ROLE OF MIS DEPARTMENT IN THE ORGANIZATION PERFORMANCE: A COMPARATIVE STUDY OF COMMERCIAL BANKS IN BANGLADESH

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Certificate from the Supervisor

This is to certify that the thesis entitled “ROLE OF MIS DEPARTMENT IN THE ORGANIZATION PERFORMANCE: A COMPARATIVE STUDY OF COMMERCIAL BANKS IN BANGLADESH” submitted by Md. Saiful Hassan for the award of the degree of Master 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.

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Declaration

I do hereby declare that the thesis entitled “ROLE OF MIS DEPARTMENT IN THE ORGANIZATION PERFORMANCE: A COMPARATIVE STUDY OF COMMERCIAL BANKS IN BANGLADESH” submitted to the university of Dhaka for the award of the degree of Master of Philosophy is my original work done under guidance and supervision of Dr. HASIBUR RASHID, Professor of the department of Management Information Systems. This work is original and not submitted anywhere for the award of any degree or diploma.

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Submitted By:

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ABSTRACT OF THE STUDY

This research is an endeavor to understand and identify the role of MIS department in organizational performance mainly focused on banking sector of Bangladesh. The argument of thesis is: Overall performance of the bank mainly depends on departmental role of MIS and departmental role of MIS depends on users' participation, IT infrastructure, and operational environments of the bank.

The main objectives of the study are to gain insights into the departmental role of MIS, identify factors that affect activities of the MIS department in the bank, identify current MIS practicing and needs of in the banking sector Bangladesh, and to identify future research issues those have been raised in this study.

The key research issues examined are: MIS orientation in service sector, , measuring MIS activities in terms of efficiency and effectiveness, way of improving departmental role of MIS for improving performance of the organization, and finding the scope for further improvement of existing MIS in the Banking sector of Bangladesh.

In literature study tried to show broader meaning and practices MIS activities in the service organization especially in the banking sector. In addition to that, relevant literatures on MIS concept, functions, discipline, and framework or model are discussed.

In order to achieve objectives, qualitative methods, in particular comparative case study method were used in collecting necessary data. Two banks one from first generation private commercial banks (FGPCBs), one from Second generation private commercial banks (SGPCBs), were selected on access priority basis among top most performers in the banking industry. As a suitAble technique, data were collected directly by researcher through personal in-depth interview and observation.

To this end, collected information from different banks was presented sequentially and analyzed data by using different theories and model developed in chapter two and finally hypothesis has been drawn from discussed results.

In conclusion, based on research findings central conclusions of the study drawn as MIS department plays very important role in improving performance of the bank. Departmental role of MIS mainly depends on IT related surrounding factors of the organization which is developed as a main model from this study while SGPCBs are more advanced in every aspects other than few exception in practicing MIS in bank comparatively than FGPCBs.

But the research suffers from a major limitation that all the factors of MIS application considered equally important but in practical it may not be true.

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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. 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.

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Thank you too to my other work colleagues and friends who always showed an interest and valued the feedback about my research work and their willingness to take on board what was discovered. I hope this research assisted in some way as a process of professional career of MIS students, development of MIS department of different universities and the banks will aware about the status of MIS infrastructure and its practicing in the bank.

Finally, I am deeply grateful to all concerned persons who provide valuAble guidance, suggestions and advices in collecting information, analyzing and preparing the report successfully.

Abbreviations

UBL	Uttara Bank Limited
AIS	Accounting Information Systems
PBL	Prime Bank Limited
MIS	Management Information Systems
IS	Information Systems
IT	Information Technology
FGPCBs	First Generation Private Commercial Banks
SGPCBs	Second Generation Private Commercial Banks
TGPCBs	Third Generation Private Commercial Banks
ICIS	International Conference on Information Systems
TPS	Transactions Processing Systems
DSS	Decision Support Systems
IRS	Information Resource Management
ICT	Information and Communication Technology
CS	Computer Science
GDP	Gross Domestic Product
WEF	World Economic Forum
ISR	Information Systems Research
MISQ	MIS Quarterly
JAIS	Journal of AIS
I&O	Information and Organization
MD	Managing Director
CEO	Chief Executive Officer
DMD	Deputy Managing Director
AMD	Assistant Managing Director
GM	General Manager
DGM	Deputy General Manager

AGM	Assistant General Manager
AD	Authorized Dealer
HR	Human Resources
SME	Small and Medium Enterprises
IBM	International Business Machine
CSE	Computer Science and Engineering
CIB	Credit Information Bureau
SBS	Schedule Bank Statistics
BACH	Bangladesh Automated Clearing House
EFT	Electronic Fund Transfer
CSR	Corporate Social Responsibilities
RAM	Random Access Memory
CD	Compact Disc
ATM	Automated Teller Machine
LAN	Local Area Networks
WAN	Wide Area Networks
ISPs	Internet Service Providers
NRB	Non Residents Bangladeshi
SVP	Senior Vice President
AVP	Assistant Vice President
EVP	Executive Vice President
DR	Disaster Recovery
PGD	Post Graduate Diploma
DBBL	Dutch Bangla Bank Ltd.

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Chapter- One: Introduction

1.1. Overview

An Information Systems (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 while management information system (MIS) is a system or process that provides the information necessary to manage an organization effectively. It is used by managers throughout the organization to help them in directing, planning, coordinating, communicating, and decision-making. Again, Managers are considered as information systems users and MIS used as basic information systems that make information available to users with similar needs (McLeod & Schell, 2004). In order to provide past, present and prediction information, an MIS can include software that helps in decision-making, data resources such as databases, the hardware resources of a system, decision support systems, people management and project management applications, and any computerized processes that enable the department to run efficiently.

The importance of maintaining a consistent approach to the development, use, and review of MIS systems within the institution must be an ongoing concern of the managers. MIS should have a clearly defined framework of guidelines, policies or practices, standards, and procedures for the organization. These should be followed throughout the institution in the development, maintenance, and use of all MIS. MIS is viewed and used at many levels by management. It should be supportive of the institution's longer term strategic goals and objectives. To the other extreme it is also those everyday accounting systems that are used to ensure basic control is

maintained over financial record keeping activities. Thus management of different organization has been increasingly urged to improve the MIS development effort in the business organization. MIS would provide outputs that are reliable, timely, and accurate to support making decisions. Today this frequently involves the use of computer systems. 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 facilitated operational and management functions and importantly in decision making process of business organization (Lederer & Mendelow 1988, McLeod & Schell 2004).

MIS plays very vital role in the management, administration and operation of the organization. The system ensures that an appropriate data is collected from various sources, processed and sent further to all the needy destinations. An institution's MIS should be designed to achieve the following goals:

- Enhance communication among employees.
- Deliver complex material throughout the institution.
- Provide an objective system for recording and aggregating information.
- Reduce expenses related to labor-intensive manual activities.
- Support the organization's strategic goals and direction.

Effective MIS should ensure the appropriate presentation formats and time frames required by operations and senior management is met. MIS can be maintained and developed by either manual or automated systems or a combination of both. It should always be sufficient to meet an institution's unique goals and objectives. The effective

deliveries of an institution's products and services are supported by the MIS. These systems should be accessible and useable at all appropriate levels of the organization. More recently, organizations have begun to create information systems that can provide a strategic impact and earn substantial profits. Basically, MIS emerged as a new field and its practice within the business organization comparatively low than others field of business and social sciences. But success of MIS application mainly depends on users' institutional academic knowledge and training.

Though few researches conducted on MIS in last three decades but the previous studies do not examine the MIS practice as a holistic approach to integrate 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 MIS practice from different dimensions and need to further research in this field (Alavi et al., 1992).

Though previous studies have made some contributions to understanding application of MIS there is a lack of comprehensive study about institutional role for developing MIS graduates and their contributory role in different business organization. Now days, many academic institutions producing MIS graduates and playing very important to ensure operational efficiency, value added services, and decision making process of service organization like bank. The study will consider role of MIS department in increasing performance of the organization especially banking sector of Bangladesh.

1.2. Problem statement

From the literature review shows that formal meaning and application of MIS, particularly, role of MIS department in the organization for application of MIS in the

banking sector is very limited. Previous studies undertaken were mostly centered on the Information Systems or MIS development in different organization. Studies conducted on in the area of MIS application are limited to decision making process of business organization. Some studies identified problem associated with MIS development, application in different organization. This study identified a number of major problems listed below:

- Role of MIS to full fill the needs of MIS requirements of different banking organization
- Misunderstanding about MIS concept.
- Misunderstanding of difference between IS designer and MIS expert.
- Limited application of MIS department in developing efficiency of the employees in the banking organization to effective use of MIS.
- Limited knowledge about the role of MIS in the business organization as well as limited application of MIS to improve performance of the organization.

Eventually none of the studies have focused on the current practices of MIS in service sector, particularly in banking sector of Bangladesh. The fragmented nature of studies resulted in lack of knowledge of MIS prevailing in the service sector and especially in banking sector. It is therefore essential to undertake a comprehensive study of the banking sector with an objective to unveil the role of MIS department to improve overall performance of the bank.

1.3. Research Question and Issues

This study has attempted to answer the following questions and issues:

i. What is MIS orientation in service sector?

ii. Why and how improved role of MIS department in banking organization play key role to improve performance level of the bank in terms of efficiency and effectiveness?
iii. What is the scope for further improvement of existing MIS in the Banking sector of Bangladesh?

1.4. Objectives of the Study

The main objective of the present study is to find out role of MIS department to improve performance level of the organization in the banking sector of Bangladesh. The specific objectives are the following:

- To identify factors that affect activities of the MIS department in the bank.
- To identify current MIS practicing and needs of in the banking sector Bangladesh.
- To identify future research issues those have been raised in this study.

1.5. Methodology of the study

In order to achieve objectives, qualitative methods, in particular case study approach will be more appropriate in collecting necessary data. As the performance of the bank and IT or MIS infrastructure of the bank differ based on development generation rather types of bank thus two banks were selected as a from the banking industry among which one from first generation private commercial banks (FGPCBs) and another from second generation private commercial banks (SGPCBs) will be selected on access priority basis in the banking industry. As a suitable technique, data were collected directly by researcher through personal in-depth interview and observation. The key persons of selected organizations in each case were interviewed specifically the executives who are directly involve in development, decision making, and implementation MIS at the different level of the organization. All the interviews were

recorded and after completing the interviews data were transcribed. Subsequently, data classified and addressed to specific research issues. Finally, interview data were presented in the form of findings and discussion based on issues identify through literature review relating to practices of MIS based on different dimensions. To this end, collected information from different banks was presented sequentially and hypothesis has been drawn from discussed results.

1.6. Scope of the study

The present study will cover role of MIS department in measuring performance of FGPCBS and SGPCBs in Bangladesh. It aims to project broad overview of role of MIS department in the bank to enhance performance of the individual, bank and banking sector as a whole. Functions of MIS department and locate the purpose of each activities individually as well as collectively and management expectations from its application. A variety factors related to MIS department to contribute in increasing performance of the business organization in terms efficiency of employees and satisfaction of customers. Efforts will give to identify these factors and determine their impact on true application of MIS. The study will also cover to identify the role of MIS department. Efforts will focus again to identify strategic significance of MIS in banking sector of Bangladesh.

1.7. Contribution of the study

1.7.1. Contribution to theory and Knowledge

Although there is ample scope of the application of MIS in banking sector of Bangladesh, with a very limited attempt the previous study has failed to do successfully. Moreover, previous studies can not explain (i) conceptual framework of MIS, (ii) relationship and distinction between IS developer and MIS expert, (iii) broader application of MIS in service organization. Therefore, the researcher believes that it will contribute to existing stock of knowledge.

7.7.2. *Contribution to practitioners*

The existing research could not provide an adequate guideline that what, why, how MIS activities accelerate baking performance and growth in developing countries like Bangladesh. The thirst of this research is to find out the answer of these questions and an attempt to develop different frameworks as the emerging findings of the study. These could be guideline to the practitioners (MIS expert and users) to find out role of educational institution especially MIS department of Dhaka university. The researcher also believes that the findings will contribute to the policy makers to understand the essence of MIS in their business organization.

1.8. Structure of the Dissertations

The study is organized into six chapters, the first of which is this Introduction, problem in perspective, objectives, research issues & research questions, research objectives, method of empirical study, and contribution of the study.

Chapter –Two: It reviews the literature on broader meaning and role of MIS activities

and department in the service organization especially in the banking sector. To this end to achieve the objectives of the study, the chapter will examine application of MIS and essence of it's in the service organization. In addition to that, relevant literatures on MIS concept, functions, discipline, and framework or model are discussed.

Chapter –Three: The objective of chapter - three is to examine the methodology of the study. In order to apply the appropriate research technique, general research paradigm in MIS and other social science disciplines are reviewed. In doing so, case study approach is proposed as an appropriate research method to resolve the research issues. Methods of data collection and techniques of data analysis are discussed.

Chapter –Four: The objective of chapter - four manly discussed about comparative case means two selected banks.

Chapter – Five: It mainly focused on collected data and data analysis.

Chapter – Six: finally in last chapter means in chapter six will cover theoretical and practical implications of the study as well as summary and concluding remarks of the study.

CHAPTER- TWO

LITERATURE REVIEW

Planning is the first and the most crucial function of management that tell where to begin and how things would be well-organized in a system. Human beings are the most privileged animals of the creation because they need not start every new thing from the beginning. The past experience is always helpful to them. They learn from the past and make the plan for the future. In this context, a review was made of the existing relevant literature available on the topic. The review literature was categorized in Six different categories. These were:

- Studies related to formal understanding of MIS, scope of MIS, functions of MIS, background of MIS develpment department and top management to enhance MIS practices in banking sector.
- Studies related to information systems usage in the bank.
- Studies related to information systems usage in other similar organizations.
- Studies related to the performance of the bank.
- Studies related to impact of MIS on working of the bank.
- Other related studies which can help in our research work.

2.1 Formal Understanding of MIS and MIS department

There is no consensus on the definition of the term 'Management Information System' and department of MIS in the business organization especially banking sector. Some specialist prefer alternative terminology such as 'Information Processing Systems', 'Information and Decision Systems', 'Organizational Information Systems', or in some cases simply an 'Information Systems' to refer computer based information processing systems to support the different activities of the business organization while

department IT or department IS used instead of department MIS in many cases. However, researcher try to explain what MIS stands for the modern business world.

2.1.1 MIS Concept

The MIS concept is the result of creation of new field of MIS in 1970s when the idea was created a by workforce who could bridge the communication and technical gaps between management and computer programmers and the business world to create information based applications for business organization. However, different scholars do not present consistent definitions even for the notion of 'MIS'. Many of them find it difficult to articulate what various terms represents just from literature surveys. But modern MIS expert define it somehow uniquely. Definitions of MIS include:

MIS is an integrated, user machine system that provides information for supporting operations and decision making functions (Awad, 1988).

Dickson et al. (1977), Information system 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), Dickson et al. (1977), Chervany et al. (1971), believed to the information structure in both frameworks 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. Each of the nine experiments in the series examined various aspects of the decision support problem. The evidence from these efforts strongly suggests that a relationship exists between information system 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. Main limitations of the study is

not considering all the variables rather than user interface of the management to focus decision making effectiveness.

Lederer & Mendelow (1988) described traditionally, information systems exclusively facilitated operational and management functions. More recently, organizations have begun to create information systems that can provide a strategic impact and earn substantial profits. So, convincing top management of the potential strategic impact of information systems impedes information systems planning. The results suggest the importance of information systems executives' skills and activities necessary for the selling of information systems products and services. They explained information systems assist in operational or management function but importantly theory limited by not considering strategic function and list of complete variables. But strength of the theory is to focus how MIS facilitating key managerial functions.

Miller (1980) presented the organizations with successful Information Systems departments appear to have some elements in common. These elements include *defining the department's role and responsibilities, structuring its basic approach, establishing management direction, developing a plan, and development of good people*. It appears that successful companies have some things in common in their approaches to Information Systems. If this impression is accurate, understanding of the commonalities would move us all one step closer to a better world. There are five key steps for a company to take regarding it’s IS function: Define the role and responsibilities of the IS function; Define the basic parameters affecting the IS function's approach to fulfilling its responsibilities; Establish proper management guidance of the IS function; Develop an IS plan and a way to measure performance against the plan; Obtain and support good people in the IS function.

Mason and Mitroff (1973) have looked at an information system as: *a person* of a certain *psychological type* who faces a *problem* within some *organizational context* for which he needs *evidence* to arrive at a solution, where the evidence is made available through some *mode of presentation*.

Mason and Mitroff point out that much of the previous research and development work that has been done has assumed " underlying psychological type, one class of problem, one or two methods of generating evidence, and finally, one mode or method of presentation."

The limitations of the Mason and Mitroff model are the following:

i. The development process is not considered nor are technical questions related to the ongoing operation of the information system.

ii. No reasonable dependent variable is suggested which might be used to measure the "goodness" of the completed system.

Mason (1981) has classified Management Information Systems into four categories or levels. He distinguishes between the Information Systems and decision making systems. His categories of MIS based on the point of articulation between the information systems and decision making systems. According to his theory information systems leaves off and the decision maker begins.

Table -2.1: ***Categorization of Information System Variables (Mason and Mitroff) (adopted from Ives, B., et al., 1980, p.912.)***

Psychological Type

a. Thinking-Sensation
b. Thinking-Intuition
c. Feeling-Sensation
d. Feeling-Intuition

Class of Problems

a. Structured
    1. Decisions under certainty
    2. Decisions under risk
    3. Decisions under uncertainty
b. Unstructured-"Wicked" Decision Problems

Method of Evidence Generation and Guarantor of Evidence-Inquiring Systems (IS)

a. Lockean IS (Data Based)
b. Leibnitzian IS (Model Based)
c. Kantian IS (Multiple Models)
d. Hegelian IS (Deadly Enemy-Conflicting Models)
e. Singerian-Churchmanian IS (Learning Systems)

Organizational Context or Organizational Class of Problem

a. Strategic planning
b. Management control
c. Operational control

Modes of Presentation

a. Personalistic
    1. Drama-Role plays
    2. Art-Graphics
    3. One-to-One contact group interaction
b. Impersonalistic
    1. Company reports
    2. Abstract models-computerized information systems

In the line of research generated from Mason and Mitroff's model, Nelson (1973) studied dialectical information systems as a method of evidence generation within a methodology for planning and decision making, Bush (1975) investigated the influence of cognitive style in a Delphi-type methodology for database design, Gingras (1977) compared the psychological types of IS designers and users, and Lyles (1977) investigated the problem formulation process for upper level management.

Laudon & Laudon (2004) 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 supporting 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 Management Information Systems is supporting decision making in an organizations through analyzing complex problems by generating routine reports.

