summary of the Concepts Involved. *Journal of the Market Research Society*, 21(2): 107-124.

- Markus M.L. & Benjamin R.I. 1996. Change agency - the next IS frontier. *MIS Quarterly*, (December):385-407
- Markus, M.L. & Robey, D. 1988. Information technology and organizational change: Causal structure in theory and research, *Management Science*, 34: 583–598.
- Marshall, C & Rossman, G.B. 1989. *Designing Qualitative Research*, Thousand Oaks CA: Sage publications.
- Maruca, R.F. (2000). “Are CIO’s Obsolete?” *Harvard Business Review*, 78(2):55.
- Mason, R. O. & Mitroff, I. I. 1973. A Program for Research on Management Information Systems, *Management Science*, 19(5):475-485.
- Mason, R.O. 1981. *Basic concepts for designing management information systems in measurement of management decision*, E.B. (ed.), Addison –Wesley.
- Maxwell, J.A. 1996. *Qualitative Research Design: An Interactive Approach*, Thousand Oaks, CA: , Sage Publications.
- Maxwell, J.A. 2004. Causal explanation, qualitative research, and scientific inquiry in education, *Educational Researcher*, 33: 3–11.
- McFarlan, F.W. 1984. Information Technology Changes the Way You Compete. *Harvard Business Review*, 62(3): 98-103.
- McFarlan, F.W. & McKenney, J.L. 1982, *Information Systems Management: A Senior Management Perspective*, Richard D. Irwin, Inc., Homewood, Illinois.
- McFarlan, F.W. 1981. Portfolio Approach to Information Systems. *Harvard Business Review*, 59(5): 142-150.
- McIvor, R. and Humphreys, P. 2004. Early supplier involvement in the design process: lessons from the electronics industry, “*Omega*”,32(3):179-199.

- McIvor, R., Humphreys, P. and Cadden, T. 2006. Supplier involvement in product development in the electronics industry: a case study, "*Journal of Engineering and Technology Management*", 23(4):374-397.
- McKenney, J.L. & McFarlan, F.W. 1982. The Information Archipelago - Maps and Bridges, *Harvard Business Review*, 60(5):109-119.
- McLaughlin, E. 1991. Oppositional poverty: the quantitative/qualitative divide and other dichotomies. *The Sociological Review*, 39(1):292-308.
- McLaughlin, M.W. 1991. Enabling professional development: What have we learned? in *Staff development for education in the '90s: New demands, new realities, new perspectives*, A. Lieberman & L. Miller (Eds.), 2nd edition. New York: Teachers College Press: 61-82.
- McLean, E.R. & Soden, J.V. 1977. *Strategic Planning for MIS*, New York: John Wiley and Sons.
- McLeod, R.J. & Schell, G. 2004. *Management Information Systems*, 9th edition, Pearson-Prentice Hall, Singapore.
- Meredith, J. 1998. Building operations management theory through case and field research. *Journal of Operations Management*, 16:441-454.
- Miles M. B. 1979. Qualitative Data as an Attractive Nuisance: The Problem of Analysis. *Administrative Science Quarterly*. Cornell University, 24 (4): 590-601.
- Miles, M. B. & Huberman, A. M. 1984. *Qualitative Data Analysis: A sourcebook of new methods*, Thousand Oaks: Sage Publications.
- Miles, M. B. & Huberman, A. M. 1994. *Qualitative Data Analysis: An expanded sourcebook*, 2nd edition, Thousand Oaks: Sage Publications.