Strength of the definition:

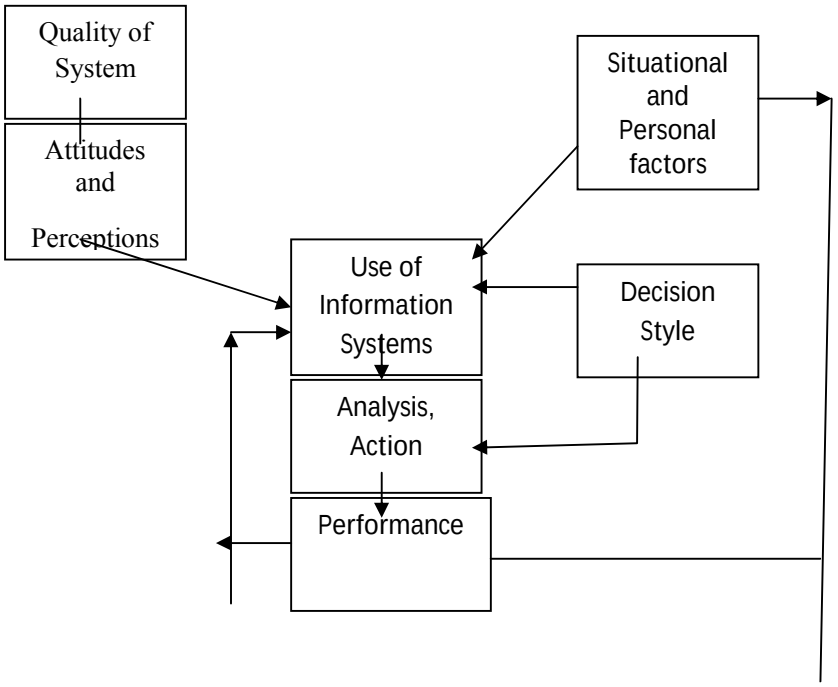
Authors considered key factors of the business environment, supporting decision making of the management level or creating friendly environment to make a complex decision simply.

Limitation of the definition:

Definition presented only use process not operational or development process. Use process means to support managerial activity of manager as a user in the management level.

Lucas (1973) explains a descriptive model of situational, personal and attitudinal variables and their impact on usage of the system and the performance of the information system user. The model, displayed in Chart-2.1, describes how user performance affects usage of the IS and how system usage in turn influences users' attitudes.

Chart - 2.1: Performance of the information systems users



Source: ***Lucas (1973):5(2):30***

The Lucas model in Chart-2.1 is a subset of the complete Lucas model taken from an empirical study done by Lucas (1975) and presents a clear picture of the hypothesized interrelationships between variables. From the model it can be predicted that usage of the system will influence user performance, that performance of the user will in turn affect usage of the system and the both usage and performance will be affected by personal and situational factors. Lucas has taken a behavioral approach which is more encompassing than many of the other models. He has stressed and identified the

importance of behavioral issues within the context of technological and structural questions. Lucas (1974), (1974), (1975), (1978) has investigated various model components in an extensive line of research, but no dissertations were identified as stemming from his model.

Mock (1973) focuses on the behavioral constraints. In particular, he argues that the IS user (i.e., decision maker) will be operating in a fixed social, personal, and structural environment. Mock suggests behavioral constraints and information structure variables influence decision maker performance. Mock identified five classes of variables which are Individual/Psychological Variables, Organizational, Interpersonal Variables, Sociological and Environmental Variables, Information structure variables, decision maker performance variables. Mock considers many of these variables to be uncontrollable from the viewpoint of the systems designer. The important focus then is to determine the nature of their effect on the system. He also indicates that little of the current (i.e., 1973) IS research can be easily translated into tools or techniques of use to the system designer. Mock's focus is on the behavioral characteristics of users, specifically decision making users. The model neglects the technical, operation and development sides of MIS. It is limited in scope, but is a very useful vehicle for the researcher by focusing on environmental or behavioral questions relating to the ongoing use of an information system.

Gorry and Morton (1971) consider an IS from the perspective of the information that it provides to management. They hypothesize that the dependent variables are the attributes of information (e.g., accuracy, currency, frequency of use) which vary depending on Anthony's (1965) levels of managerial activity and Simon's (1960) relative degree of structure in the decision being made. Table - 2.2 displays these

relationships. The middle line separates largely structured decisions which are supported by structured decision systems, and largely unstructured decisions supported by decision support systems. For a structured decision system, a given general IS model is implemented in a certain organizational context. IS development for unstructured decisions focuses on information handling capabilities and tailoring the decision models to the task and individual. Several limitations are expressed and implied by this model. The focus is only on managerial activities: "Information systems should exist only to support decisions". Transaction processing type systems therefore are ignored. The authors also acknowledge their model is static and "not designed to say anything about how information systems are built".

Table-2.2: A framework for Information Systems

Relative degree of structure in the decision being made	Levels of Managerial Activity		
	Operational control	Managerial control	Strategic Planning
Structured	Structured Decision Systems (Programmed)		
Unstructured	Decision Support Systems (Non Programmed)		

Source: Gory & Scott Morton *1971:13(1):58.*

Parker, C. and Case, T. (1993) presented MIS is any systems that provides people with either data or information relating to an organization's operations. Management Information systems supports the activities of employees, owners, customers, and other key people in the organization's environment either by efficiently processing data to assist with the transactions work load or effectively supplying information to authorized people in a timely manner. Authors explain Transaction processing systems, Management reporting systems, decision support systems, office information

systems are the sub systems of MIS. Definition emphasized MIS as supporting tools for organization any type of information system considered as a part of MIS. So MIS support to any type of data or information processing for saving time in the business operation. Thus MIS is not primary factor rather than supportive factor for increasing efficiency of the organizations.

McLeod & Schell (2004) defined Management Information Systems as a computer –based systems that makes information available to users with similar needs. While information is processed data that is meaningful; it usually tells the user something that she or he did not already know. According to their model, they emphasized on r*eport writing software, organizational problem solvers, mathematical model, and the environment*. Model focused on the problem solving by using mathematical model and software produced routine report. Limitation of the model is highlighting only mathematical model and excluded thinking about planning, operation and decision making situation of the organization with the application of MIS. Gupta (1998) explained MIS from two contexts are:

Table-2.3: Different views of MIS

MIS as a field of study	MIS is an interdisciplinary field that is influenced by computer science, political science, psychology, operation research, linguistics, sociology and organizational theory.
MIS as an information Systems	MIS is a broad class of systems that provides information to facilitate organizational decision making.

Source: Gupta, U.G. (1998), p.6.

MIS is considered as interdisciplinary field of study which is the strength of the model but he presented MIS in limited organizational context which is only for facilitating decision making.

Post & Anderson (2003) presented MIS as a computer based information systems main goal of which is to enable managers to make better decision by providing quality information. Theory provides importance on using computer based information systems to take effective decision for getting advantages and achieve goal of the organization. So MIS assist in decision making process of managers but not operational activities within the organization.

Zmud (1984) Information systems activities (those tasks associated with acquiring, deploying, and managing information technologies) are in a considerable state of flux in many organizations. Two major forces are behind much of this turmoil. First, *a substantial increase in computing* has occurred over the last decade because of the phenomenal advances achieved in computer hardware and software (Benjamin, R.I. 1982, & McKenney, J.L. and McFarlan, F.W., 1982). As a consequence, individuals responsible for directing an organization's use of information resources face an expanding user base and an exploding portfolio of information services. Second, resource scarcities have led many organizations to stress the improvement of existing services rather than the provision of new services (Allen, B., 1982). This, in turn, has led many end users to act independently of the centralized information systems authority in deciding when and how to exploit information technologies (McFarlan, F.W. and McKenney, J.L. 1982). The model presented when and how the information system will be benefited for the organization. It's only focused on user application,

development, and operational side of Information systems rather focusing on decision making process.

Researcher developed a theory of MIS based empirical findings of previous theory given IS scholar in different times and explained in following way:

> *"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."*

Researcher defined Management Information Systems is an integrated user oriented system for providing information to support operations, management, and decision-making functions in an organization.

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 -2.4:

Table-2.4: Nature and scope of information and its use in different levels in the organization

Information characteristics	**Level of Decision Making**		
	Operational	*Tactical*	*Strategic*

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

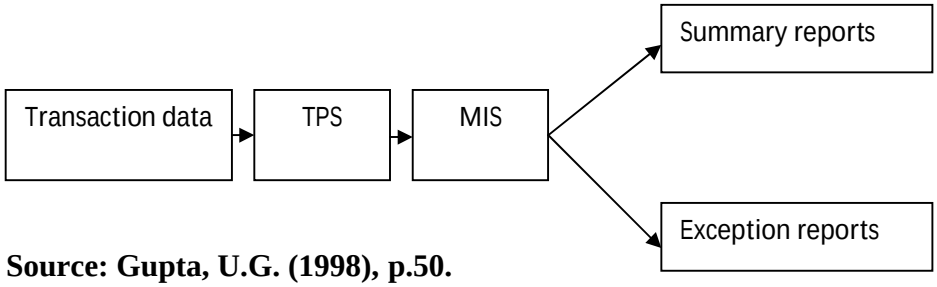
Source: Gupta, U.G. (1998), p20.

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.

2.1.3 Functions of MIS

Management Information Systems are distinct from regular information systems in that they are used to analyze other information systems applied in operational activities in the organization. MIS are general purpose well integrated systems that meet the tactical information needs of middle managers. These systems generate summery and exception report (Gupta, 1998).

Example of MIS showed in Chart -2.2:



Source: Gupta, U.G. (1998), p.50.

MIS has been introduced as a broad concept referring to a federation of sub systems and subsystems of MIS support managerial activities of the organization (Davis and Olson, 2000). But major uses of computer based information systems depends on user. Table - 2.5 shows the user experience on MIS.

Table-2.5 MIS as seen by the User

User	**Uses**
Clerical personnel	Handle transactions, process input data and answer inquiries.
First level managers	Obtain operations data. Assistance with planning scheduling, identifying out of control situations, and making decisions.
Staff specialist	Information for analysis, Assistance with analysis, planning, and reporting.
Management	Regular reports. Ad hoc retrieval requests. Ad hoc reports. Assistance in identifying problems and opportunities. Assistance in decision making analysis.

Source: Davis & Olson (2000), p. 17.

It would be oversimplification to say that problem solving is the most important activity that manager performs (McLeod and Schell, 2004). MIS can be an appropriate tool to support human decision making (Robson, 1997). In Simon (1960) of Human problem solving, author explained that information systems will play an effective instrumentation to support problem solving in three phases out of four phases model (Robson 1997, McLeod and Schell 2004). Information supports in different problem solving phase of Simon (1977) has outlined in chart -2.3 and role of instrumentation in decision phase of Simon and Newell (1972) in chart-2.4.

Chart-2.3: Simon problem solving model

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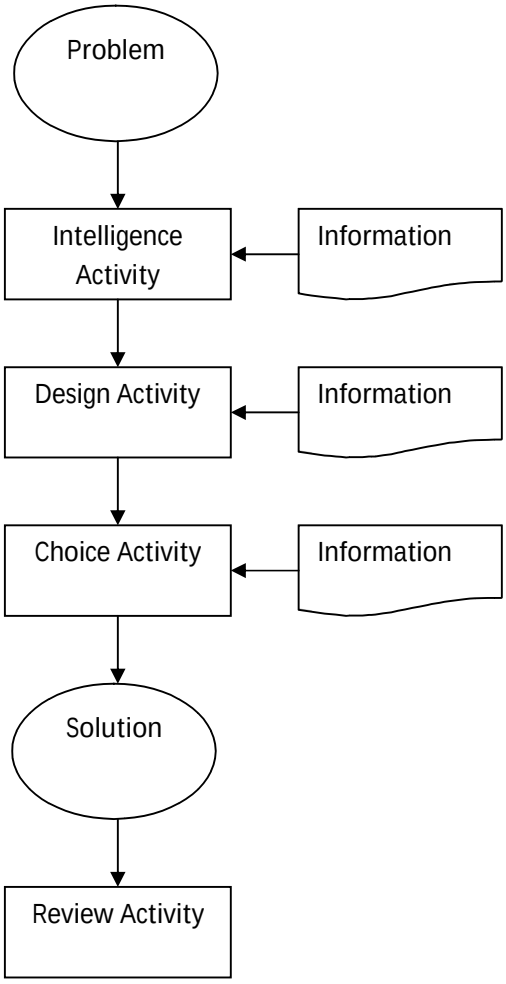
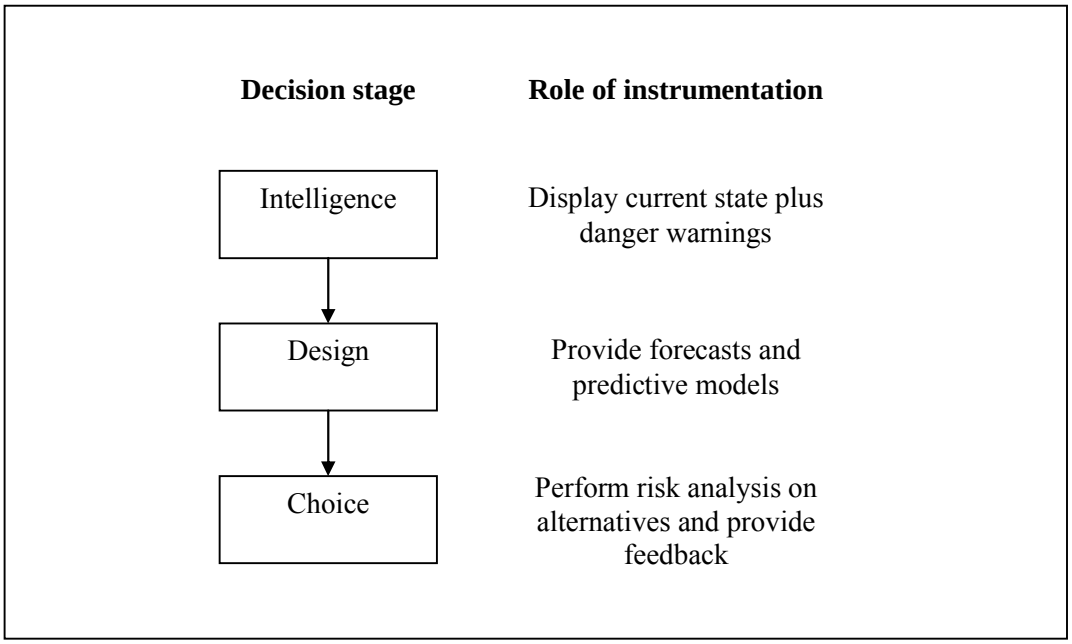


Source: McLeod and Schell 2004, p.18.

Chart-2.4: Simon model of decision making



Source: Robson 1997, p. 86.

Ives, B. et al. (1980), presented a pictorial model of an information system is presented in chart -2.5. There are three information system environments, three information system processes, and the information subsystem itself, all of which exist within an organizational environment and an external environment. The environmental characteristics define the resources and constraints which dictate the scope and form of each information subsystem. The organizational environment is marked by the organizational goals, tasks, structure, volatility, and management philosophy/style. The user environment is the environment surrounding and including primary users. Primary users consist of decision makers (e.g., management) making decisions based on the IS outputs and intermediaries (e.g., staff) who filter or interpret the outputs for decision makers. The primary user environment can be described by characteristics of the user, of the user's organization, and of the user's task. The IS development environment consists of the development methods and techniques (e.g., systems

development methodology, intervention techniques), design personnel and their characteristics (e.g., education/experience levels of analysts and involved users), and the organization and management of IS development and maintenance (e.g., development planning and control systems). It also includes other existing information systems that may interface with or be impacted by the system under development. The IS operations environment incorporates the resources necessary for IS operations. The major components include software, hardware, database, procedures/documentation, organization and management of IS operations, and the operations personnel. The operations personnel include computer operations staff, database administration staff, technical support staff and secondary users of the IS. A secondary user such as data collection/entry personnel and control clerks provide and maintain data but do not directly benefit from IS outputs in performing their tasks. The Information Subsystem (ISS) the second factor of importance to the model is the information subsystem (or application system) represented by a circle in Chart-2.5, which is the output of the development process. The operations process is the physical operation of the ISS and is primarily a function of the operations resource, with interfaces at the boundaries of other environments in the form of personal interaction. The process can be measured by resource use (e.g., time, cost), performance, quality of life and satisfaction of secondary users, and the service to users (e.g., turnaround time, response time for user requests, availability, error rates). The use process, focusing on usage of the ISS by the primary user, is usually measured by task accomplishment leading to an effect on productivity and decision making quality. More recently, the conceptualizations of information satisfaction and the quality of work life of users have led to additional measures.

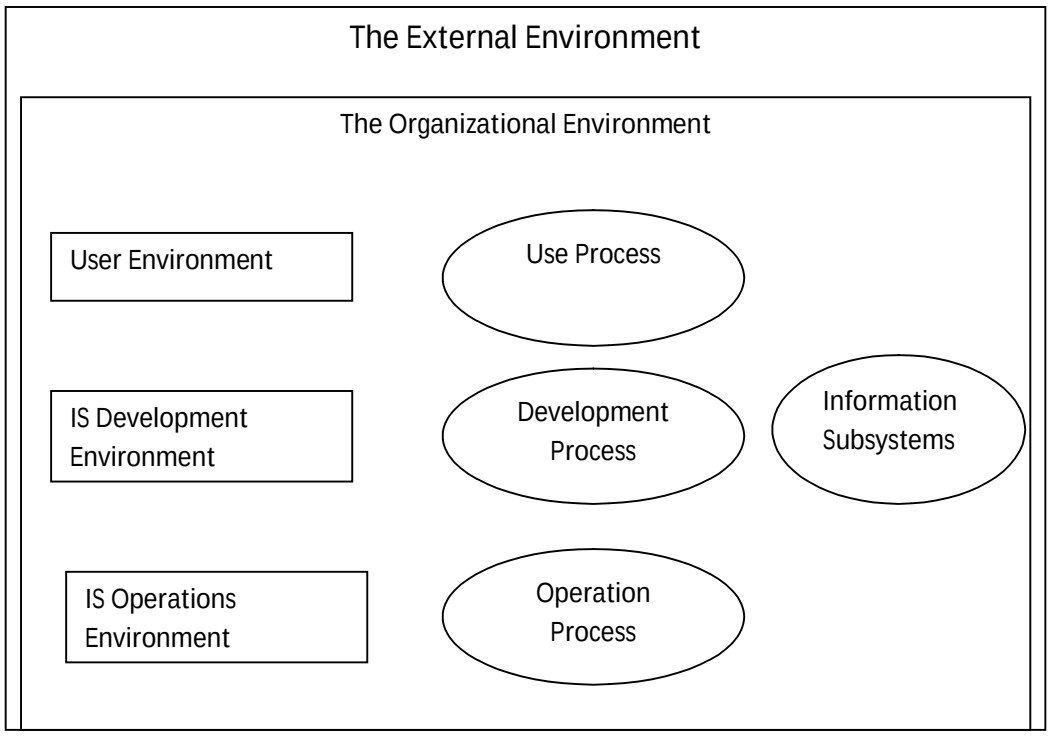
Limitation of the model:

i. Model could not identify the role specifically of management people and IT people.

ii. The model focuses on designing the user system interface, development process, and operation process but overlooks list of activities in each phases.

But model focuses all types' variables to identify the impact of each factor on development of Information system model.

Chart-2.5: Model for Information System research



2.1.4 Background of IS and MIS

Information systems (IS) is a professional and academic discipline concerned with the strategic, managerial, operational activities, involved in the gathering, processing, storing, distributing, and use of information, and its associated technologies, in society and organizations (Newsletter, 1995). As an area of study, IS bridges the

multidisciplinary business field and the interdisciplinary computer science field that is evolving toward a new scientific discipline.

Table -2.6: The History of Information System in Business

Year	Main activities	Skills required
1970s	Mainframe computers were used Computers and data were centralized Systems were tied to a few business functions: payroll, inventory, billing Main focus was to automate existing processes	Programming in COBOL
1980s	PCs and LANs are installed Departments set up own computer systems End-user computing with Word Processors and Spreadsheets makes departments less dependent on the IT department Main focus is automating existing processes	PC support, basic networking
1990s	Wide Area Networks (WANs) become corporate standards Senior management looks for system integration and data integration. No more stand-alone systems. Main focus is central control and corporate learning	Network support, systems integration, database administration
2000s	Wide Area Networks expand via the Internet to include global enterprises and business partners – supply chain and distribution	Network support, systems integration

	Senior management looks for data sharing across systems.Main focus is efficiencies and speed in inventory, manufacturing, distribution	

Source: Khazanchi, D. & Bjorn, E.M. 2004 (available at: http://www.uwosh.edu/faculty_staff/wresch/311IShistory.htm, visit date: 10th august, 2010)

Before the concept of management information systems was created, computer scientists were just programmers creating applications for science and math calculations. As computer usage evolved in fields of business and data management, software applications were needed to process nonscientific data. A field of study would be needed to bridge the gap between computer programmers and the business world to create information-based applications for business and networks (Hart, 2010)

MIS have existed since the 1960s, when mainframe computers began making significant inroads in automating information-based activities at large corporations. Historically, they represent roughly the second generation of business software applications, an intermediate step between the very basic, large transaction-centered systems of the 1950s and early 1960s and the more specialized software tools that started taking root in the 1970s, such as word processing and decision support systems. The first MISs, however, often weren't particularly useful because of equipment shortcomings, a lack of computer literacy among the intended users, and poor planning for which functions the MIS would best serve. As computers continued to grow cheaper and the software more user friendly, MISs gained wider acceptance in the 1970s.

The conceptual foundations of MIS may be traced back to Leavitt and Whisler's (1958) forecast of the coming of "Information Technology." The term MIS became popular in 1965 (Dickson et al., 1981), and in the late 1960s, the first academic MIS programs were announced (Dickson, 1981).

Davis & Olson (2000) describe MIS as a concept continues to evolve. It is related to, but not equivalent with data processing and other information systems related concepts. Two such concepts that can be considered extension of MIS concept are decision support systems (DSS) and information resource management (IRM). An emerging trend consistent with the evolution of the MIS concept is end user computing.

Dickson (1981) described the evolution and status of the Management Information Systems (MIS) field. It was then possible to provide in a single reference an analysis of the bulk of research work in the MIS discipline. Since then, the broad nature of MIS as an academic discipline as well as its increasing significance has resulted in an explosion of research into a very wide range of topics. One of the earliest attempts to define the boundaries of the discipline was provided by Gory and Scott Morton (1971). Their framework focuses on the “structured ness” of decision tasks and the level of managerial activity at which those decision tasks are performed. Mason and Mitroff (1973) added to the formulation of what constitutes research in MIS describing an information system as dealing with the support of individual decision-makers. Davis (1974) provided definitions of MIS and the MIS discipline that have framed and guided our understanding of MIS as an academic discipline. These definitions were formulated into a framework for MIS research by Ives, Hamilton, and Davis (1980) who delimits research in MIS as being “the systematic investigation of the

development, operations, use and/or impact of an information (sub) system in an organizational environment." Nolan and Wetherbe (1980) synthesized a variety of taxonomies and frameworks in an attempt to define a "comprehensive framework" for MIS research.

2.1.5 Relationship between IS designer& developer and MIS expert

The task of IS specialist is still to create and mediate IS or ICT to users, but any closer of analysis of IS specialists shows that they do not form a uniform occupational group. The title "IS specialist" includes three groups: i) Programmers in software industry; ii) support personnel in an IS function; and iii) management and trade union consultant who use computer technology to change things (Dahlbom & Mathiassen, 1997). In above categories IS designer and developer are within the first and second group while MIS expert in the third group. IS designer and developer generally technical person but MIS expert are the management people and education background also different. MIS experts are the students of MIS concentration or hybrid manager while IS designer and developer generally students of computer science (CS). Moreover, they have some similarities and dissimilarities (Downey et al. 2009). MIS and CS students have some similar courses, including database, networking, and programming courses. The courses that a student takes can influence their choice of major. One study found that the first course in the CS major was a significant influence on major choice (Taylor & Mounfield, 1989). Other studies reported that high school course work influenced choice of major for MIS majors (Saemann & Crooker, 1999) as well as CS majors (Olivieri, 2005). The perceived degree of difficulty of courses in the major can also influence choice of major (Calkins & Welki, 2006; Saemann & Crooker, 1999), although to what extent and how the two majors compare is unclear.

Despite these similarities between MIS and CS students, there are of course also differences. Because most MIS departments (and all of the ones studied herein) are in the business college, MIS majors typically take the common business core curriculum that all business majors take. That core generally includes courses in accounting, management, marketing, finance, and economics. The MIS major should understand how business organizations function and create value. These courses are quite different from those taken by CS majors. In the universities that were included in this study, CS majors averaged almost 18 computer science courses, over double that of MIS major courses required. The curriculum of CS is quite different, despite the common emphasis on technology *(Downey et al. 2009)*. The work of MIS specialists has evolved from designing technical aspects of an IS to influencing business transformation. The responsibility for managing both social and technological change has been identified in the literature as change agent roles. A change agent is a resource person who has the capacity to initiate and influence structural, employee, and work process changes within a business (Markus & Benjamin, 1996). *Computer and information systems managers* play a vital role in the implementation and administration of technology within their organizations. They plan, coordinate, and direct research on the computer-related activities of firms. In consultation with other managers, they help determine the goals of an organization and then implement technology to meet those goals. They oversee all technical aspect of an organization, such as software development, network security, and Internet operations. MIS expert are the students of MIS concentration or hybrid manager while Robson (1997) define hybrid management is the combination of hybrid users and find clear distinction exists between hybrid users and hybrid managers and this distinction is one of emphasis and

purpose. Hybrid users are the people involved in user-controlled computing, they combine a degree of technical competence with the business literacy required to fulfill their primary role. Hybrid managers, as opposed to managers who are hybrid users, require this business literacy and technical competency plus a third dimension. This third item is the organizational astuteness that allows manager to make business-appropriate IS use and management decisions that enhance or set business directions as well as follow them. It is fairly well recognized that hybrid users can be trained whereas the more sophisticated development of hybrid managers is problematic, perhaps requiring inbuilt talent and personal qualities, but can be encouraged or discouraged. For this reason undergraduate study can generally produce only hybrid users whilst postgraduate and post-experience study can support the development of hybrid managers. Skyrme and Earl (1992) describe the characteristics of hybrid manager showed in Table-2.7:

Table-2.7: Characteristics of hybrid managers

Business knowledge	General business knowledge about the organization's goals providing a global view.
Organization -specific knowledge	Culture Structure Processes Key people and their motivation
IS knowledge/ Experience	Experience of project managing IS applications in the organization's business Awareness of existing/potential applications in the organisatiooi6usiness Knowledge of who can provide expertise on specific technologic
Interpersonal Skills	Unusual set of interests Can influence top management Can relate to the 'broad picture'

	Can develop co-operative relationships with large numbers of people inside and outside the organization Develop team work Sensitive to personal needs Can motivate specialists/subordinates/peers
Communication skills	Value information sensing Good listening skills Good at informal communication Responsive
Cognitive capabilities	Above-average intelligence Moderately analytical Strongly intuitive Good problem solving skills
Personal traits and behavior	People oriented Development and change focus Outgoing Commitment and integrity Energy and enthusiasm

Source: adapted from Robson, W. (1997), p.369.

So, MIS experts and System designer & developer has specific distinction is one group technical understanding business experts and other group technically sound business understanding who design and develop the IS (Robson 1997, Downey et al. 2009, Calkins & Welki, 2006; Saemann & Crooker, 1999).

2.2 Management Information Systems usage in the Bank

The paper titled "Role of Information Systems in Banks: An empirical study in the Indian Context" by A.M. Rawani and M.P. Gupta (2002), made an attempt to explore empirically the difference in the role of IS in the banking industry, i.e., between public sector, private sector, and foreign sector banks operating in India. This paper uses a strategic grid to determine the role played by IS in banks. The study carried was focused on role of Information Systems in banks from the perspective of technical persons in development and maintenance of IS, i.e. strategic or supportive. The study indicated that IS played a supportive role in public sector banks and a strategic role in private and foreign sector banks. The study also indicated that the future impact of IS does not vary significantly with the banking groups. Kaushik Mukerjee (2006) in his paper "CRM in Banking-Focus on ICICI Bank's initiatives" had focused on CRM in Banking and its applications in ICICI Bank. The CRM in ICICI is being used for targeting customers, sales, consistent interface with customers, etc. ICICI Bank has managed to focus better on customers by undertaking a serious approach that has enabled it to manage its operations effectively. It included better targeting of customers; higher share of wallet; more effective channel strategies; database marketing, etc. The bank is able to evaluate customer usage pattern through CRM data warehouse. New products are developed through extensive customer profiling. Through CRM, ICICI is able to manage its data centrally.

Shyam Ramadhyani (2006) in his paper titled "Audit of Banks operating in a computerized Information Systems Environment" focused on Audit related issues of IS in bank. It was emphasized that the use of computers changes the processing, storage, retrieval and communication of financial information and may affect the

accounting and internal control systems employed by a bank. The potential for human errors in the development, maintenance and execution of computer Information Systems may be greater than in manual systems, due to level of details inherent in these activities. Through audit reviews, a thorough look and understanding of IS in bank can be seen. The audit of IS would provide us general understanding of IS in bank, managing authentication of users, access control, ,data security, data integrity, audit logs, testing, accounting entries, data migration, network and RDBMS security, business continuity and disaster recovery plans, hacking, identification of transaction for Substantative checking, use of reports generated by system and documentation.

The paper titled "Application of IT in Banking" by K.S. Rajashekara (2004), talked about impact analysis of IT on banking. The problem of doing proper impact analysis is due to difficulty of measuring output accurately when the quality of service is changing as a result of such factors as convenience, speed, and lower risk. Through IT, banks anticipate reduction in operating costs through such efficiencies as the streamlining back office processing and elimination of error-prone manual input of data. Owing to IT, bank can offer new products and services. Banks are able to develop and implement sophisticated risk, information management system and techniques with more powerful data storage and analysis technologies. IT has positively affected the stakeholders of bank like management, employees, and customers, analysis technologies. IT has positively affected the stakeholders of bank like management, employees, and customers.

Vasant Godse (2005) in paper titled "Technology: An Impact Analysis" talked about role of Information Technology in banking. Banks faced the enormous task of re-orienting their technology infrastructure towards such interactive decision support

and information gathering tools, much different from transaction processing and final accounting. The impact of technology could be on relationship with information technology providers, organizational aspects, banker-customer relationship, control and supervisory aspects, new concepts and processes, which help in further gaining competitive advantage. A paper titled "Information Orientation: People, Technology and the bottom line" by Donald A. Marchand, William J. Kettinger, John D. Rollins (2000), stressed upon the effective usage of information for business performance. It was stressed that IT improved business performance only if combined with competent information management and the right behaviors and values. The research was applied on banks. Banks were evaluated on three broad scales i.e. IT Practices (including IT practices for Operational support, IT for Business-process support, IT for Innovation support, IT for Managerial support); Information Management Practices (Sensing information, Collecting information, Organizing information, Processing information, Maintaining information); Information behaviours and values (Information Integrity, formality, control, sharing, transparency, proactiveness). Companies that incorporated a people-centric, rather than merely techno-centric, view of information use and that are good at all three information capabilities would improve their business performance.

A paper titled "Understanding the impact of IT-based coordination on the performance of Information-intensive firms: A Gestalt approach in Banking Industry" by Yannis A. Pollalis (2003), moved towards the development of such an explanatory and predictive model of IT-based performance by distinguishing three types of organizational systems integration (or coordination) that impact the performance of information-intensive organizations: Technological Integration (i.e. the integration of

various IT components such as data, applications telecommunications, and systems); Functional integration (i.e., the coordination of responsibilities and roles such as data, applications telecommunications, and systems); across a firm's value-chain activities between corporate and IT planning activities); and Strategic integration (i.e. effective decision-making at all levels, increased productivity and better return on investment). The organizations with coordinated elements (i.e., strategy, structure, and technology) will be more successful than uncoordinated ones. Banks were chosen as the context for the empirical phase of the study because of their high information intensity and their focus on customer service and cost management. The research indicated the existence of successful and unsuccessful patterns of integration, that is, certain combinations of technological, functional, and strategic integration might lead to better or worse performance. Strategic and Technological integration were found to be most important elements of success, which indicated the importance of consistency between technological and strategic infrastructure.

The paper titled "Impact of Information Technology on the Indian Banking Sector" by Harmeen K. Soch and H.S.Sdhdhu (2003) emphasized that impact of IT on banking was so radical that it would be a key determinant of success or failure in the industry, a key determinant of whether banks as a recognizable grouping continue to exist, and a key determinant of the differentiation between competitors in financial services. Mere possession of sophisticated IT would not guarantee success in future. The ability to apply IT effectively, i.e. to increase profits by reducing costs or adding value, will be the key. Banks that choose to use IT strategically would be long term beneficiaries of the Information revolution.

2.3 Management Information Systems Usage in other similar Organizations

The major objective of the study carried by Catherina Yi-Fang Ku (1995), with title "A Critical Success Factors Study of Management Information Systems Downsizing from Management Information Systems Managers' Perspectives" was to extract and test critical MIS success factors derived from previous research in order to empirically determine critical success factors (CSFs) for MIS downsizing success. CSFs were considered from the perspective of MIS managers. Seven CSFs for MIS downsizing success were identified: communications between users and the MIS department, the managerial objectives of MIS/DP operations, the commitment and support of MIS downsizing, the MIS department's service function, user participation, appropriate applications, and the user satisfaction. The study was focused on determining critical success factors that could help in decreasing the size of MIS in an organization. It did not talk about effectiveness of IS in an organization. More focus was on downsizing rather than on evaluation of IS based on KPI. The major objective of the study carried by Helmut E. Zsifkovits (1996), titled "Success factors for management support systems implementation" was to delineate the reasons for the low level of Information Technology acceptance and discuss different aspects of Management Support Systems (MSS). This study emphasized on decision process with special reference to group decisions. Critical Success Factors (CSF), Key Indicator Management (KIM) and One-Page Management (OPM) were discussed as methods to establish yardsticks for measuring a company's performance and provided a framework for data structures in MSS. The study was focused on finding reasons for low level of IT acceptance in Management Support Systems in an organization, rather than on evaluation of IS after implementation.

The paper with title "A critical review of end-user information system satisfaction research and new research framework", carried on by Norman.

Au, Eric W.T. Ngai and T.C. Edwin Cheng (2002), presented a critical review of research in End-User Information System Satisfaction (EUISS). To provide more insights into the psychological processing of the information system performance construct and its impact on EUISS, an integrated conceptual model was proposed based on the equity and needs theories. The implications of the proposed model for EUISS were discussed, and suggestions were made for testing the model. The study was focused on End- user satisfaction from information system. More stress of the study was on psychological processing of information systems and a model was proposed on equity and needs theory. Technical aspects of system usage were not considered.

The paper with title "The Delone and Mclean Model of Information Systems Success", by Williams D. Delone and Ephraim R.Mclean (2002), presented Information Systems (IS) Success Model as a framework and model for measuring the complex-dependent variable in IS research. They discussed the utility of the model for measuring e-commerce system success. The study was focused on measuring e-commerce system success through a proposed model.

The paper on "Investment in Enterprise Resource Planning: Business impact and productivity measures", by Lorin M. Hitt, D.J. Wu and Xiaoge Zhou (2002), discussed that Enterprise Resource Planning (ERP) software systems integrate key business and management processes within and beyond a firm's boundary. There was little large-sample statistical evidence on whether the benefits of ERP implementation exceed the costs and risks. It was found that firms which invested in ERP tend to show

higher performance across a wide variety of financial metrics. Even though there is a slowdown in business performance and productivity shortly after the implementation, financial markets consistently rewarded the adopters with higher market valuation. The study carried on was focused on cost-benefit analysis of ERP implementation.

The results of the study "The impact of technology investments on a firm's Production Efficiency, Product Quality, and Productivity", by Matt E. Thatcher and Jim R. Oliver (2002), examining the contribution of IT to productivity, were mixed. One reason for these mixed empirical findings may be that these studies have not effectively accounted for the impact of technology investments that increase production efficiency and improve product quality on firm productivity. In particular, it was assumed that such investments should lead to gains in both profits and productivity. It was demonstrated that investments in technologies that reduce the firm's fixed overheads costs do not affect the firm's product quality and pricing decisions but do increase profits and improve productivity. It was also demonstrated that investments in technologies that reduce the variable costs of designing, developing, and manufacturing a product encourage the firm to improve product quality and to charge a higher price. Although this adjustment helped the firm to capture higher profits, it would also increase total production costs and would, under a range of conditions, decrease firm's productivity. Finally, it was shown that the direction of firm productivity following such investments depended upon the relationship between the fixed costs of the firm and the size of the market. The study carried on was focused on impact of technology investments on product-based industry only.

The purpose of the paper named "Impact of Information Technology management practices on customer service", by Jahangir Karimi, Toni M. Somers and Yash P. Gupta (2002) was to gauge whether IT management practices differ among firms where IT has a major role in transforming marketing, operations, or both, which gave the firms advantage by affecting customer service. Several research hypotheses were tested using data obtained from a survey of 213 iT-leaders in the financial services industry. The results clearly indicated that the IT leader firms had a higher level of IT management sophistication and a higher role for their IT leaders compared to IT-enabled customer focus, IT-enabled operations i focus, and IT-laggard firms. The study concluded that IT management practices differed among IT leader firms, IT-enabled customer focus, IT-enabled operations focus and IT-laggard firms. This paper was silent on other aspects of IT like functional integration, technological integration, etc., besides customer service.

Next, the people must collaborate and work in teams for faster and beneficial plans and implementation. Finally, a well-defined process for constant monitoring and refinements of the plans was required. The rings in ACE model signified continuity of the three processes. This was a general model applied on automobile manufacturing industry.

The paper on "Information Technology Usage: an Indian experience", presented by M.P.Gupta and Sanjay Kumar (2004), devised phases of IT usage in Indian organizations. The IT usage could be described in three phases, which coincided with three levels of IT applications, viz., automate, informate, and transformate. The automate phase referred to that period which saw the development of those

applications of IT that served essentially to reduce operating time (work faster) and increased operating efficiency (make fewer mistakes). In this phase, there was a strong emphasis on reducing the manual aspects of clerical, routine, and tedious work. In the informate phase, IT was used to generate and deliver extensive management reports and decision support systems (DSS). The transformate phase traced the development of strategic IT for competitive advantage. The researchers stressed that KPIs linked to the goals and objectives of the organization need to be clearly identified and incorporated into the IS so as to monitor the health of the organization at all times. But only a few organizations had done so in India.