- Miller, W.B. 1980. Building an Effective Information Systems Function. *MIS Quarterly*, 4(2):21-30.
- Mingers, J., 2001. Combining IS research methods: towards a pluralist methodology. *Information Systems Research*, 12(3):240-259.
- Mintzberg, H. 1979. An Emerging Strategy of "Direct" Research. *Administrative Science Quarterly*, 24(4): 582-589
- Mitchell, J. C., 1983. Case and Situation Analysis. *Sociological Review*, 31(2): 187–211.
- Mitchell, V.W. 1993. Industrial In-depth Interviews: Some Considerations for First-time Users. *Marketing Intelligence & Planning*, 11(4):25 – 29.
- Mitroff, I. I. 1974. *The subjective side of science: A philosophical Inquiry into the psychology of Apollo moon scientists*, Amsterdam: Elsevier.
- Mock, T. J. 1973. A Longitudinal Study of Some Information Structure Alternatives, *Database*, 5(2, 3, and 4):40-45.
- Monod, E., 2003. A Copernican Revolution in IS: Using Kant's Critique of Pure Reason for Describing Epistemological Trends in IS, *Proceedings of the 9th Americas Conference on Information Systems AMCIS 2003*, Tampa/FL, U.S.A., p.2719-2724.
- Natalisa, D. and Subroto, B. 2003. Effects of management commitment on service quality to increase customer satisfaction of domestic airlines in Indonesia, *Singapore Management Review*, 25(1):85-105.
- Nelson, J. A. 1973. 'Dialectic Information Systems: A Methodology for Planning and Decision Making,' Unpublished Ph.D. dissertation, University of Pittsburgh.

Nelson, R.R., Todd, P.A., Wixom, B.H., 2005. Antecedents of information and system quality: an empirical examination within the context of data warehousing, *Journal of Management Information Systems*, 21:199–235.

Newsletter <http://www.comp.leeds.ac.uk/ukais/Newsletters/Vol1No1.html>

Niehaves, B. 2005. Epistemological perspectives on multi-method Information systems research. *European conference on Information Systems*, University of Munster, p. 1-13.

Nolan, R.L. & Wetherbe, J.C. 1980. Toward a comprehensive framework for MIS research. *MIS Quarterly*, 4(2), 1-19.

Nolan, R.L. 1982. Managing Information Systems by Committee. *Harvard Business Review*, 60 (4): 72-79.

Ohmae, K. 1982. *The Mind of the Strategist*. New York: McGraw-Hill Book Company.

Olivieri, L.M. 2005. High School Environments and Girls' Interest in Computer Science, *ACM SIGCSE Bulletin*, 37(2):85-88.

O'reilly, C. & Pondy, L. 1980. *Organizational Communication* in S. Kerr (Ed.), *Organizational Behavior*, Grid, Columbus, Ohio.

Orlikowski, W.J. & Baroudi, J.J. Studying Information Technology in Organizations: Research Approaches and Assumptions, *Information Systems Research*, 2(1): 1-28.

Ostlund, L.E. 1974. Perceived innovation attributes as predictors of innovativeness. *Journal of Consumer Research*, 1(2): 9-23.

Oyeranti, G. A. 2000. Concept and Measurement of productivity: *Online publications*, *url: occasionalpapers/rd/2000/abe-00-1.pdf.p1* visit date: 10th march 2012.

- Parasuraman, A. 1986. *Marketing Research*, Reading, MA: Addison-Wesley.
- Parker, C., & Case, T. 1993. *Management Information Systems – Strategy and Action*, 2nd edition, Mitchell Mc Graw-Hill, Singapore.
- Parsons, G. 1983. Fitting Information Systems Technology to the Corporate Needs: The Linking Strategy, *Harvard Business School Teaching Notes*, 9(June):176-183.
- Passmore, J. 1967. *Logical positivism*, *Encyclopedia of philosophy*, Paul Edwards's edition, New York: Macmillan.
- Patton, M.Q. 1978. *Qualitative evaluation methods*. Beverly Hills, CA: Sage.
- Patton, M.Q. 2001. *Qualitative Research and Evaluation Methods*, Thousand Oaks, CA: Sage Publications.
- Peter, J. P. & Olson, J. C. 1983. Is Science Marketing? *Journal of Marketing*, 47 (fall): 111-25.
- Petre, P. 1985. How to Keep Customers Happy Captives. "*Fortune*", 112(5):42-46.
- Popper, K. 1962. *Conjectures and Reputations*, New York: Harper.
- Popper, K. 1972. *Objective Knowledge*, Oxford, U.K.: Clarendon.
- Porter, M.E. & Millar, V.E. 1985. How Information Gives You Competitive Advantage. *Harvard Business Review*, 63(4):149-160.
- Porter, M.E. (1985) Technology & Competitive Advantage, *The Journal of Business Strategy*, 5(3):60-78.
- Porter, M.E. 1979. How competitive forces shape strategy. *Harvard business review*,(March-April):137-45.