Technology Acceptance Model (TAM) was proposed by Fred Davis (1986) in his doctoral thesis. It examined the mediating role of perceived ease of use and perceived usefulness in their relation between systems characteristics (external variables) and the probability of system use (an indicator of system success). Overall, TAM was empirically proven successful in predicting about 40% of a system's use. TAM was a useful model, but had to f be integrated into a broader one, which would include variables, related to both human and social change processes. Limitation was that, it was applied on student community and not on business environment, and didn't involve much of business applications. This model talked about end user's perspective only, not about other stakeholders of the system. Performance of IS in organization should be studied from functional and strategic point of view also.

Robert G. Fichman and Scott A. Moses (1999) while discussing their paper on "An incremental process for software implementation", had said that even when all

elements for a smooth implementation were present like support of senior management, adequate staffing and funding, a good fit between the needs of the organization and the capabilities of the software, and a solid information technology (IT) infrastructure, the implementation project sometimes failed to achieve the desired results. The traditional approaches of one time implementation do not work with dynamically changing requirements of an organization. They suggested an approach of incremental process for software implementation. They suggested implementation strategy based on principle of Result-Driven Incremental ism (RDI). The critical success factors (CSF) for the implementation of RDI approach were Technology divisibility, Technology and methodology fit, Technology and organization fit. This study was focused on problems of implementation, not on evaluation issue. Charles R.McClure and John Carlo Bertot (2001) while discussing in their Book on "Evaluating and using Networked Information Resources and Services", had written about the evolving context of evaluation, new methodologies for network evaluation, cross-discipline education and training, publicizing the importance of evaluation, combining technical and social-evaluation research, and the need of additional research. The five sections in which he divided the discussion were focused on evaluation of Networked Information Services. The first section focused on frameworks for evaluation. The second section moved on to,, discuss the methodologies for network evaluation. The third section explored ways to explain and measure usability. In fourth section policy issues were covered. In fifth section it was emphasized that the information-science-evaluation paradigm needed to change "to remain relevant and connected to the real world of systems building and systems use." The study focused on evaluation of Networked Information Resources

and Services and their relevance for real world systems. This study talked more on technological integration and was silent on other performance indicators of IS.

A paper with title "Managing information technology evaluation-techniques and processes", by L.P. Willcocks (2002), discussed that Evaluation brings into play notions of costs, benefits, risk and value. It also implied an organizational process by which these factors are assessed, whether formally or informally. The research showed the following problem areas for evaluation of IT plan which includes: Inappropriate measures, Budgeting practice conceals full costs, Understanding human and organizational costs, Understating knock-on costs, Overstating costs, Neglecting 'intangible benefits', Not fully investigating risk, Failure to devote evaluation time and Effort to a major capital asset, Failure to take into account time-scale of likely benefits. The study further stressed on problem areas for evaluation of IT plan. It did not talk on implementation and after-use of IS and its effectiveness.

The paper by A. Rafiq (2003) with title "Practical Approach to Information System Audit", stressed on objectives of IS Audit including appropriate controls to be implemented in IT as designed and envisaged by the senior management. IS Audit was expected to provide reasonable assurance to the management that appropriate controls are designed and implemented in Information Systems supported by Information Technology. IT Audit involved finalizing scope of audit, identifying related standards, perform specific tasks and execute audit as per audit phases. IS auditor covered following areas in IS audit of banks: Implementation audit; Environment and physical access controls review; Logical access controls review; IS operations review; SDLC control review; Business continuity planning review; Application controls and Data

security review; IT security review; IT policies review; Certification of vendor software and IT Training. The paper titled "Using Technology for Strategic Advantage" by RJagannathan (2003), cautioned Indian companies from investing in Information Technology in a hasty manner. It discussed about the common pitfalls companies faced in implementing technology solutions. It emphasized that the use of technology for strategic advantage was possible if top management commitment was there. The investment in IT should emerge from a business need. IT solutions should be applied after change management, by managing expectations of employees. The intangible benefits and intangible costs should also be taken care of, besides ROI and Payback periods. Decisions to invest in IT should be taken jointly by business unit heads and the IT department. Companies should target those vendors who have the domain knowledge and experience in executing them.

The paper titled "A conceptual model of the challenges in successful Information Technology implementation to the businesses: A human centered approach", by Himanshu Aggarwal, D.P. Goyal, P.K. Bansal (2005), emphasized the human aspect of Information Technology. A very important factor in the successful IT alignment to the business was people's involvement, participation, changing attitude and the overall culture of the organization. The inherent problems with the human aspect of implementation of technology had been discussed with special reference to the Tacit knowledge, i.e., an experience based practical and experimental knowledge deeply rooted ,in human beings. The tacit knowledge despite its importance has been undermined and is largely un-exploited. Finally, a conceptual model entailing the various challenges in the technological implementation of Information Technology

with humanitarian approach has been presented in order to achieve continuous improvement, innovation and sustainable competitive advantage. The paper titled "Why do people use Information technology? A critical review of the technology acceptance model" by Paul Legris, John Ingham, Pierre Collerette (2003), suggested Technology Acceptance Model 2 (TAM2). TAM had proven to be a useful theoretical model in helping to understand and explain use behaviour in IS implementation. It examined the mediating role of perceived ease of use and perceived usefulness in their relation between systems characteristics (external variables) and the probability of system use (an indicator of system success). A new and improved version of Davis's model: TAM2 was used that included subjective norms, and was tested with longitudinal research designs. Analysis of empirical research using TAM shows that results were not totally consistent or clear. Research has shown that the influence of some factors on intention to use IS, varies at different stages in the IS implementation process. It was concluded that TAM is a useful model, but has to be integrated in to a broader one, which would include variables, related to both human and social change processes.

2.4 Performance of Bank

The paper with title "Expectations and Perceptions of Service Quality in Old and New Generation Banks- A study of select banks in the South Canara Region" by A.J. Joshina and Moli. P. Koshi (2005) showed that service marketing was different from goods marketing because of inherent differences in service as compared to goods. The service was intangible, heterogeneous, production and consumption took place simultaneously and it was perishable. The results showed the challenges based by the

service business and had given rise to the need for new concepts and approaches for marketing and managing service businesses. New generation banks like ICICI, UTI Bank exceeded expectations of service quality in dimensions of reliability, empathy and price. In case of other dimensions like tangibility, responsiveness and assurance, there was negative gap in perception and expectations but it was much smaller in new generation banks than old generation banks.

Sathya Swaroop Debasish (2001) in his paper titled "Service Quality in Commercial Banks: A comparative analysis of selected banks in Delhi" evaluated perception of service quality to customer on basis of three dimensions; the customer-employee interaction i.e. Functional Quality (FQ- refers to service delivery of the staff to customers); the service environment i.e. Environment Quality (EQ- refers to tangibles and intangible infrastructure at support better service delivery); the outcome-service product i.e. Technical Quality (TQ- refers to Product quality and tangible benefits offered to customers). The study revealed that foreign banks (Citi Bank, HSBC, Bank of America) operating in Delhi provided better service quality, as compared to private sector banks (ICICI, HDFC, Karur Vysya Bank) and public sector banks (SBI, Corporation Bank, PNB). Citibank, ICICI Bank and SBI were perceived to deliver better services in their respective banking sectors. The point of worry was that the public sector banks, which accounted for over three-fourth of banking business in the country had failed to adequately satisfy their customers.

R. Rani Geetha Priyadarshini & R. Venkatapathy (2001) in their study titled "Organizational Effectiveness in the Banking Industry" attempted to elicit factors affecting the effectiveness of various categories of banks pertaining to their financial performance and levels of ownership. The components of Organizational effectiveness

were Immediate supervision; Management Leadership; Compensation; Feedback and growth; Working conditions and job demands; Perception of quality; Communication; Productivity and decision-making; Personal morale and motivation; Organizational values. Four categories of banks were: Top performing Nationalized Banks; Top performing Private Banks; Low performing Nationalized Banks; Low performing Private Banks. Then results were measured on ownership types and level of performance for these banks.

In paper titled “Capturing the customer's voice-A case study in banking" by S.K.

* Bhattacharyya & Zillur Rahman (2002), customer needs and wants in a bank were properly emphasized. Customer needs were categorized as Basic needs, Performance needs and Excitement needs. The various banking services like Tangibility, Reliability, Competence, Courtesy, Understanding customers, Communication, Access, Responsiveness, Credibility, and Security; were related with these needs. This paper helped to identity how customers perceived services of a bank.

C.L. Chandan (2001) in his paper titled "Competitiveness of Public Sector Banks and Reform Process" had said that Public Sector Banks (PSBs) have responded well to various reform measures to meet the competition and challenges of changed environment. They had modernized and restructured themselves and had shown signs of improving profitability and financial health. The PSBs had taken leap in introduction of technology and computers in their operations, which helped them in improving the quality service to customers. A major challenge before PSBs was to retain their market share. They should focus on customer centric business strategy, with emphasis on better service, with further technology up gradation, product

development and innovations, and diversification in to new markets. Organizational restructuring and human re-engineering is imperative to be flexible, efficient and productive. Banks must become more competitive internally and improve their internal systems. The rural banking was a market segment where PSBs had a competitive advantage. For meeting the social and economic objectives, the govt. should not alter the public sector character of these banks.

V.P. Gulati and M.V. SivaKumaran (2003) in their paper titled "CRM in Banking and Financial Services CRM for Banks in India" emphasized on the value added by CRM in banking. With more and more advancement in technology taking place and an equally higher level of implementation of technology would be totally irrelevant and unproductive unless they were made after a well thought-out business strategy, supported by exhaustive business intelligence and customer information systems and solutions.

Meaningful CRM was just a matter of time and not a matter of choice. The sharper focus provided by CRM would help the bank management in making key decisions and impact analysis on various groups of customers and their contribution to the bank. A carefully planned CRM strategy and initiative would bring in the following benefits to the customers namely: Improved customer service, Effective and timely delivery, Value added services, ' Personalization and closeness, Variety of products and packages, Availability, Reliability and affordability of products and services, More satisfaction, A sensitive market with equally good choices. The initiative would also bring in the following benefits to the banks namely: Growing customer base, Increasing levels of customer loyalty, Stable and vibrant business potential, Higher volumes, Lower costs, Sensitized and productive workforce, Proper and functional

customer segmentation, Focused and cost-efficient marketing, Business process reengineering on scientific lines, An attractive and profitable product mix, Proximity to customer, Improved bottom line.

2.5 Impact of Technology on working of Bank

A.P. Sebastian Titus and Albin D. Robert Lawrence (2004) in their paper titled "Customer Focus in Banking Services" had stressed on importance of customer relationship management. The aim of the banks should be to retain the existing customers and acquire the new customers. In order to add value to the services offered, the banking industry has to efficiently and effectively utilize the technology with an eye on the cost of product and the services offered. To win the customers, the modern banking should integrate technology and deploy marketing strategies that would enable banks to maximize profits through customer satisfaction. In market with fierce competition providing the customers with value addition is the only way to achieve complete sustained customer satisfaction.

S.S. Satchidananda & Dharshan Shanthamurthy (2005) in their paper titled "Implementing Information Security in Banks" provided a perspective on the Information security for banks and also guidance for its implementation. It set out the methodology for implementing Information security management system in banks. A structured Information security risk assessment would enable banks to accomplish their security needs and objectives. This paper suggested the OCTAVE (Operationally Critical Threat Asset Vulnerability Evaluation) risk assessment methodology for managing the risk of Information security in banks.

H. Peeru Mohamed and VJ. SivaKumar (2003) in their paper titled "Strategic Issues relating to e-CRM in Banks - The perspective of bankers and customers", emphasized the views of bankers and customers as regards designing and implementing e-CRM. It also tried to identify and discuss issues relating to implementation of e-CRM in the banking industry. The findings provided guidelines for customer acquisition, retention and interaction. e-CRM includes capabilities like self-service knowledge bases, automated e-mail response, personalization of web contents, online product bundling and pricing, and so on. e-CRM gives Internet users the ability to interact with the business through their preferred communication channel, and allows the business to offset expensive customer service agents with technology. So, the value was largely one of improved customer satisfaction and reduced cost through improved efficiency. However, an e-CRM strategy deployed alone could also backfire and actually result in decreased customer satisfaction. If the customer's interactions through electronic channels were not seamlessly integrated with those taking place through traditional channels, the customer is likely to become extremely frustrated.

A paper titled "Internet Banking in Indian Scenario" by T.Uma Maheswara Rao and L. Hymavathi (2005), had emphasized the importance of Internet usage for banking worldwide and its relevance in Indian scenario. In order to avail the benefits those were accrued through using Internet, the financial institutions like banks were transforming themselves and conducting their business electronically. This transformation from normal banking to electronic banking enabled customers to transact online, while saving on various factors. Normal* banking activities still persist in developing countries like India, where the Internet penetration levels were low.

A paper on retail banking titled "From Physical to Virtual Banking" by George Smith Alexander, Arti Sharma & Tamal Bandyopadhyay (2003), emphasized that Technology is minimum requirement for business in banking. It allowed banks to service a lot more customers with the same amount of infrastructure. Technology and alternative channels had lowered the cost of delivering services to the creamy layers among masses. The private and foreign banks have made technology the basic driver of banking growth and business. So, public sector banks needed to adopt the same for competitive advantage. A paper titled "Technology-Key to success" by Ashish Sen (1997), had discussed about the importance of IT in banking. He said that the competition unleashed by the reforms process have improved the services of banks thus making them more customer-oriented. Technology has played an important role in making this happen. Computerization in commercial banks has indeed traveled a long way. Starting with reconciliation of inter-branch transaction and providing whole-bank MIS reports, on a selective basis, computerization was confined to bank head offices alone for quite some time. In subsequent phases, computerization spanned many areas including branches, back office and front office operations. Use of modern, state of the art technology in banking, is being increasingly seen as essential not only for good customer service, but also for good housekeeping. About four decades of public sector banking has widened the banks branch network and customer base to such gigantic proportions that time tested manual systems of yesteryears are now bucking under the pressure of sheer volume and variety of transactions. Most of the foreign banks and all the newly established private sector banks operating in India are fairly advanced in the use of technology. Services such as neatly printed statement of

accounts, automatic and prompt updation of pass books, ATMs, etc. are some of the benefits that customers are enjoying. However, Indian banks unlike their western counterparts have failed to achieve inter-connectivity amongst branches.

2.6 Efficiency and Effectiveness through MIS and performance of business organization

Today, MIS is considered as an advanced tool for ensuring efficiency in organization activities of the organization. Organizational performance and behavior are so closely linked to organizational information processing that a number of organizational scientists have advocated viewing organizations as information processing systems (Simon 1973, Galbraith 1977, Tushman and Nadler 1978, O'Reilly and Pondy 1980). These thoughts suggest that a summarization of our knowledge concerning the determinants of the performance and behavior of organizational information systems would be useful, useful to those who design organizational information systems and useful to those who manage such systems. Although the concept of information is clearly important to those whose profession it is to design or manage information systems, we should note that the concept is also important to the theories and concepts employed by those management scientists whose profession it is to develop, test, and refine theories for predicting and under- standing organizational performance and behavior (Huber, 1982). Chervany, et al. (1971) tried to isolate the major elements that determine the effectiveness of information systems. Their result, shown in Table-2.8, identifies the independent variables (factors which determine decision quality) and the dependent variables (factors which measure decision quality).

***Table: 2.8 -Independent and Dependent Variables Influencing Information** Systems Design (Chervany, Dickson, and Kozar)*

The Decision Maker	Independent Variables The Decision Maker	The Characteristics of the information Systems	Dependent Variables Decision effectiveness
Indirectly Acquired Attributes -Aptitudes -Attitudes	Function -Finance -Production -Marketing -Personnel R & D etc.	Forment -content -Form -Presentation -Media	Quality -Cost -Profits -Time etc.
Directly Acquired Attributes -Training -Experience	Level -Strategic -Tactical	Time Availability Decisions aids	
	Environmental -Stability -Competitiveness -Time Pressure		

Source: adapted from Ives, B. et al. (1980), p.912.

Limitations of the Model:

i. List of variables is not complete.

ii. The model focuses on designing the user system interface and overlooks development process considerations.

But the concept of measurable dependent and independent variables differentiates this model and makes it useful as an initial research framework. In the line of research originating from the Chervany et al. (1971) and Kozar (1972) studied the effects of

various computer display media on managerial decision effectiveness, Senn (1973) tested the effects of summarized versus detailed data display and batch versus online processing on decision making effectiveness, Benbasat (1974) investigated the effects of IS characteristics and decision maker characteristics on decision effectiveness. Barkin (1974) investigated the influence of user cognitive styles on IS utilization, and Jenkins(1977) tested the effects of decision maker, decision environment, and IS characteristics on decision effectiveness and information satisfaction. All of these authors used a laboratory setting and a simulated IS in their research methodology. Dickson, et al. (1977) summarized this series of experiments known as the "Minnesota Experiments".

Decision making effectiveness mainly depends on availability of required information. If the relevant information required in a decision-making process is not available at the appropriate time, then there is a good change to be a poor organization planning, inappropriate decision-making, poor priority of needs, and defective programming or scheduling of activities (Adebayo, 2007). MIS is deemed to be a system which provides organizations top management and, even lower level management, with appropriate information based on data from both internal and external sources, to allow them to make effective and timely decisions that best achieve their organization goals and satisfy stakeholder requirements (Argyris, 1971). Few authors have explored that the critical information required by midlevel and strategic level management is efficiently provided by MIS (Fabunmi, 2003; Knight Moore, 2005).

Again MIS not only support decision making process but also MIS concentrated on the information in the context of:

- Electronic data processing which carries out transaction processing functions and records detailed factual data.
- Management reporting systems which scrutinize the operational activities of an organization, providing summaries, information and feedback to management.

Only during the last two decades, the MIS field has shifted to the primary, considered the second type of communication, namely, instruction-based (Karim, 2011).

Iris Vessey (1991) developed cognitive fit theory of MIS which mainly focused on the correspondence between task and information presentation format leads to superior task performance for individual users. (In other words, how the information is presented to you will affect your performance in a given task).

2.7 Strategic essence of MIS

Strategy means developing tactical policy of the organization to achieve its specific goals over competitors. Porter (1980) defined strategy is a broad based formula for how business is going to compete, what its goals should be, and what policy will be needed to carry out those goals. The essence of formulating competitive strategy is relating a company to its environment. Strategic management is an important step in ensuring the long-term viability of an organization. It involves the reading of signs and portents of the future and interpreting them in order to choose an appropriate direction for the future development of the organization. Information Systems is seen as a way of achieving these strategies in order to create competitive advantage. Strategic management of IS functions is concerned with the formal organizational unit or function called an information systems department. Alignment of organizational and IS strategies is a necessary step in achieving competitive advantage and has long been noted as a persistent problem (Henderson et al. 1996). The information systems

department can be a powerful change agent (Gottschalk & Taylor, 2000). IS departments can effect changes in the organization by suggesting new business strategies and new information-based products and coordinating both development of technology and the planned changes in the organization. The IS function must also maintain a technology watch, looking for opportunities and threats from developing technology (Jordan, 1993). IS department also operate in an increasingly complex environment. Strategic essence of MIS generally implies significance of MIS from the strategic view point in the business organization. Robson (1997) describes few model aim to determine which IS strategy to adopt in order to impact, presumably favorably, upon the business, e.g. Competitive forces model (Porter 1979, McFarlan 1984), Competitive strategies model (Porter 1980), Value chain model (Porter 1985, Rackoff 1985), Consumer resource life model (Ives & Learmonth 1984), Impact of IS/IT (Parsons 1983), Strategic opportunities model (Benjamin 1984). Every organization wants confidence in its strategies since they define its sense of direction. However, just as there are a number of business benefits that can be obtained from IS there are number of ways of going about the process of deciding and documenting an IS strategy (Robson, 1997). Earl (1989) classed management strategy to information technology such as infrastructure led – where the emphasize on bottom-up approach, business led-where the emphasize is top-down approach, and mixed –where the emphasize is inside-out. Silk (1991) presents a view of stages planning process in chart -2.6. In this model, the likelihood of one approach being prominent can be charted by the nature of organization and the business importance of IS to at the given time. This business importance can take three forms (Robson, 1997). So IS can be important:

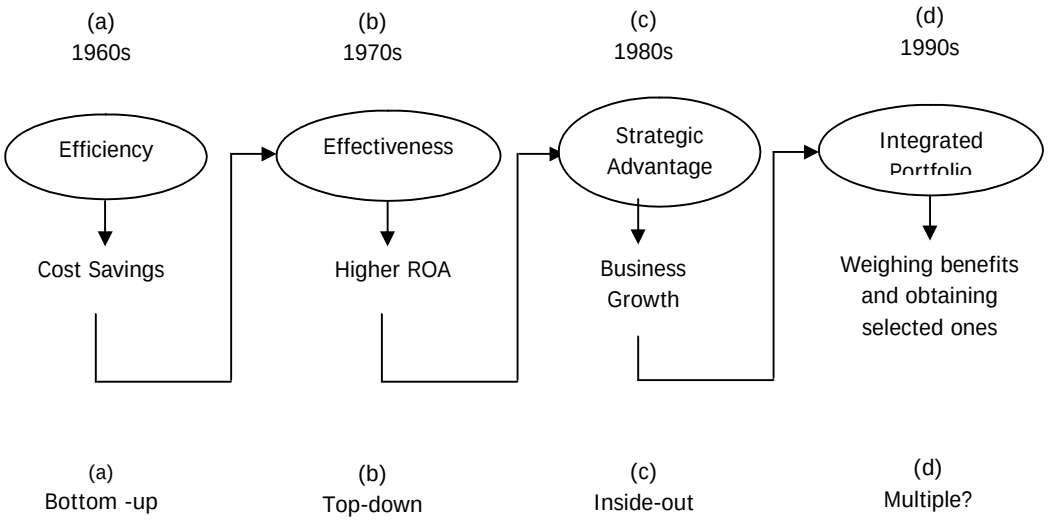
i. As a means of delivery of products or services

ii. Since business strategies depend upon IT for implementation

iii. Since IT provides new strategic opportunities

However, MIS has a strategic essence for the business organization in the modern competitive business arena.

Chart-2.6: Silk's Evolution of the planning process



Source: Adapted from Robson (1997), p. 183.

Basically, information systems with strategic impact help an organization realize its goals and objectives. Anthony (1965) suggested that top management is responsible for the development and implementation of an organization's strategy. Since information systems can have a significant strategic impact in the manner suggested by a growing number of authors (Clemons, et al., 1984; Clemons and McFarlan, 1986; Harris, 1985; Ives and Learmonth, 1984; Jonscher, 1983; McFarlan, 1984; Petre, 1985; Porter and Millar, 1985; Rackoff, et al., 1985; Wiseman, 1985), top management also needs to take responsibility for fostering information systems with the potential to provide this impact.

Many literatures approving the positive impacts of Information Technology or Information Systems expenses on business value. In order to improve the financial organizational capability and enhance its level of competition in the market, financial organizations should understand the dimensions of the Information Management, and clearly define and develop the resources in case of human, technological, and internal operations, among others, and manage them well across the organizational boundaries. However, establishing the link between Information System Management, planning and decision making is, at best, tricky. Kozak (2005) investigates the influence of the evolution in information Technology on the profit and cost effectiveness of the banking zone during the period between 1992 and 2003. The study indicates an optimistic relationship among the executed Information Technology, productivity and cost savings. So cost, profit, efficiency, productivity is the important dimensions for enjoying competitive advantages.

In the last few years, much emphasis has been put on Decision Support Systems (DSS), which supports the process of making decisions (Davis and Olson, 1985). Further, the phrase, "strategic use of Information Systems Technology (IST)," which has been used to describe the IST success in achieving advantages over competitors (e.g., see Bakos and Treacy (1986), Benjamin, et al. (1984), Senn (1987)) carries the implicit connotation that firms might have achieved competitive advantages by receiving strategic information from their DSS to support long-range strategic planning. However, a strategy is the way in which an organization endeavors to differentiate itself from its competitors, using its relative corporate strengths to better meet customer needs (Ohmae, 1982). A system or application is strategic if it changes the way a firm operates with competitive forces in the environment (Senn, 1987). Thus, it

is conceivable that simple MIS can change the way a firm competes if the firm applies its MIS to capture strategic opportunities. The main difference between DSS and MIS is one is fully decision oriented other is supporting decision process and smooth & low cost operation activities of the organization to achieve strategic benefits.

2.8 Other related Studies

The study by Patrick Y.K. Chau and Paul J. Hu (2002) with title "Examining a model of Information Technology acceptance by individual professionals: An exploratory study", investigated technology acceptance by individual professionals by examining physicians' decisions to accept telemedicine technology. Synthesized from relevant prior research, a generic research framework was built to provide a necessary foundation upon which a research model for telemedicine technology acceptance by physicians could be developed. Results of the study suggested several areas where individual professionals might subtly differ in their technology acceptance decision-making, as compared with end users and business managers in ordinary business settings. Based on results obtained from this study, the initially proposed framework for technology acceptance by individual professionals was revised to a "hierarchical, three layer" structure with the individual context at the inner core, the implementation context on the outermost layer, and the technological context residing in the middle. The study carried on was focused on technology acceptance by individual professionals, by taking case study of Telemedicine technology for physicians.

Mike Evans (2003) in his paper on CRM titled "What are the returns on Investment from CRM", stressed that failure of CRM in an organization was not the failure of

CRM Technology. The problem was to match technology to sales and marketing working practices and then manage change in those practices. CRM's marketing automation should provide big benefits by matching marketing activities to sales activities. IT industry had seen CRM too much as an automation tool and not enough as an empowerment tool. CRM had worked best in situations where a sale is simply about taking orders from inward calls generated by marketing campaigns. CRM needed to be applied intelligently where sales was complex enough otherwise it won't work.

2.9 Role of Academic Institution in increasing performance of the bank

MIS is a discipline and a .profession that brings information and communication technologies to businesses and society. By applying information and communications technologies and systems, MIS solves real business problems and gives competitive advantage to firms. MIS focuses on the concepts and tools necessary for analyzing, designing, planning, developing, and managing organizational information resources. MIS is a discipline and a profession that brings information and communication technologies to businesses and society. For organizations to operate smoothly, efficiently, and competitively, all their functions have to glue by well designed, well implemented, and well maintained Information Systems. MIS professionals makes this happen.

The AACSB Accredited BBA/BS Major in Management Information Systems (MIS) Produces leaders who initiate, design, and apply technology to transform business functions and produce innovative products and services. We accomplish that by strengthening the skills that are critical to success in the information systems field: systems development, critical thinking, and leadership, oral, written, and interpersonal

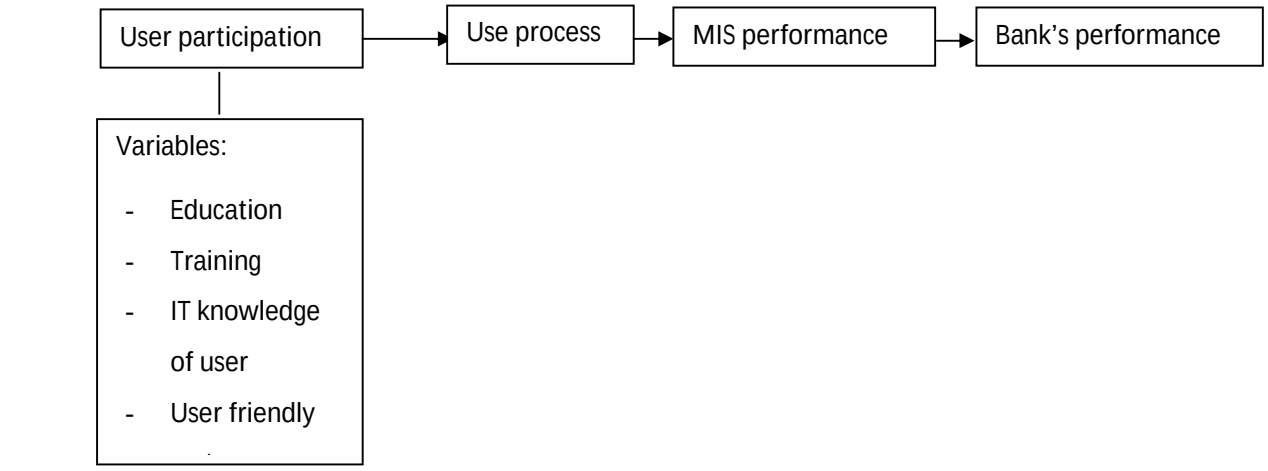
communication. MIS majors are active participants in their learning experience. Through simulations, group projects, and other hands-on assignments, they apply what they learn to real world situations. Internships are plentiful.

Over the next seven years, the number of jobs in the information technology sector is expected to swell 24% -more than twice the overall job-growth rate. (Time Magazine, May 25, 2009). 5 of the 12 fastest growing occupations relate to information systems, with a reported growth in new jobs of more than 49,000 through 2018 (U.S. Bureau of Labor Statistics). 94% increase in demand for social media experience since August 2010 (September 2011, wantedanalytics.com)

2.10 Proposition for role of MIS department in organizational performance

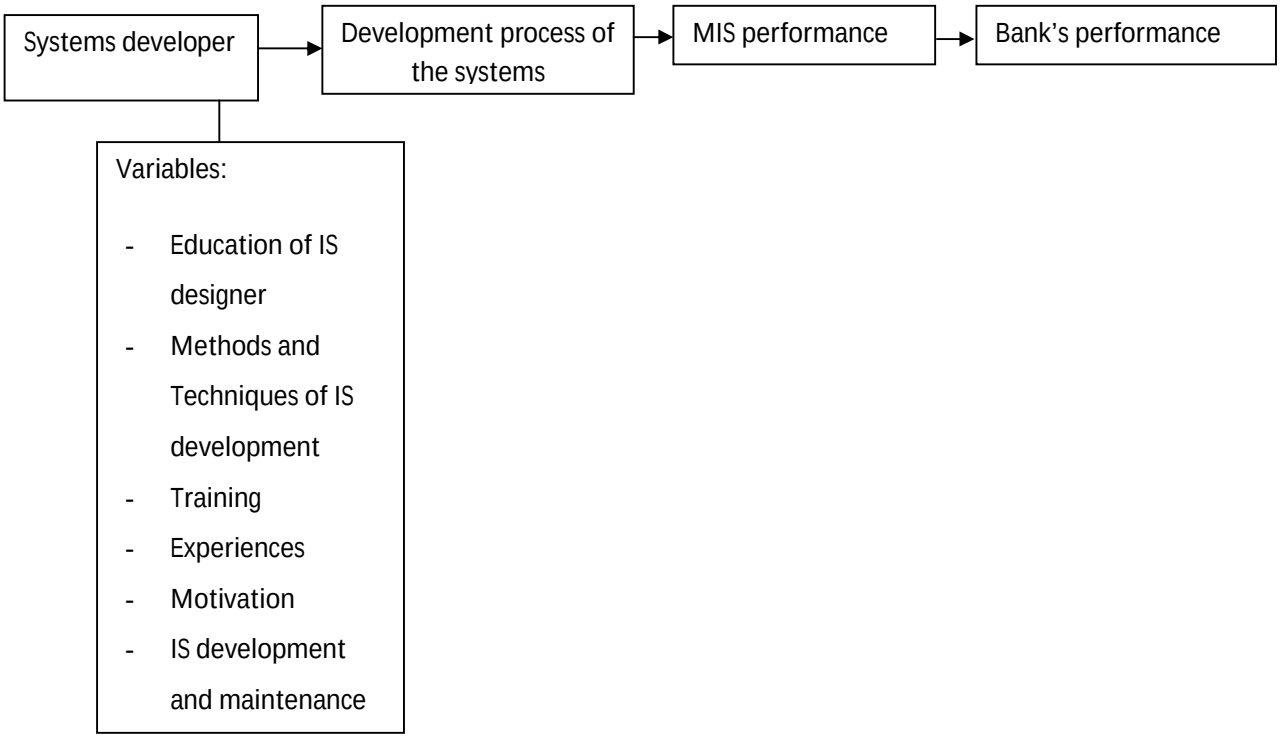
The broad proposition of MIS research is the extension of IS model of Ives, B. et al. (1980) develop by the researcher to find out the role of MIS department in improving performance of banking sector of Bangladesh. In the broad proposition of proposed MIS model, researcher identified four dimensions are: Organizational environment, MIS environment, Management hierarchy, and Human value Judgment. Organizational environment is marked by the organizational goals, tasks, structure, volatility, and management style (Ives, B. et al. 1980). Again organizational environment consist three sub components are: User participation, System development process, Operational infrastructure. These factors are directly related to the performance of the bank while department has positive role on development of these factors.

Sub proposition-one:



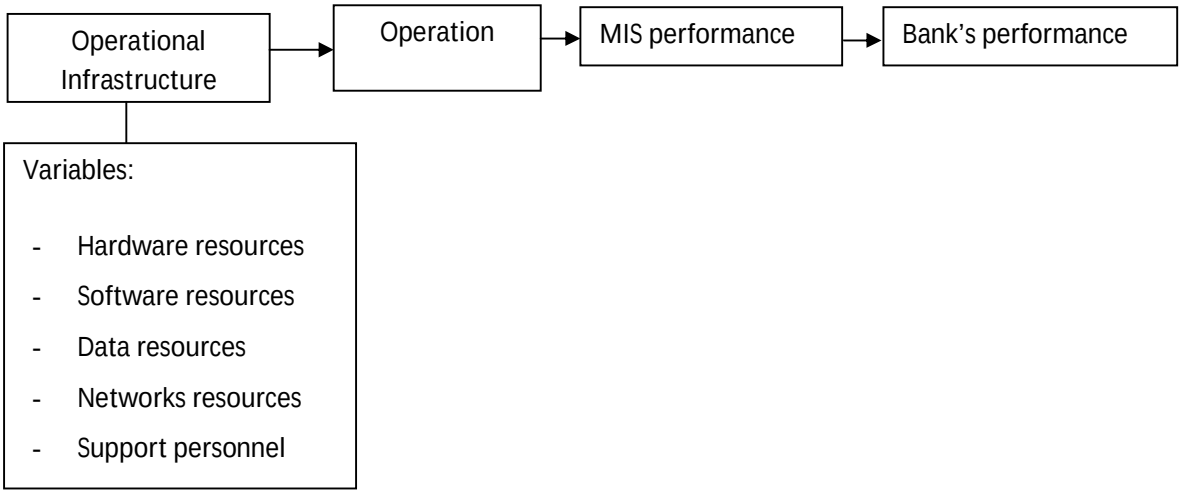
The user means general users of the systems consist of primary data entry workers (e.g., officers in the branch level) and intermediaries (e.g., staff) who filter or interpret the outputs for decision makers. The primary user can be described by characteristics of the users such as educational background, IT knowledge, training on given information systems, and user friendliness of the systems.

Sub proposition-two:



The IS development environment consists of the development methods and techniques (e.g., systems development methodology, intervention techniques), design personnel and their characteristics (e.g., education/experience /training levels of analysts and involved users), and the organization and management of IS development and maintenance (e.g., development planning and control systems).

Sub proposition-three:



The IS operations environment incorporates the resources necessary for IS operations. The major components include software resources, hardware resources, data resources, Networks, procedures/documentation, organization and management of IS operations, and the operations personnel.

Literature review showed the concept, history, functions of MIS and practices of MIS in the service organization specifically in the banking sector of Bangladesh. But it is clear that application of MIS and role of MIS department in banking sector in Bangladesh not up to date and understanding and application in discrete form. Again, essence of MIS from the economic & strategic view point not measured clearly. So there is need to understand the specific method to identify the role and its application in the banking sector Bangladesh.

Chapter – Three: Research Methodology

3.1 Introduction

This chapter gives an overview of the research approach adopted in the thesis. It identifies the thesis's epistemology and theoretical perspective. It further looks at the research methodology and the practical approach adopted to achieve objectives of the study. Case study was used as a research strategy as it is distinguished by its ability to investigate the role of MIS department in two banks from different perspectives and focus on relationships and processes.

The philosophical assumptions underlying this research come from the interpretive tradition. This implies a subjective epistemology and the ontological belief that reality is socially constructed. The research strategy adopted was to conduct multiple case studies in two organisations and in a community. The fieldwork was conducted at the sites during the period from January 2013 to June 2013 and a steady correspondence has been maintained with the different participants at the sites.

The chapter explores case study and rationalizes the sampling strategies and the research methods used for collecting the data in each case study. Data was collected using three qualitative research methods: in-depth interviews, direct observation and document analysis. The chapter then looks at the qualitative analysis techniques which were used for analyzing the data. It ends with a discussion of issues related to the validity, reliability and generalization of the results.

3.2 Research Approach

3.2.1 Qualitative versus quantitative research approach

The distinction between qualitative and quantitative research is a methodological issue. The decision to choose a specific methodology should be based on its suitability to answer the research questions (Bryman, 1988). Denzin and Lincoln (1998) asserted that qualitative research emphasises the process of discovering how the social meaning is constructed and stresses the relationship between the investigator and the topic studied. Conversely, quantitative research is based on the measurement and the analysis of causal relationships between variables. Berg (2001) discriminated between qualitative and quantitative research arguing that qualitative research referred to the meanings, concepts, definitions, characteristics, metaphors, symbols and descriptions of things, while quantitative research referred to the measures and counts of things.

Qualitative and quantitative research approaches differ basically in some major areas, including: their analytical objectives; types of questions posed; types of data collection methods used; types of data produced; degree of flexibility in study design (see Table 3.1) (Mack *et al.,* 2005). Snape and Spencer (2003) indicated that qualitative research is a naturalistic/interpretative approach concerned with understanding the meaning people give to the phenomena within their social setting. They outlined a number of key elements which distinguish the qualitative approach, among these: it is the approach which provides a deeper understanding of the social world; it is based on a small scale sample; it uses interactive data collection methods, i.e. interviews; it allows new issues and concepts to be explored.

Table 3.1: Comparison of quantitative and qualitative research approaches

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	Subjectivity is expected.	Objectivity is critical.
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 participants in the study, & participant characteristics are deliberately hidden from the researcher (double blind studies).
Results	Particular or specialized findings that is less generalize able.	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), p34.

Previous studies (Groundwork, 1995; Meritt, 1998) reported a number of problems in investigating environmental issues in small businesses using questionnaire surveys. The most important of these is that the results of the survey tend to be inconclusive either because of the low response rate or misunderstanding of the questions. Moreover, *"there is a tendency for consumers to overstate their interest in, and concern for, the environment in questionnaire surveys and therefore to create the impression of being and acting in an environmentally-conscious way"* (Davies *et al.,* 2002:44). Therefore, respondents tend to give answers which may not be accurate but consider agreeable from the social standpoint (Malhotra, 1993).