- Porter, M.E. 1980. *Competitive Strategy: Techniques for analyzing Industries and competitors*, New York: Free Press.
- Post, G. V. & Anderson, D. L. 2003. *Management Information Systems – solving business problems with information technology*, 3rd edition, Tata McGraw-Hill companies Inc., New Delhi.
- Potocki, K.A. Bocato, R.C. 1995. A System of Management for Organizational Improvement, *Johns Hopkins APL technical digest*, 16(4): 402-412.
- Probert, S.K. 2001. ‘Contemporary Epistemology and IS Methodology: An Interpretive Framework,’ *7th Americas Conference on Information Systems AMCIS 2001*, Boston/MA, U.S.A.
- Rackoff, N. Wiseman, C. & Ullrich, A. 1985. Information Systems for Competitive Advantage: Implementing a Planning Process, *MIS Quarterly*, 9(4):285-294.
- Ragu-Nathan, B.S., Apigian, C.H., Ragu-Nathan, T.S. and Tu, Q. 2004. A path analytic study of the effect of top management support for information systems performance, “*Omega*” 32(6):459-471.
- Rahman, A. (2009). Digital Bangladesh, “*The daily star*”, Bangladesh, January 13, p10.
<http://archive.thedailystar.net/newDesign/cache/cached-news-details-121567.html>
- Ramdani, B., Kawalek, P. and Lorenzo, O. 2009. Predicting SMEs’ adoption of enterprise systems, “*Journal of Enterprise Information Management*”, 22(1/2):10-24.
- Ranganathan, C. and Kannabiran, G. 2004. Effective management of information systems function: an exploratory study of Indian organizations, “*International Journal of Information Management*”, 24(3):247-266.

- Rawani, A.M. & Gupta, M.P. 1999. 'Role of information systems in banks: an empirical study in the indian context', *POMS'99 International Conference*, Indian Institute of Technology, New Delhi.
- Rawani, A.M. & Gupta, M.P. 2002. Role of Information Systems in Banks: An Empirical Study in the Indian Context, *Vikalpa*, 27(4):69-74.
- Reeves, C. and Hoy, F. 1993. Employee perceptions of management commitment and customer evaluations of quality service in independent firms, *Journal of Small Business Management*, 31(4):52-60.
- Reichardt, C. S. and Cook, T. D. 1979. Beyond qualitative versus quantitative methods, in *Qualitative and quantitative methods in evaluation research*, Cook, T.D. and Reichardt, C.S. (eds.). Beverly HIU, CA: Sage Publication: 7-32.
- Reid, A. J. 1996. What we want: Qualitative research. *Canadian Family Physician*, 42(1): 387–389.
- Reinartz, W., Krafft, M. and Hoyer, W.D. 2004. The customer relationship management process: its measurement and impact on performance, *Journal of Marketing Research*, 41:293-305.
- Robson, C. 1993. *Real world research: a resource for social scientists and practitioner researchers*. Cambridge, USA: Blakewell
- Robson, S. & Foster, A. 1989. *Qualitative Research in Action*, London: Hodder and Stoughton.
- Robson, W. 1997. *Strategic Management & Information Systems*, Prentice Hall, 2nd edition, Pearson education, Glasgow, England.
- Rogers, E.M. 2003. *Diffusion of Innovations*, New York: The Free Press.
- Rohmetra, N. and Smith, M. 2004. Training and Development In The Changing

Technological Environment, *Journal Of Management Research*, 4(2).

Ross, J.W. and Feeny, D.F. 1999. The Evolving Role of the CIO, in R.M. Zmud (ed.) *Framing the Domain of IT Research: Glimpsing the Future Through the Past*, Cincinnati, OH; Pinnaflex Educational Resources Inc.

Russo, N.L., & Stoltermann, E. 2000. Exploring the assumptions underlying information systems methodologies. Their impact on past, present and future ISM research. *Information Technology & People*, 13(4):313-327.

Ryals, L. & Payne, A.F.T. 2001. Customer relationship management in financial services: towards information-enabled relationship marketing, *Journal of Strategic Marketing*, 9:1-25.

Saemann, G.P. & Crooker, K.J. 1999. Student Perception of the Profession and Its Effect on Decisions to Major in Accounting. *Journal of Accounting Education*, 17(1):1-22.

Sale, J.E.M., Lohfeld, L.H., & Brazil, K. 2000. *Revisiting the Quantitative-Qualitative Debate: Implications for Mixed-Methods Research*. Netherlands: Kluwer Academic Publishers.

Sampson, P. 1978. Qualitative research and motivation, in *Consumer Market Research Handbook*, 2nd edition, New York: Van Nostrand.

Sandelowski, M. 1986. The problem of rigor in qualitative research. *Advances in Nursing Science* 8(1): 27-37.

Sandhu, M. & Ajmal, M. 2012. The adoption of ICT in project-based and traditional organizations Evidence from Finnish and Swedish companies, “*Journal of Enterprise Information Management*”, 25(1):7-27.

- Santhanam, R. and Hartono, E. 2003. Issues in Linking Information Technology Capability to Firm Performance. *MIS Quarterly*, 27(1):125-153.
- Sasser, W.E., J. Olsen, and D.D. Wyckoff 1979. *Management of Service Operations: Text, Cases and Readings*. New York: Allyn and Bacon.
- Sayeed, Y., Bari, M., Rahman, M.M., Azad, W.A., Moniruzzaman, M., Shilpi, L.M. 2002. Swinging Banking: Not Very Promising, *Bangladesh Research*, August(13).
- SCB, 2013. Performance of banks,” Schedule Banks Statistics”, (July –September): 1-31. [http://: www.bb.org.bd/pub/quarterly/schbanksta/jul_sep_13/intro.pdf](http://www.bb.org.bd/pub/quarterly/schbanksta/jul_sep_13/intro.pdf)
- Secker, J., Wimbush, E., Watson, J. & Milburn, K. 1995. Qualitative methods in health promotion research: Some criteria for quality. *Health Education Journal*, 54 (1): 74–87.
- Senn, J.A. 1973. ‘Information System Structure and Purchasing Decision Effectiveness: An Experimental Study,’ Unpublished Ph.D. dissertation, University of Minnesota.
- Senn, J.A. 1978. Essential Principles of Information Systems Development. *MIS Quarterly*, 2(2):17-26
- Senn, J.A. 1987. *Information Systems In Management*. Belmont: Wadsworth Publishing Co.
- Shadish, W.R. Cook, T.D. and Campbell, D.T. 2002. Experimental and Quasi Experimental Designs for Generalized Causal Inference, Boston: Houghton Mifflin.
- Shah, Mamood and Clarke , Steve(2009):*E-Banking Management: Issues, Solutions, and Strategies*, Information Science Publishing, UK.

- Shamsuddoha, M. 2008. Electronic Banking in Bangladesh, *Journal of Business Solutions*, 1(2):(December):1-11.
- Silk, D.J. 1991. *Planning It: Creating an Information Management Strategy*, Butterworth: Heinemann.
- Silverman, D. 1985. *Qualitative Methodology and Sociology*, Aldershot: Gower.
- Simon, H.A. & Newel, A. 1972. *Human Problem Solving*, Prentice-Hall, Englewood Cliffs.
- Simon, H.A. 1960. *The New Science of Decision*, Harper Brothers Publishers, New York.
- Simon, H.A. 1973. Applying Information technology to Organization Design. *Public Admin. Review*, 1(1):268-278.
- Simon, H.A. 1977. *The New Science of Management Decision*, 3rd revised edition; (first edition 1960) Prentice-Hall, Englewood Cliffs, NJ.
- Skyrme, D.J. & Earl, M.J. 1992. Hybrid Managers: What do we know about them?. *Journal of Information Systems*, 1(2):169-187.
- Smith, J. K. & Heshusius, L. 1986. Closing down the conversation: The end of the quantitative-qualitative debate among educational inquiries. *Educational Researcher*, 15(1): 4–12.
- Smith, J. K. 1983. Quantitative versus qualitative research: An attempt to clarify the issue. *Educational Researcher*, 12(1): 6–13.
- Smith, N. 1990. The case study: A useful research method for information management, *Journal of Information Technology*, (5), 123-133.
- Snyder, I. 1995. Multiple perspectives in literacy research: Integrating the quantitative and qualitative. *Language and Education*, 9 (1), 45-59.