Accordingly, Researcher decided to use a qualitative approach to accomplish the overall aim of the study as most of the business and environment literature has largely focused on quantitative studies that lack deeper theoretical analyses (Stokes, 2000). The qualitative approach has helped me to get a deeper understanding of the issues being investigated.

Researcher started the research process by identifying the research problem, setting out the aim and objectives of the study, developing five research questions, reviewing the related literature, selecting the research methodology and the methods that will be effective in answering the research questions, gathering the data from the field using multiple qualitative methods and finally analyzing the data. Researcher tried to understand and make sense of the data collected in which a best practice model for the banking sector of Bangladesh.

3.2.2 Inductive versus deductive research approach

It is important also to classify the research approach in terms of whether it is inductive or deductive. Saunders *et al.* (2003) differentiated between these two types of the research design. First, the deductive approach – known as testing a theory, in which the researcher develops a theory or hypotheses and designs a research strategy to test the formulated theory, second, the inductive approach – known as building a theory, in which the researcher starts with collecting data in an attempt to develop a theory. A researcher should explain clearly which approach is being followed in his or her research project. Marshall (1997) illustrated the theoretical use of both terms (inductive and deductive) as follows:

When researchers first begin to open up any new line of enquiry there will be no useful theories available from which to deduce propositions for testing. Knowledge has to begin with collecting facts and then trying to find some order in them. This is known as induction. Deduction is the technique by which knowledge develops in more mature fields of enquiry. It involves a sort of logical leap. Going a stage further than the theory, data is then collected to test it.

(Marshall, 1997:17)

The current study is shaped with using inductive research design. Saunders e*t al.* (2003)

noted that the inductive approach gives the chance to have more explanation of what is going on. Researcher has started the research process by exploring and collecting the data from different sources and by using multiple sources of evidence: semi-structured interviews, direct observation and document analysis in an attempt to develop a best practice model for SWM in small hotels. The secondary sources of data used in this research, involving: critically reviewing previous research, reports, records and documents on SWM and small hotels, while primary data were collected by interviewing the owner/manager of non-GDES and GDES small hotels; executives of the public and private waste sector and Arena Network officials. Easterby-Smith *et al.* (2002) and Gray (2004) indicated that qualitative research is often associated with inductive research designs in which a range of methods are used to collect the data and explore the problem from different perspectives.

3.2.3 Theoretical approach

In an attempt to distinguish the research approach used in this study further than qualitative and quantitative approaches, Crotty (1998) asserted that the research should be distinguished with epistemological and theoretical perspectives in which a researcher could not claim to be both objectivist and constructionist at the same time. In this research, Crotty (1998) is used as a guide to form the thesis' theoretical approach. The views, beliefs and thoughts of small hotel owners/managers and the key representatives of both public and private waste sectors regarding SWM issues in small hotels were reached by following a research string of constructionism – interpretivism/ phenomenology (see Figure 3.1). The choice and the justifications behind selecting this approach will be discussed in detail in the following sections.

3.2.3.1 Epistemology

Crotty (1998:8) asserted that *"epistemology is a way of understanding and explaining how we know what we know"*. Maynard (1994:10) indicated that:

Epistemology is concerned with providing a philosophical grounding for deciding what kinds of knowledge are possible and how we can ensure that they are both adequate and legitimate

Epistemology seeks to answer two different questions including: How do we know the world? What is the relationship between the inquirer and the known? (Denzin and Lincoln, 1998). Dawson (2002) added that epistemology is the study of knowledge and is more concerned with identifying the origin of knowledge.

3.2.3.2 Constructionism

Constructionists perceive reality as if it is socially constructed (Schwandt, 1998, Saunders *et al.,* 2003). Constructions exist in the mind of individuals and the role of the inquirer is to understand, reconstruct, analyse and critique participants' views in a way that leads to construct meaningful findings/outcomes (Guba and Lincoln, 1989). Shadish (1995:67) indicated that social constructionism refers to *"constructing knowledge about reality, not constructing reality itself"*. This epistemology rejects the objectivists' perspective of knowledge (Crotty, 1998) implying that both the subject and the object are actively participated in the creation of the meaning (Guba and Lincoln, 1998).

In this sense, people tend to construct meaning in different ways even when looking at the same phenomenon (Crotty, 1998). In other words, the constructionist paradigm is *"a perspective that emphasizes how different stakeholders in social settings construct their beliefs"* (Schutt, 2006:44). The aim of the researcher is to understand and reconstruct people's beliefs trying to reach a common consensus. As such constructions are opened to

new interpretations as the information increases (Carr and Kemmis, 1986). Constructionism and phenomenology are interconnected in a way that one cannot be phenomenological and at the same time owes to objectivist or subjectivist epistemology (Crotty, 1998).

As explained, constructionists believe that reality is constructed and there is no truth without mind. Thus, I had undertaken constructionism as an epistemological stance which allowed me to engage with the social world of small hotels trying to understand and construct the reality from the perspective of different stakeholders who experienced or lived the phenomenon being studied. All participants were carefully selected and challenged to reach a high level of consensus regarding SWM issues being investigated. A common perspective was achieved using effective method of analysis and interpretation (a grounded theory approach involving the constant comparative method).

3.2.3.3 **Theoretical perspective**

Crotty (1998:3) defined the theoretical perspective as:

> *The philosophical stance informing the methodology and thus providing a context for the process and grounding its logic and criteria.*

The research methods literature has informed a number of research philosophies in which the researcher can use to shape his methodology, including: positivism, post-positivism and interpretivism. It should be clear that the distinction between these philosophical positions did not mean that there was one stance better than the others but they all better in doing different things (Saunders *et al.,* 2003).

3.2.3.4 Interpretivism

Social reality can be viewed as being constructed. It is *"based on a constant process of interpretation and reinterpretation of the intentional, meaningful behaviour of people – including researchers"* (Smith, 1989:85). Thus, depiction and/or interpretation of the social inquiry is a constructive process and consequently the researcher cannot be isolated from the phenomenon investigated (Smith, 1989). For interpretivists, the world is too complex to be reduced to a set of observable laws and generalizability is a less important issue than understanding the real conditions behind the reality (Gray, 2004). The main goal of the interpretivist is to understand the meaning of the social situation from the point of view of those who live it. The inquirer must interpret the event, understand the process of meaning construction and reveal what meanings are embodied in people's actions (Schwandt, 1998).

A part from constructionism, it is important for the interpretivists to find out the subjective meanings or realities which stimulate people's actions in order to understand and make sense of these actions in a way that is meaningful for the research participants (Saunders *et al.,* 2003). A researcher perceived the data, which he collected with his own sense and interpreted it by his minds. So any researcher could not be certain that he realised the reality properly or his understanding was more valid than the others (Schutt, 2006). Thus, there is not only one reality in social world but researchers understand issues in different meanings (Rubin and Rubin, 1995).

Adopting an interpretivism paradigm, Researcher entered the users of IS in the bank to engage with them and collect in-depth information regarding role MIS and MIS department in improving performance of the bank. From the data researcher collected researcher has made interpretations to serve the overall purpose of the research which was intended to help bank and bankers to proper utilize MIS to improve overall performance.

3.2.3.5 Phenomenology

Phenomenology is *"the study of lived, human phenomena within the everyday social contexts in which the phenomena occur from the perspective of those who experience them"* (Titchen and Hobson, 2005:121). It implies that people's experience of social reality provides a basis to understand the meaning of that reality. Hence, the researcher should work towards having new meanings and increasing his understanding of the phenomena from the social world (Gray, 2004). The phenomenological approach focuses on exploring how human beings experience the phenomenon, i.e. how they perceive it; describe it; make sense of it. To reach such understanding, the researcher should conduct in-depth interviews with people who live with or have directly experienced the phenomenon (Patton, 2002).

Titchen and Hobson (2005) identified two different approaches to look at the phenomenon. Firstly, a direct approach, in which the phenomenon can be investigated by exploring human consciousness in a direct way, the researcher conducts interviews with the interested stakeholders to reach their experiences of the phenomenon. Secondly, an indirect approach, in which the observer gets into the social context of the phenomenon to live it personally with the participants in order to notice and identify the common meaning and practices. Phenomenology relies on personal experiences to explore and understand the existing issue. This inductive approach tries to find the internal logic of the subject (Gray, 2004). Easterby-Smith *et al.* (1991) outlined the major differences between positivism and phenomenological stances (see Table 3.2).

In this respect, the issues of banking sector were treated as a phenomenon and investigated from different perspectives. The phenomenon of banking sector was investigated in a direct way using multiple-qualitative research methods to explore and understand people' experiences regarding the issues being investigated, these include: in-depth interviews,

direct observation and document analysis. Using such qualitative methods allowed me to interact effectively with the bankers and obtain in-depth views from different angles regarding role of MIS issues in banks. I then attempted to form a meaning of such views and find out common perspectives from which a conclusion and a best practice model could be made to add a contribution to MIS literature.

Table 3.2: Summary of the major features of positivism and phenomenology research philosophy

Basic beliefs	- The world is external and objective - The observer is independent - Science is value-free	- The world is socially constructed and subjective - The observer is a party to what is being observed - Science is driven by
The researcher should	- Focus on facts - Locate causality between variables - Formulate and test hypotheses (deductive approach)	- Focus on meaning - Try to understand what is happening - Construct theories and models from thedata(inductive approach)
Methods include	- Operationalizing concepts so that they can be measured - Using large samples from which to generalise to the population - Quantitative methods	-Using multiple methods to establish different views of a phenomena - Using small samples researched in depth or over time - Qualitative methods

(Source: Easterby-Smith *et al.,* 1991)

Phenomenology is a theoretical perspective that uses relatively unstructured data collection methods and follows an inductive approach for collecting data. It is characterised by its ability to get issues that are not involved originally in the aim of the research. This perspective also has an advantage of generating thick descriptions of people's experiences or perspectives within their natural settings (Gray, 2004).

3.3 Research methods in Information Systems

In Niehaves (2005), Information Systems research can be seen as a rich tapestry 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 inside 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. Information systems (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 US journals or European journals shows that, on a methodological level, quantitative methods dominate the US research culture (71%), while 49% of the articles published in European journal apply qualitative methods. On the paradigmatic level, the

vast majority (89%) of US publications are characterized by a positivist paradigm. Though European journals also published mainly research based on positivist principles (66%), they tend to be much more receptive to interpretivist research (34%) than US journals.

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.

3.4 Qualitative or Quantitative a question of epistemology

Over the past fifteen years, the debate over the relative virtues of quantitative and qualitative methodology has gained considerable impetus. While the exact constitution of the two methodologies varies somewhat from author to author or is defined with varying degrees of specificity, there is substantial agreement about the fundamental antinomies and their practical implications for the conduct of research (Bryman, 1984). Many researchers now observes that the use of a sound method in social sciences research particularly in Information systems, is not a matter of simply the strengths and weaknesses of qualitative and quantitative methods rather a question of epistemology to what extent the method is scientifically approached and potentially sound for accumulating scientific knowledge (e.g. Anderson 1983, Deshpande 1983, Hunt 1976, Peter and Olson 1983, Hirschman 1985, 1986, Whitely 1984).

Therefore it may help to review of what science is. In order to tell science from non science the academic community has tried to establish criteria or standards for general application. These are mainly rooted in the quantitative (i.e. positivist) paradigm and they resemble the specifications used for the incoming inspections of different perspectives for instances at a warehouse when a shipment of standardized mass-produced components is being checked. But scientific research is not the same as standardized components and thus problems arise in using such criteria in science context –they are useful only if it is clear what science really is (Gumesson, 1991).

To understand clearly, what science really is, associates with same problems, what popper has remarked as the problem of demarcation (Anderson, 1983). Obviously a host of criteria can be used to judge work for evaluating its scientific status but there is no universal criteria that can be applied in each circumstances solving instrument of the demarcation problem.

From the observation of Anderson (1983), the problem of demarcation is inextricably linked with the issue of scientific method. Again Hunt (1976) contends that the study of the positive dimensions (where the objective is explanation, prediction, and understanding). According to Hunt, a field of enquiry is a science if (i) it has a distinct subject matter; (ii) it presupposes the existence of underlying uniformities in this subject matter and (iii) it employs of the "scientific method." To Anderson (1983), Hunts demarcation standard depends entirely on this last criterion. Hunt, identified the key elements in the scientific method is "inter subjective certification." On this view, science is epistemologically unique because different investigators with varying attitudes, opinions, and beliefs can ascertain the truth content of theories, laws, and explanations (Hunt, 1976). Elsewhere, Hunt (1983) makes clear that his concept of scientific method is a version of positivism. The belief of the positivist that social science may not accurate as physics but it

is not essentially different from the natural sciences. This belief rests upon three major assumption as whitely (1984) observes. These are:

Firstly, that there is a single method or set of procedures which generates true, scientific knowledge in all circumstances.

Secondly, that this method is directly and unambiguously applicable to the social world, and Thirdly, that knowledge so general is directly useful to social sciences and their epistemological status is unaffected by their goals or validation criteria.

Anderson (1983) identifies the two pillar of positivism such as logical empiricism and falsificationism.

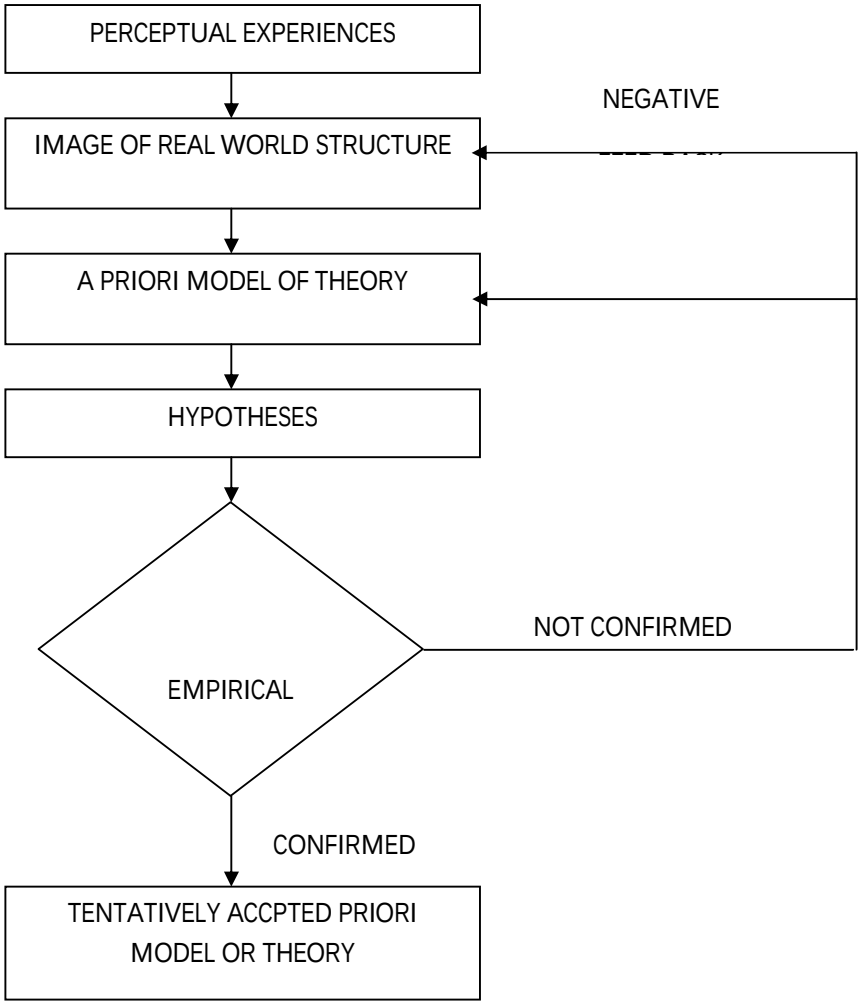
3.4.1 Logical Empiricism

During the 1920s positivism emerged as a full-fledged philosophy of science in the form of logical positivism. Developed by the Vienna Circle, a group of scientists and philosophers led informally by Moritz Schlick, logical positivism accepted as its central doctrine Wittenstein's verification theory of meaning (Brown 1977, Howard and Sheth 1969, Passmore 1967). In Anderson (1983), According to logical positivists, universal scientific propositions are true according to whether they have been verified by empirical tests – yet no finite number of empirical tests can ever guarantee the truth of universal statements (Black 1967, Brown 1977, Chalmers 1976). In short, inductive inference can never be justified on purely logical grounds (Hempel 1965). Logical empiricism is characterized by the inductive statistical method. On this view, science begins with observation, and its theories are ultimately justified by the accumulation of further observations, which provide probabilistic support for its conclusions. Again, Carnap

(1953) replaces the concept of verification with the idea of "gradually increasing confirmation". He notes that if verification is taken to mean the "complete and definitive establishment of truth," then universal statements can never be verified. However, they may be "confirmed" by the accumulation of successful empirical tests. This process can be explained in chart -3.1.

This provides the researcher with his/her image of the real world Structure from which he/she cognitively generates an a priori (i.e., untested) model of the process to be investigated. Hypotheses are derived from the model and are subjected to empirical tests. If the data are in accord with the hypotheses, a confirming instance has been identified. Thus, science progresses through the accumulation of multiple confirming- instances obtained under a wide variety of circumstances and conditions. Moreover, attempts to justify induction on the basis of experience are necessarily circular. The argument that induction has worked successfully in the past is itself an inductive argument and cannot be used to support the principle of induction (Chalmers 1976).

Chart-3.1: The Logical Empiricist Model of Scientific Method



Source: Anderson, 1983:47(Fall):20.