- Strauss A.L. 1987. *Qualitative analysis for social scientists*. Cambridge, UK: Cambridge University Press.
- Sullivan, C. H. 1985. System Planning in Information Age, *Sloan Management Review*, (winter): 3-12.
- Taylor, H.G. & Mounfield, L.C. 1989. The Effect of High School Computer Science, Gender, and Work on Success in College Computer Science," *Proceedings of the Twentieth SIGCSE Technical Symposium on Computer Science Education*, February 23-24, Louisville, Kentucky, USA, pp. 195-198.
- Taylor, J.W. 1977. A striking characteristic of innovators. *Journal of Marketing Research*, 14(February):104-107.
- Tracey, B. & Tewsk, M.J. 1995. Training Effectiveness: Accounting For Individual Characteristics And Work Environment, *Cornell Hotel And Restaurant Administration Quarterly*, 36:36.
- Tripon, A., Blaga, P. (2010), 'Study on performance boost of innovative SMEs through sustainable development of human resources', in *The 6th International Seminar on the Quality Management in Higher Education – Proceedings*, Tulcea, Romania, pp. 673-676.
- Tull, D.S. & Hawkins, D.I. 1990. *Marketing Research: Measurement and Method*, 4th edition, New York: Macmillan.
- Tushman, M. and Nadler, D. A., "An Information Processing Approach to Organizational Design," *Academic Management Review*, 3(3): 613-624.
- Tziner, A., Fisher, M., Senior, T. and Weisberg, J. 2007. *Effects of trinee charactersitics on training effectiveness international journal of selection and assessment*, 15(2).

- Voss, C. Tsiriktsis, N. & Frohlich, M. 2002. Case research in Operations Management. *International journal of Operations & Production Management*, 22(2):195-219.
- Wade, M. and Hulland, J., 2004. Review: The Resource-Based View and Information System Research: Review, Extension, and Suggestions for Future Research. *MIS Quarterly*, 28 (1):107-142.
- Wainer, H. A. and Rubin, I.M. 1969. Motivation of Research and Development Entrepreneurs: Determinants of Company Success, *J. Appl. Psychology*, 53(3):178-190.
- Walsham, G. 1993. *Interpreting Information Systems in Organizations*, Chichester: Wiley.
- Walsham, G. 1995. Interpretive Case Studies in IS Research: Nature and Method. *European Journal of Information Systems*, (4):74-81.
- Weber, R., 2004. The Rhetoric of Positivism Versus Interpretivism. *MIS Quarterly*, 28(1): iii-xii.
- Wells, W. A. 1974. 'Venture Capital Decision Making', Unpublished doctoral dissertation, Carnegie Mellon University, Pittsburgh.
- Wetherbe, J. C. & Whitehead, J. 1977. A Contingency View of Managing the Data Processing Organization. *MIS Quarterly*, 1(1): 19-25.
- Whitley, R. 1984. The development of management studies as a fragmented adhocracy, *Social Science Information*, 23(4-5):775-818.
- Wiersma, U. J. 1992. The effects of extrinsic rewards on intrinsic motivation: A meta-analysis. *J. Occupational Orgarz. Psych.* 65: 101-114.
- Willoughby, T.C. & Pye, 1977. Top Management's Computer Role. *Journal of Systems Management*, 28(9):10-13.

- Wiseman, C. 1985. *Strategy and Computers: Information Systems as Competitive Weapons*, Dow Jones-Irwin: Homewood, IL.
- Worsley, P.M. 1974. The state of Theory and the status of theory, in *Sociology*. London: Sage Publication: 8(1): 1-17.
- Xia, W. and King, W. R., 1999. Assessing the organizational impact of it infrastructure capabilities, Working Paper. Carlson School of Management, University of Minnesota.
- Yadav, S. B. 1983. Determining an Organization's Information Requirements: A State of the Art Survey, *Data Base*, 14(3)3-20.
- Yin, R.K. 1981. The Case Study as a Serious Research Strategy. *Knowledge* (3):97-114.
- Yin, R.K. 1981. The Case Study Crisis: Some Answers. *Administrative Science Quarterly*, 26: 58-65.
- Yin, R.K. 1990. *Case Study Research*, Sage publication, Beverly Hills, CA.
- Zmud, R. W. 1984. Design Alternatives for Organizing Information Systems Activities, "*MIS Quarterly*", 8(2):79-93.