3.4.2 Falsificationism

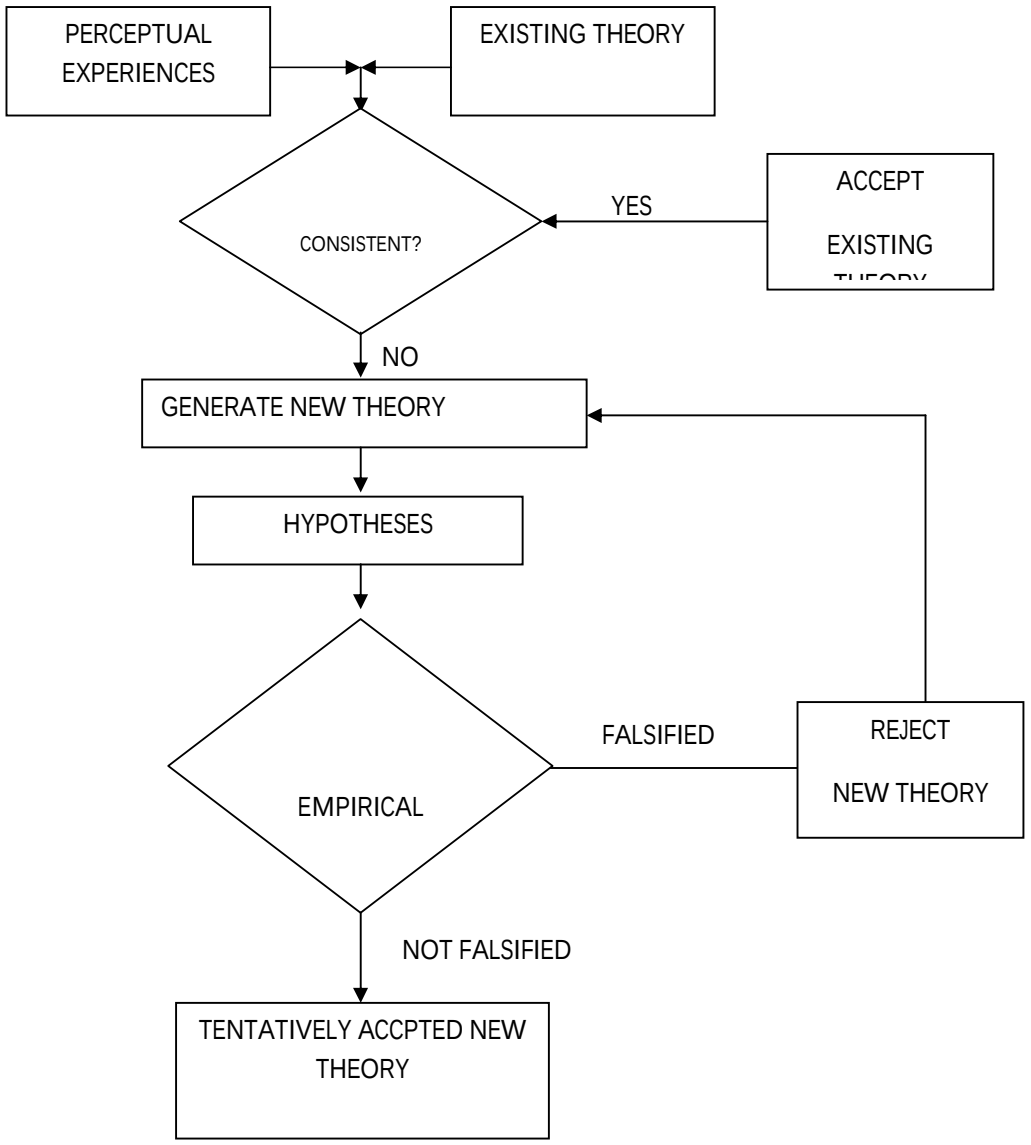
In Anderson (1983) reference to the Popper (1972), alternative to the inductivist program can be illustrated with reference to chart -3.2 . Unlike the logical positivists, Popper accepts the fact that "observation always presupposes the existence of some system of expectations". For Popper, the scientific process begins when observations clash with existing theories or preconceptions. When this occurs, we are confronted with a scientific problem. A theory is then proposed to solve the problem, and the logical consequences of the theory (hypotheses) are subjected to rigorous empirical tests. The objective of the

testing is the refutation of the hypotheses. When a theory's predictions are falsified, it is to be ruthlessly rejected. Those theories that survive falsification are said to be corroborated and are tentatively accepted. In contrast to the gradually increasing confirmation of induction, falsificationism substitutes the logical necessity of deduction. According to falsificationism, then, science progresses by a process of "conjectures and refutations" (Popper 1962). On this view, the objective of science is to solve problems. Solutions to these problems are posed in the form of theories, which are subjected to potentially refuting empirical tests. Theories that survive falsification are accepted as tentative solutions to the problems.

On the other hand interpretive paradigms play an important part in the application of the chosen method. As Guba and Lincoln (1985 p.15) note, paradigms consist of "… a systematic set of beliefs together with their accompanying methods." Paradigms epitomize our particular view of the world and as such are the embodiment of our view of 'reality'. They also provide us as researchers with the guiding principles on which our very practices are founded, doing so in a taken for granted way which avoids the need for lengthy, philosophical consideration (Guba & Lincoln, 1985). Again, paradigms are enabling for the very reason that they provide our basic set of tenets or rules which, guide procedure. On the other hand, paradigms are constraining because their fundamental weakness is that the logic behind the action is obscured by the taken for granted nature of the paradigm's assumptions (Patton, 1978).

The discussion of research paradigms has influenced the discourse in the IS discipline (Burrell & Morgan 1979; Chen & Hirschheim 2004; Hirschheim & Klein 1989; Iivari 1991).

Chart-3.2: The Falsificationism Model of Scientific Method



Source: Anderson, 1983:47(Fall):21

i. In the IS discipline, we can observe a broad discussion of epistemological paradigms, especially ***positivism*** and ***interpretivism*** (Fitzgerald & Howcroft 1998; Jones 2004; Lee 1991; Mingers 2001; Probert 2001; Russo & Stoltermann 2000; Walsham 1995; Weber 2004). Here, a paradigm is understood as a distinct worldview based on certain epistemological and also ontological assumptions.

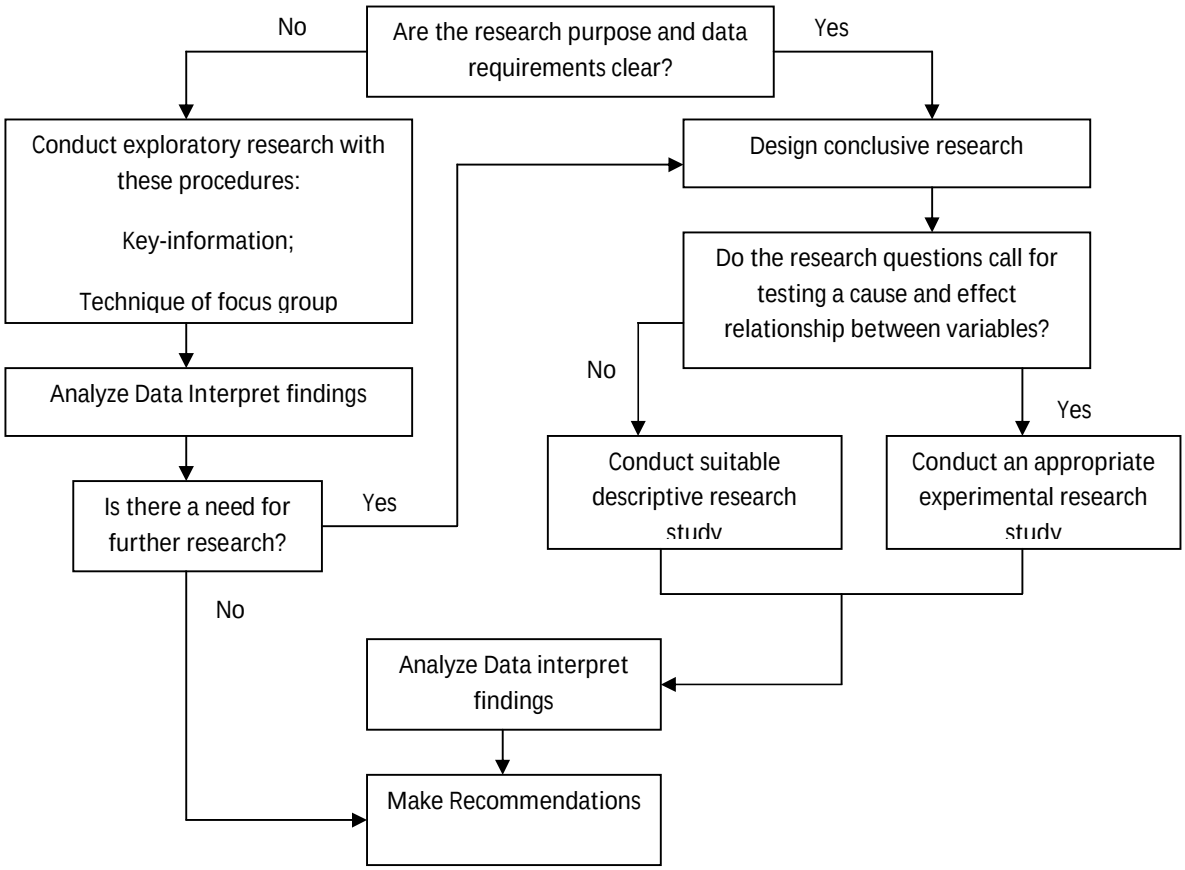
ii. However, the term paradigm is not only used to distinguish particular epistemological positions. Hevner et al. (2004) and March & Smith (1995) introduce two distinct paradigms: ***behavioral science research*** and ***design science research***. The former is understood as a "problem understanding paradigm", the latter as a "problem solving paradigm" (Hevner et al. 2004; March & Smith 1995). Thus, the term paradigm here addresses distinct phases of a problem-oriented process, understanding and solving it.

iii. Another pair of concepts that influences the discussion of paradigms in IS is that of ***critical research*** and '***non-critical research***'. Critical research has been identified as a possible paradigm and is often portrayed as a third alternative to our first set of paradigms, positivism and interpretivism (Chua 1986; Orlikowski & Baroudi 1991). However, we will argue that they constitute a distinct set of paradigms, which should not be conflated with the interpretivism/positivism one.

Furthermore we have to choose our research methodology for our study with the reference to the epistemology and predefined objectives of the study. The previous discussion on strengths and weaknesses of quantitative and qualitative research methods provides a clear understanding that in some situations quantitative methods are appropriate, but qualitative methods are not and v*ise-versa.* Briefly it emanates that while quantitative methods are appropriate for testing hypotheses, describing a large number of variables, collecting from large number of samples to determine associations (and the strengths of these associations), controlling for construct validity, and controlling for reliability, qualitative methods are appropriate for sorting out and screening behavior, exploring complex (may be sensitive and private) behavior, and explanatory models of behavior (i.e., grounded theory). Therefore, choosing the most appropriate type or method depends on the nature of the situation, how the researcher perceived it, and most importantly its ability to know what the researcher wants to know (Objectives of the study). Parasuraman (1986)

describes through flow diagram guidelines for identifying the appropriate method to be employed in research shown in Chart – 3.3. Again, method selection depends on the purpose of the research and phenomena of interest (Bonoma, 1985). Thus the next section will discuss about the objectives of the study and selection of appropriate methodology.

Chart-3.3: Flow diagram for selecting appropriate research type



Source: Parasuraman (1986), p. 144.

3.5 Justification of the choice of methodology

The main objectives of the study are to explore and explain the role of MIS department in improving performance of bank with the deep insight understanding strategic essence in the banking sector of Bangladesh (detail in chapter -1). 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 gather such data, it appears that a qualitative method is more appropriate than a quantitative method. Moreover, the interest of under study is concerned not to 'test' or 'verify' the theories but to 'generate' the multiple theories as their potentiality observed in the literature (Chapter-2) in obtaining adequate knowledge for pre-understandin*g* (Gummesson 1991) of the research issues. Literature suggests that for achieving such objective a 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.

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 an banking information systems) 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 causal relationships exist

vi. To study processes as they develop and emerge, rather than in outcomes or impacts; for example, to investigate the development process for the application under study in parallel with that process so that you can improve the application development as it progresses.

Thus the researcher has obtained 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 qualitative research approach for this research.

One of the qualitative methods has been suggested by the researchers is the case study approach (e.g.. Bonoma 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) has portrayed as in Table 3.6 to the relevant situation for case study research.

Table-3.3: Matching research purpose with methodology (Handfield and Melnyk, 1998)

Purpose	**Research question**	**Research structure**
Exploration Uncover areas for research and theory development	Is there something interesting enough to justify research?	In-depth case studies unfocused, longitudinal field study
Theory building Identify/describe key variables Identify linkage between variables Identify "why" this relationship exist	What are the key variables? What are the patterns or linkage between variables? Why should this relationship exist?	Few focused case studies In depth field studies Multi-site case studies Best-in-site case studies
Theory testing 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
Theory extension/refinement To better structure the theories in light of the observed results	How the generalsable 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 discussed the reasons for using case study in details.

3.5.1 The case study strategy

It is recognized that not all case studies are interpretive. Case studies are normally associated with qualitative research, but can also be used as a method of inquiry employing a positivist epistemology and ontology.

Yin (1994) warns against confusing case studies with qualitative methods using the ethnographic method. Ethnographic methods are derived from cultural anthropology. In studying organisations these methods might help the researchers to extract cultural

knowledge, and identify actions and instruments that participants utilise in their everyday life (Schwartman, 1993; Prasad, 1997). Yin (1994) distinguishes ethnographies from case studies in that the former take a long period of time to conduct and require very detailed observational evidence. Case studies, by contrast, are conducted within a defined time frame and do not necessarily imply the use of ethnographic techniques. Researchers conducting case studies may not even need to visit the organisation under study; they could collect their data by consulting secondary sources or interviewing respondents telephonically or by e-mail (ibid.). Yin (1994) defines a case study as an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly defined. Yin (1994:13) argues that 'The case study allows an investigation to retain the holistic and meaningful characteristics of real-life events such as individual life cycles, organisational and managerial processes, neighbourhood change, international relations and the maturation of industries.' Therefore, the case study approach is especially useful in situations where contextual conditions of the events being studied are critical and where the researcher has no control over the events as they unfold. The case study, as a research strategy, should encompass specific techniques for collecting and analysing data, directed by clearly stated theoretical assumptions. Furthermore, data should be collected from different sources and its integrity should be ensured. A classification of the different types of case study is shown in Table 3.1.

Stake (1993) distinguishes three types of case studies: intrinsic, instrumental and collective. An intrinsic case study is done when the case is unique and is therefore not representative of others. The purpose of conducting this type of case study is not mainly to build a theory, but because of its intrinsic interest. An instrumental case study is selected to provide insights or to develop an existing theory: 'The case is often looked at in

depth, its contexts scrutinised, its ordinary activities detailed because it helps us pursue the external interest' (Stake, 1993:237). Finally, the collective case study is instrumental and extends to more than one instance.

Yin (1993) also distinguishes three types of case studies: exploratory, causal and descriptive case studies. In an exploratory case study, the collection of data occurs before theories or specific research questions are formulated: it is followed up by analysis of data and leads to more systemic case studies. The first stage in this type of case study is to define the issues to be researched. The causal case study will look for cause-and-effect relationships, and search for explanatory theories of the phenomena. For Yin (ibid.) this situation offers the most suitable conditions for adopting the case study as the research strategy of choice. The descriptive case study will require a theory to guide the collection of data and 'this theory should be openly stated in advance and be the subject of review and debate and later serve as the 'design' for the descriptive case study. The more thoughtful the theory, the better the descriptive case study will be.' (Yin, 1993:22). Case studies can also be single or multiple according to their numbers. Case studies can be embedded as well as holistic. An embedded case study is one in which there is more than one sub-unit, whilst in a holistic case study a global programme of organisation is contemplated (Yin, 1994).

Table 3.4: Types of case studies

Criteria	**Type of case study**
Nature of the case	Intrinsic: unique and extraordinary Instrumental: developing theories and insights Collective: more than one instrumental case

Theoretical aims	Descriptive: requires theory to guide data collection Causal: search for causal and explanatory theories
Number	Single Multiple
Units	Embedded: more than one sub-unit Holistic: global

3.5.2 *The case study as a research approach in IS*

The case study is a widely accepted research strategy in the field of IS. A study conducted by Scott and Ives (1992) reveals that the case study approach was the most common research strategy from 1970 to1979 from a universe of 532 journal papers. In a similar research study, Farhoomand (1992) shows how from 1977 to 1985 the case study was one of the most popular research methods (25.4%) from 636 papers surveyed from journals focused on or related to information systems. According to Walsham, (1993:14), 'case studies provide the main vehicle for research in the interpretive tradition.' The case study strategy has been argued to be particularly useful for practice-based problems where the experience of the actors is important and the context of action is critical (Lee, 1989; Galliers, 1991).

In information systems, case studies might be classified as positivist, critical or interpretive according to the epistemological and ontological assumptions adopted. Yin (1993) provides a positivist definition when he argues that evidence should link up research questions arising from rival theories. The design should include clearly stated objectives linked to the research questions and basic sub-units of analysis. This research should identify the critical evidence, interviews and documents that support the

hypotheses, (including rival hypotheses) and analysis of techniques. Following this stream of thought, Benbasat *et al*. (1987) emphasises the importance of testing hypotheses when conducting case studies. This might be the reason why Walsham (1993, 1995b) classifies the views on case studies of Benbasat and his colleagues (ibid.) along with those of Yin as positivist. In this thesis it is assumed that the difference between an interpretive and a positivist case study resides in epistemological and ontological positions. The positivist position maintains that scientific knowledge consists of facts while its ontology considers the reality as independent of social construction (Walsham, 1995b). This contrasts with the inter- subjective and socially constructed epistemology and ontology of the interpretive position. However, in this research, it is considered that using case study strategy from an interpretive point of view can benefit from incorporating the rigours in designing and collecting data discussed by Benbasat *et al*. (1987) and Yin (1994).

This approach is not radically opposed to positivist research. Nevertheless, it is recognized that the research is strongly influenced by the epistemological and ontological stance of the researcher. In this case, it is recognized that the researcher believes that reality is socially constructed and that (we) can learn about it through the interplay between the subject and object of this study. This is also recognized by Galliers (1987) and by Zuboff (1988:423) in clarifying the rationale of her epistemological and ontological stances:

Behind every method lies a belief. Researchers must have a theory of reality and how reality must surrender itself to their knowledge-seeking efforts. These epistemological fundamentals are subject to debate but not to ultimate proof. Each epistemology implies a set of methods uniquely suited to it…My own commitment to understand social phenomena has been fundamentally shaped by the study of phenomenology and, in particular, its application to sociology and psychology.

Paré and Elam (1997) argue that case study research strategy makes the capture and understanding of context possible and can be used to achieve a variety of research aims using diverse data collection and analysis methods. Montealegre (1995) says that case studies (in particular, in-depth case studies) permit a comprehensive approach to the historical and social analysis of complex phenomena. The interpretive researcher attempts to derive his or her constructs from the field by an in-depth examination of exposure to the phenomenon of interest. Through this approach, categories and themes emerge that hopefully are closely linked to the experiences of the relevant study's participants (Orlikowski and Baroudi, 1991).

Case study research has been subject to criticism on the grounds of non-representativeness and a lack of statistical generalisability. Moreover, the richness and complexity of the data collected means that the data is often open to different interpretations, and potential 'researcher bias' (Conford and Smithson, 1996). Despite the lack of a detailed step-by-step data analysis of case study data (Miles and Huberman, 1994), and especially the problem of not being able to provide generalisability in a statistical sense, Pettigrew (1985) still believes that case studies are useful in developing and refining generalisable concepts and that multiple case studies can lead to generalisations in terms of propositions. Walsham (1993:15) argues that the validity of the case study approach derived from an interpretive epistemological stance is based on the 'plausibility and cogency of the logical reasoning applied in describing and presenting the results from the cases and in drawing conclusions from them.' Similarly, Yin (1994) argues that case studies are used for analytical generalisations, where the researcher's aim is to generalise a particular set of results to some broader theoretical propositions.

In addition, the case study approach allows for 'thick descriptions' of the phenomena under study (Yin, 1994). Such 'thick descriptions' give the researcher access to the subtleties of changing and multiple interpretations (Walsham, 1995b), which would have been lost in quantitative or experimental strategies (Yin, 1994). The case study approach has also been suggested for projects of a procedural nature extending over a long period of time (Benbast et. al 1987; Yin, 1994; Walsham, 1993; Mitev, 2000b). In studying events in their natural setting, the case study makes use of multiple methods of data collection such as interviews, documentary reviews, archival records, and direct and participant observations (Yin, 1994).