Appendices

Appendix - A¹

Sample In-depth Interview Guide

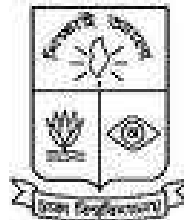
Research Title:

Management Information Systems in Practice: An Exploratory Study on Banking Sector of Bangladesh

Researcher:

Mohammad Mizener Rahaman
Assistant Professor
Department of Business Administration
Shahjalal University of Science and Technology, Sylhet-3114
E-mail: mizen.ban.sust@gmail.com
mizen_397@yahoo.com
Cell: 01716-258962

IN-DEPTH INTERVIEW GUIDE



Department of Management Information Systems
University of Dhaka
Dhaka-1000, Bangladesh

Name of Interviewer : **MOHAMMAD MIZENUR RAHAMAN**

Date :

Name of Interviewee :

Designation of Interviewee :

Start Time :

End Time :

INTERVIEW GUIDELINE

The following guidelines are followed for collecting data through 'In-depth' interview. Both technical users and end users are probed asking what, and how questions to give more insight information.

CONCEPT:

- Information Systems (IS), Information Technology (IT), Management Information Systems (MIS)
- Difference of Information Systems Designer and MIS expert
- Difference of Technical users and End Users
- Corporate executives
- Employees participation in Information Systems
- IT infrastructure

STRATEGIC ESSENCE:

- Benefits
 - Management
 - Operations
 - Decision making
- Risk

FRAMEWORK:

- Current practices of MIS
 - Role of corporate executives
 - IT infrastructure
 - Employee participation in using IS
- Existing infrastructure of IT & IS
 - Hardware
 - Software
 - Networks
 - Human resources (technical users & End users)
 - Data management
- Needs of expansion
- Problems faced

Appendix - A²

Sample In-depth Interview Guide

In-depth interview guideline

Question: What do you mean by Management Information Systems?

Question: How can you differentiate Information Technology from Information Systems?

Question: What is the difference between Information systems designer and MIS experts?

Question: Do you find any difference between technical users and end users?

Question: What is the idea about MIS of the different users in your bank?

Question: Do they have any misunderstanding?

Question: Why this misunderstanding?

Question: What is your thinking about MIS in banking organization?

Question: What is the current practice of MIS in your organization?

Question: What factors will you mention that affect the improved practices of MIS?

Question: Do you think corporate people have a role to improve practices of MIS in your organization?

Question: What are the factors influencing to increase the role of corporate people to improve practices of MIS in your organization?

Question: Do the employees of your bank are satisfied by using MIS?

Question: What is their motivation in participation newly developed systems and MIS?

Question: What are the factors influencing to the employee participation of IS in` your organization?

Question: What are the current practices of MIS of your bank at present?

Question: By comparing MIS practicing with PCBs, what is your position?

Question: What is the current position of the IT infrastructure of your bank?

Question: What are the factors influencing to strengthen IT infrastructure of your bank?

Question: What is the current position of the hardware infrastructure of the bank?

Question: Do you think that hardware infrastructure have to be expanded in near future to compete with others.

Question: Do you think that bank's policy regarding acquiring hardware is very well?

Question: What is the current position of the software infrastructure of the bank?

Question: Do you face any problems or your subordinate faces any problems by using software of the bank?

Question: What is the current position of the network infrastructure of the bank?

Question: What is the current position of the human resources infrastructure of the bank?

Question: Why bank suffered from lack of expertise employees?

Question: What is your data management policy?

Question: Do you face any problem in data management?

Question: Do your bank has needed to expand IT infrastructure or have any gap between existing structures and your needs or expectation?

Question: What are the actual problems of the bank at present?

Question: Do you have any specific recommendation minimize such types of gap?

Appendix-B¹

List of Interviewee

Case – One: Agrani Bank Ltd.

S.N.	Respondents
1	A.K.M. Mujibur Rahman Deputy Managing Director
2	Mr. Kazi Alamgir DGM and Head of IT & MIS division
3	Mr. Jalal uddin Ahmed Project Manager, Online banking Implementation & AGM
4	Mr. Enamul Mowla Head of IT Technical & AGM
5	Fazle Khoda Head of General Banking Division & AGM
6	Mr. Habibur Rahman Manager & DGM, Purana Paltan br.
7	Shirin Akhter Manager, & DGM, Washa Br.
8	Mr. Md. Nazrul Islam Manager & DGM, Amin Court Br.
	Nilchand Singha AGM, Sylhet Circle office
10	Abdus Salam Mollah Manager & AGM, B- Wapda Br.
11	Mr. Hibjul Alam Manager & AGM, Lal digir Par Br, Sylhet
12	Mr. Syed Hafijul Islam Manager & AGM, Dhaka University Br.
13	Mr. Shawkat Hossain Manager & DGM, Foreign exchange Br.
14	Mr. Zakir Hossain Manager, Banani Branch
15	Mr. Mizanur Rahaman Main Br, GM

Case – Two: Mercantile Bank Ltd.

S.N.	Respondents
1	Mr. A.K.M Shahidul Haque Managing Director & CEO
2	M. A. Yousuf Khan Deputy Managing Director
3	Engr. Md. Rafiqul Hoque Bhuiyan Head of IT & SVP
4	Md. Shafiet Wahed Head of IT Business Team & SVP
5	Shah Syed Abdul Bari Head of General Banking Division & SVP
6	Md. Kamrul Islam Chowdhury Manager, Main Branch & DMD
7	Syed Ahmadul Karim Manager, Dhanmondi & SEVP
8	Md. Mahmood Alam Chowdhury Manager, Kawran Bazar & EVP
9	Shah Md. Sohel Khursid Manager, Bijoy Nagar Branch & SVP
10	ABM Eradul Islam Manager, Motijheel Branch & SVP
11	Imam Kabir Chowdhury Manager, Sylhet Branch & SVP
12	Md. Abul Bashar Manager, Elephant Road Branch & SVP
13	Md. Abdul Awal Manager, Green Road Branch & VP
14	Abdullah Md. Zaki Hasan Manager, Banani Branch & EVP
15	Md. Nazrul Hossain Manager, Gulshan Branch & EVP

Appendix-B²**Date of Interview****Case – One: Agrani Bank Ltd.**

S.N.	Respondents	Date of Interview
1	Deputy Managing Director A.K.M. Mujibur Rahman	02.10.2011
2	Mr. Kazi Alamgir DGM and Head of IT & MIS division	26.09.2011
3	Mr. Jalal uddin Ahmed Project Manager, Online banking Implementation & AGM	25.09.2011
4	Mr. Enamul Mowla Head of IT Technical & AGM	06.09.2011
5	Fazle Khoda Head of General Banking Division & AGM	07.09.2011
6	Mr. Habibur Rahman Manager & DGM, Purana Paltan br.	27.09.2011
7	Shirin Akhter Manager, & DGM, Washa Br.	08.10.2011
8	Mr. Md. Nazrul Islam Manager & DGM, Amin Court Br.	18.10.2011
	Nilchand Singha AGM, Sylhet Circle office	05.10.2011
10	Abdus Salam Mollah Manager & AGM, B- Wapda Br.	12.10.2011
11	Mr. Hibjul Alam Manager & AGM, Lal digir Par Br, Sylhet	22.10.2011
12	Mr. Syed Hafijul Islam Manager & AGM, Dhaka University Br.	16.10.2011
13	Mr. Shawkat Hossain Manager & DGM, Foreign exchange Br.	14.09.2011
14	Mr. Zakir Hossain Manager, Banani Branch	15.09.2011
15	Mr. Mizanur Rahaman Main Br, GM	07.08.2011

Case – Two: Mercantile Bank Ltd.

S.N.	Respondents	Date of Interview
1	Mr. A.K.M Shahidul Haque Managing Director & CEO	26.02.2012
2	M. A. Yousuf Khan Deputy Managing Director	28.02.2012
3	Engr. Md. Rafiqul Hoque Bhuiyan Head of IT & SVP	20.02.2012
4	Md. Shafiet Wahed Head of IT Business Team & SVP	20.02.2012
5	Shah Syed Abdul Bari Head of General Banking Division & SVP	04.03.2012
6	Md. Kamrul Islam Chowdhury Manager, Main Branch & DMD	07.02.2012
7	Syed Ahmadul Karim Manager, Dhanmondi & SEVP	11.02.2012
8	Md. Mahmood Alam Chowdhury Manager, Kawran Bazar & EVP	14.02.2012
9	Shah Md. Sohel Khursid Manager, Bijoy Nagar Branch & SVP	19.02.2012
10	ABM Eradul Islam Manager, Motijheel Branch & SVP	05.02.2012
11	Imam Kabir Chowdhury Manager, Sylhet Branch & SVP	09.02.2012
12	Md. Abul Bashar Manager, Elephant Road Branch & SVP	28.02.2012
13	Md. Abdul Awal Manager, Green Road Branch & VP	01.04.2012
14	Abdullah Md. Zaki Hasan Manager, Banani Branch & EVP	05.04.2012
15	Md. Nazrul Hossain Manager, Gulshan Branch & EVP	12.04.2012

Appendix-B³

List of Corporate executives of Agrani Bank Ltd.:

S.N.	Name & Designation	Mail address
1	Dr. Khondoker Bazlul Hoque Chairman	chairman@agranibank.org
2	Mr. Syed Abdul Hamid Managing Director & CEO	mdagrani@agranibank.org
3	Mr. Md. Obayed Ullah Al Masud Deputy Managing Director	dmd1@agranibank.org
4	Mr. Mohammad Shams-UI Islam Deputy Managing Director	dmd_shams@agranibank.org
5	Mr. Muhammad Awal Khan Deputy Managing Director	dmd_akhan@agranibank.org
6	Mr. Mizanur Rahman Khan Deputy Managing Director	
7	Mr. Mohammad Jalaluddin General Manager	gmibu@agranibank.org
8	Mr. A A Md. Shajahan General Manager	gmchittagong@agranibank.org
9	Mr. Md. Najrul Islam Farazi General Manager	gmbcad@agranibank.org
10	Mr. Md. Shohidullah General Manager	gmcomilla@agranibank.org
11	Mr. Badal Chandra Dey General Manager	cs@agranibank.org
12	Mr. Hamidur Rahman General Manager	gmchittagong@agranibank.org
13	Mr. Mobarak Hossain General Manager	gmaudit@agranibank.org
14	Mr. Md. Rofiqul Alam General Manager	gmadmin@agranibank.org
15	Mr. Md. Moshiur Ali General Manager	gmdhaka1@agranibank.org
16	Mr. Md. Ali Hossain Prodhania	gmid@agranibank.org

	General Manager	
17	Mrs. Kolpona Saha General Manager	gmrajshahi@agranibank.org
18	Mr. Md. Delwar Hossain General Manager	gmrecovery@agranibank.org
19	Mrs. Tazrina Ferdousi General Manager	gmcredit@agranibank.org
20	Mr. Kazi Alamgir General Manager (IT)	gmit@agranibank.org
21	Mr. Md. Aminul Islam General Manager	gmkhulna@agranibank.org
22	Mr. Ponkoj Roy Chowdhury General Manager	gmbarisal@agranibank.org
23	Mr. Md. Yousuf Ali General Manager	gmsylhet@agranibank.org
24	Mr. Md. Kamruzzaman General Manager	gmrangpur@agranibank.org
25	Mr. Borhan Uddin Faruk Ahmed General Manager	gmfaridpur@agranibank.org
26	Mr. Md. Shawkat Islam General Manager	gmprbr@agranibank.org
27	Mr. Md. Harmuz Miah General Manager	gmmymensingh@agranibank.org, harmuz@yahoo.com

Source: website of ABL. (<http://www.agranibank.org/management.php>)