Given the interpretive stance adopted in this research and the nature of the research question of understanding how MIS department role change the performance of the bank, it is believed that the case study approach is the appropriate research strategy for this topic. However, this might not reveal in detail the unique experiences of individual organizations and the layers of factors influencing the change. The case study method was chosen because of its advantages in creating novel and profound insights and its focus on examining the rich social and cultural influences of the study site.

3.6 Research design

3.6.1 Selection a Case and Criterion for selection 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). Here, a bank or a banker individually can be a case, but the researcher interest is to explore role of MIS department in development, decision making, and implementation at the different level of the banking organization, therefore jointly a bank and bankers (business graduates and non business graduates or technical and non technical people) will be 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 has the experience that as each case progressed, as each interview was conducted, the data were conformed to research expectations.

By considering the nature and depth of study and the time and financial considerations, two cases will be 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 key decision makers but may not be IS educated and it is hoped that the data required for the study can be achieved. While it has been asserted by many researchers that one case can be enough even for generalization (Gummesson, 1991), others argues that the richness of research and level of understanding are more important than the number of cases (Brannen 1992, Leathar 1987). So, researcher selected two cases is appropriate for the present study.

3.6.2 Selection process

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 one may consider the following criterion for selecting a case (Islam,):

i) data require for the particular study
ii) demographic, economic, and social criteria can be basis for practicality of the study

Considering these two criteria researcher identified the following basis for selecting case studies for the present study:

Bank(s):

Bank (i) which performing business transactions daily with its national and international clients. (ii) Out of 59 (Fifty nine) banks, Two banks will be selected as a case for this studies and one from each category (FGPCBs & SGPCBs) which are the top performer in banking transaction (Turnover, profits, and served clients) and (iii) geographically located corporate office in Dhaka city and (iv) pioneer in modern IT based banking.

Bankers (Management and non 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 and least ten branch managers were interviewed based on judgmental sampling

One of the crucial reasons for selecting bank, bankers from the Dhaka city is logistic support for the researcher since researcher's research working place in Dhaka so communication, transportation are so better in Dhaka is better than other city in Bangladesh.

3.7 Process of Data collection

In case study research data can be collected frequently form both primary and secondary sources (Smith, 1990). Many researchers argue that qualitative data are often collected via depth interviews (e.g. Leather 1987, Tull & Hawkins 1990). Depth interviews generally 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 depth Interviews and second one is called focus group interviews. 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 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 researcher main interest of this research is to find the current practices of MIS in banking business as well as others organization, how they evaluate its performance, what are the problems they faced in practicing MIS, what is the difference between MIS expert (business graduates) and IS designer (IT graduate). The above mentioned multiple sources may perfectly help to find these 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.

In this studies data collection was done through both secondary and primary sources. Primary data sources included participants for each case study. Secondary data sources mainly covered technical document of the MIS department, and annual reports of the companies. Secondary data covered different sources and provided an essential preparation for the interviews. Secondary data helped to cross-check official information, learn about major events, technical details, historical decisions and main organizational players and roles. They also supported the exploring of particular responses during interviews.

Mitev (2000a, 2000b), and Silva and Backhouse (1997) have illustrated through the *Socrate* and London Ambulance Services case studies the benefit of examining written secondary sources as research material, which provides a multitude of interpretations. For this study it was possible to conduct the data collection and analysis in an iterative manner.

3.8 Data collection and analysis

The main data techniques used in this research study were in-depth interviews, participant observation, and secondary source analysis. Personal interviews constituted one of the most important and valuable sources of information.

The social nature of information systems has led many IS researchers to adopt research approaches that focus primarily on human interpretations and meaning (Walsham, 1995b). Interpretive studies advocate a relativistic understanding of the phenomena being studied (Orlikowski and Baroudi, 1991). Interpretive researchers see the pursuit of meaning and understanding as subjective and knowledge as a social

construction (Walsham, 1993). They examine the social reality and subjective meanings held by people by eliciting and observing what is significant and important to them. They are not reporting facts, but their interpretations of other people's interpretations (Walsham, 1995b). There is no rigid separation between data collection and analysis, and the process is an iterative cycle of data collection and analysis, with the intention that the results of the analysis will help guide the subsequent collection of data. The cycle is repeated and theory is elaborated and checked as the process continues. When conducting interpretive research it is generally accepted that researchers should interact directly and intensively with the subjects of their research over a period of time.

The interviewees were chosen for their relevance to the conceptual questions rather than their representativeness. Initial participants (at the first group interview) were asked to suggest names of other actors involved in the topic of the case study. The total number of respondents to interview was reached heuristically, i.e., the decision to stop adding respondents was taken when nothing new was being learnt from the interviews and a state of theoretical saturation was achieved. The interviewees were selected on the basis of their closeness to the topics of the study project and their levels of experience in management and organizational issues. It was deemed essential not to limit interviewees to IS/IT staff. The way in which the data collection was organized is described in detail in Chapter 4.

The analysis of data firstly dealt with the description of each case based on the data collected via the different instruments. Secondly, an analysis was done of similar and different patterns in each case study. It is the author's contention that the descriptions of the case studies allow one to gain insights into the specific context. Finally, considering

that this research study is composed of three different case sites, it was necessary to search for patterns in all the cases. This enabled the researcher to develop a strong body of evidence from the cases.

Nevertheless, Griggs (1987) suggests the following three systematic steps for qualitative data analysis:

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

Theoretical Framework

The conceptual framework contains the key factors, the variables and presumed relationships amongst them (Miles and Huberman, 1994). Walsham (1993) maintains that

in the interpretive tradition there are no 'correct' or 'incorrect' theories. Instead, they should be judged according to how 'interesting' they are. Thus interpretive researchers can only claim that the theories presented are interesting to them and expect them to be interesting to those involved in the same areas. Interpretive theories will be made public and people will judge, evaluate and alter the theories. The result is not the generation of a new theory, but the generation of an inter-subjective one, that is, a theory built on by people working in the field. Walsham (1995b) presents three different uses of theory in interpretive case studies: theory guiding the design and collection of data; theory as an iterative process of data collection and analysis; and theory as an outcome of a case study. The use of theory as an iterative process between data collection and analysis has been applied in this research study. Yin (1993) emphasises that the theoretical propositions before the case study should be formulated very carefully because they contribute to the design of the case. The formulation of the theoretical propositions will also, according to Yin, indicate what analytical generalizations are expected as an outcome of the case study. The main aim of this research is to understand the role of MIS department in improving bank's performance in the banking industry of Bangladesh.

3.9 Summary

In this chapter the theoretical and philosophical assumptions underlying the research methodology in the IS field were reviewed. In addition, a discussion of the research design for this study was made. A summary of this chapter is presented in Table 3.2 through highlighting the major decisions made in order to conduct this research work.

Table 3.4: Summary of the research design

Level of decision	**choice**
Epistemological and ontological	Interpretive
Research strategy	Multiple case studies
Research Techniques	Participant observation, in-depth interviews (individuals and groups), group discussion, documentation analysis, questionnaires.
Organizations	Banking sector
Sub-units of Analysis	FGPCB – Uttara Bank SGPCB – Mercantile Bank
Timeline	January 2013- June 2013

CHAPTER - FOUR

DESCRIPTION OF CASES

4.0 Introduction

This chapter is prepared to depict comparative case study on the role of MIS department for improving performance of the bank in the banking sector of Bangladesh. The description is presented by characterizing the different aspects based on collected data from the period of January 2013 to March 2013.

All the support 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 researcher described case of First Generation Private Commercial Banks (FGPCBs) and in the second part described case of Second Generation Private Commercial Banks (SGSGPCBs). Again each part explained based on the observational data and in-depth interview's data divided into two sections are i) Corporate level and ii) Operational level. In both cases corporate level and Operational level observation and in-depth interview were conducted in two phases. Data presented sequentially based on research questions and objectives of the study.

4.1 Uttara Bank Ltd. (UBL)

Researcher selected UBL as a first case and representative of the First Generation Private Commercial Banks (FGPCBs) based on access priority basis which is a leading commercial bank with 220 outlets strategically located in almost all the commercial areas throughout Bangladesh. This bank also pioneer in introducing information systems among the FGPCBs in the banking sector of Bangladesh. Again the bank is in the process of implementing online banking in selected branches.

4.1.1 Background of the UBL:

Uttara Bank one of the largest and oldest private-sector commercial bank in Bangladesh, with years of experience. Adaptation of modern technology both in terms of equipment and banking practice ensures efficient service to clients. 220 branches at home and 600 affiliates worldwide create efficient networking and reach capability. Uttara is a bank that serves both clients and country.

Uttara bank ltd. had been a nationalized bank in the name of Uttara bank under the Bangladesh Bank (Nationalization) order 1972, formally known as the Eastern Banking Corporation Limited which was started functioning on and from 28.1.1965. Consequent upon the amendment of Bangladesh Bank (Nationalization) order 1972, The Uttara Bank was converted into Uttara Bank Limited as a public limited company in the year 1983. The Uttara Bank Limited was incorporated as a banking company on 29.6.1983 and obtained business commencement certificate on 21.8.1983. The Bank floated its shares in the year 1984. It has 215 branches all over the Bangladesh through which it carries out all its banking activities. The Bank is listed in the Dhaka Stock Exchange Ltd. and Chittagong Stock Exchange Ltd. as a publicly quoted company for trading of its shares.

The bank performs all traditional commercial banking functions. The bank has correspondent relationships with 300 foreign banks/bank offices and exchange houses in 72 countries. With the objective of attracting the Bangladeshi wage earners abroad and the non-resident foreigners to invest in Bangladesh, the bank offered them the opportunity to open non-resident foreign currency deposit accounts and foreign currency current deposit accounts with it. By sides the bank consists of major divisions named 1) Corporate banking, 2) Retail banking, 3) Treasury, 4) Small & Medium Enterprise (SME). At present the bank operating its business by 211 branches. Uttara Bank Limited is the first local

commercial bank that providing online banking services to its customers from the very beginning of its starts.

UBL 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 Uttara Bank which emerged as a nationalized commercial bank in 1972 immediately after the emergence of Bangladesh as an independent state. Uttara Bank Limited started functioning as a going concern basis through a Vendors Agreement signed between the ministry of finance, Government of the People's Republic of Bangladesh on behalf of the former Uttara Bank and the Board of Directors of Uttara Bank Limited on November 15, 2007 with retrospective effect from 01 July, 2007.

Uttara Bank Limited is governed by a Board of Directors consisting of 15(fifteen) 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.

Vision of the bank

To be the best private commercial bank in Bangladesh in terms of efficiency, assets competence asset quality, sound management and profitability having strong liquidity. Uttara Bank will be a unique organization in Bangladesh. It will be a knowledge-based organization where the Uttara Bank professionals will learn continuously from their customers and colleagues worldwide to add value. Bank 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. HR Planning, Deployment & Operations Division

vi. HR Training, Research & Development Division

vii. Industrial Credit Division

viii. Information Technology & IT division

ix. Internal Control & Compliance Division

x. Planning, Co-Ordination & Marketing Division

xi. Procurement & Common Services Division

xii. Recovery and NPA Management Division

xiii. Rural Credit Division

xiv. 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.

Bank now emphasized on the IT division as a key department of the bank which performs actually functions of MIS department. Management people in corporate level and manager of the different branches have considered the IT division as a driver of the bank as the bank tries to get competitive advantage through the use of information systems.

Though the bank partially, few branches and head office first computerized but IT expansion starts in actual form in 1980. Now all the branches are under core banking systems. All 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 mean time, 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.

4.1.2 Data from Corporate level:

4.1.2.1 Concept of MIS:

From the study of the UBL researcher identified few key points about the concept of MIS. Different persons nourish different views about MIS concept but they have unique understanding about MIS which focused on reporting systems. DGM and Head of IT division of UBL Mr. Sayem explained about the concept of MIS:

> ***"****MIS is the reporting systems of the bank on the prepared based on the requirements of management. Reports are mainly prepared based on management's desire or instructions. Information mainly collected from different sources mainly from operational level and based on these information a consolidated report is prepared by zonal office, circle office or head office and process, make corrections to send it top management for taking strategic decisions."*

He also said: An organized approach to the study of the information needs of an organization's management at every level in making operational, tactical, and strategic decisions. Its objective is to design and implement procedures, processes, and routines that provide detailed reports in an accurate, consistent, and timely manner.

In a management information system, modern, computerized systems continuously gather relevant data, both from inside and outside an organization. This data is then processed, integrated, and stored in a centralized database or data ware house) where it is constantly updated and made available to all who have the authority to access it, in a form that suits their purpose.

In his explanation he emphasized on reporting which needs of management for strategic definition. On the other hand another AGM Mr. Jahangir Alam added another thing with reporting systems in the concept of MIS:

> *"MIS means reporting systems of the bank based on daily operations or other activities intended to reach the top management. To inform top management about the current position there should be a proper MIS including strengths and weakness. All reporting have not to be intended to top management."*

AGM and Project director of online implementation of UBL Mr. Rashid Uddin Ahmed explained the concept MIS in following way:

> *"MIS means collecting data from the root level of the bank then processing and storing it and lastly sending to the management level for decision making purposes. Main purpose is to collect, verify, process and send to the top and mid level management. MIS in banks and other organizations have no remarkAble differences."*

All the top management people of UBL try to explain MIS is the reporting systems to the top management people by collecting data from the root level (here in operational level of the bank) to top management with a target to support mid management and strategic management people for ensuring success of the banking organization. Researcher tried to find the practical scenario of understanding level about the concept of MIS in corporate level by his observation method and explained scenario in following way:

> *"Only few officers in corporate level understand clear concept of MIS which supports above explanation given by top management people and others have not clear idea about MIS. Some of them understand MIS means reporting systems only, some of them understand it as a software for recording data in the*

different levels of the bank, some of them understand MIS is reporting systems based on Bangladesh bank guidelines like preparing SBS-2 or SBS-3 or CIB reporting only. Now the scenario is changing and concept of MIS now explored to the users of IS in bank's corporate level."

This is not actually rational question what is the difference between Information technology and Information systems but the researcher found some irrationality among the users on the observed cases. Information Technology and Information Systems, many bankers perceive no difference. However, there is a major difference in the specific areas of concentration. Information Technology usually refers to the underlying infrastructure of hardware and networks resources to support information systems. On the other hand Information Systems usually refers specifically to the software resources used to transform raw data into information from which decisions may be based on the organizational requirement.

One of the principal officers (technical side) of UBL in the corporate level, Md. Ashif Iqbal explained about the thinking of information systems in following way:

"Information Systems is the design or process of transferring information into systems which is designed by programmer or information systems designer while information technology is the tools for presenting information to the users."

IT division of UBL Mr. Sayem explained about the concept of MIS:

"There is a misconception about IS and IT in today's business organization but it is not fact of debating. Information Technology falls under the information systems umbrella, but has nothing to do with systems. IT deals with the

technology involved in the systems themselves while Information Systems are the design or process of transferring information into systems"

In his explanation he emphasized on tools for using systems known as IT but Information Systems is a large umbrella referring to systems designed to create, store, manipulate, or disseminate information.

On the other hand another AGM Mr. Jahangir Alam explained the distinction of IT and IS like:

"Information technology is the supporting tools for using Information Systems. As for example mobile phone is a technology but systems using for calling someone through the mobile phone is IS."

AGM and Project director of online implementation of UBL Mr. Rashid Uddin Ahmed explained the concept IT and IS in following way:

"Information technology is the tools for collecting and processing information using information Systems that is applying in advance science. Again Information systems' is in essence bridging the gap between business and the ever growing field of computers."

Though information systems focus on the system making use of technology in the business organizations but the many people have misunderstanding about these two terms. However researcher found low deviation of thinking about the concept of IS and IT in corporate level of UBL.

4.1.2.2 Information systems designer and MIS experts:

From the name of the term it is clear that both the terms have not same meaning but users of information systems and bankers have distinct idea. Though most of the users of the bank have same idea about the above mentioned term but a few people has totally different ideology on above mentioned concepts.

DGM of IT division of UBL Mr. Sayem explained about the above mentioned concepts in following way:

> *"There is actually difference between two concepts. Mainly IS designer is the top most position of the technical department but may not expert in business application and MIS expert of course experienced and efficient in business application by using IS but MIS expert not necessary to be a technical person."*

Here DGM mainly focused on the technical and non technical side of the banking operations. IS designer are the technically expert while MIS experts are the business experts using IT.

Again another key person of IT and IT division and Project director of online implementation of UBL Mr. Rashid Uddin Ahmed explained the concepts different way but mostly similar with the explanation of previous one:

> *"Systems designers are mainly technical people like systems analyst or programmer but MIS experts integrate business needs with IT. People have to know everything of business of the organization but may not expert in technical side."*

Again AGM of IT and IT division of UBL Mr. Jahangir Alam explained in short form like:

"Systems designers are mainly technical people but MIS people are the business people. MIS people have to know everything of business of the organization but may not be expert in technical side."

Lastly researcher have found no noticeAble difference among the understanding of different people in corporate level in IT and IT division about the concepts of IS designer and MIS experts.

Again people in the organization sometimes misrepresent about the concept of end users and technical users of the IS.

"End users are those who work in the ultimate systems in the field level but technical users are designers who prepare the systems and analysis partly done by MIS experts." explained by the DGM of IT division of UBL Mr. Sayem.

End users those are works in the ultimate systems in the field level not necessarily be an expert but technical users' have to expert in technical side. Technical users ready and troable shoots the systems for the end users but end users only use the systems in banks.

Another employee of the IT division said,

"End users those are works in the ultimate systems in the field level but technical users' are designer who prepare the systems and analysis part done by MIS experts."

Again the management people of the corporate level have different thoughts about the user understanding of MIS. Mr. Jahangir Alam explained:

"*Actually, idea of the MIS in user's level differs in many ways like remote branches user, district branches users, zonal office, circle office, head office used information systems in different way based on their responsibility."*

He also explained that they have misunderstanding which is mainly because of education level, training, experiences, and learning process. Mind setting of the users also differ in operational level and corporate level.

DGM of IT division of UBL Mr. Sayem & The Project director of online implementation of UBL and AGM of IT and IT division Mr. Rashid Uddin Ahmed also supports the statement of Mr. Jahangir Alam on misunderstanding of user the UBL about MIS. But Mr. Rashid Uddin Ahmed added misunderstanding mainly from miscommunication and this miscommunication leads from lack of training, business knowledge, experiences, and understanding. Training is a key factor for such types of problems.

DGM of IT division of UBL Mr. Sayem explained the comparison between MIS graduates and graduates from other discipline in the following way:

"MIS graduates are graduates from the business discipline having knowledge on business and use of Information technology. So they are hybrid people. They are not expert in designing information systems but they how to design and will be the best user of management information systems of the bank. So in case of fresh recruitment, if the MIS graduates are recruited will be useful for the bank and there will arise no need for training in initial level about the simple system using which may not be possible for other users."

4.1.2.3 Role of MIS in UBL:

Role of MIS in different organization differ based on the IT infrastructure of the organization. Banking organization also has different dimension of practicing of MIS in FGPCBs or SGPCBs.

DGM of IT division of UBL Mr. Sayem explained the level of practicing MIS in UBL in following way:

"At present bank has some specific format for bringing data from operational level to corporate 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 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 months bank collect more than 100 reports from the branch but in corporate 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 UBL by following statement:

"SGPCBs 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 SGPCBs."

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

"in respect of current scenario, day by day, importance of data, using of data, for data analysis, planning, decision making, and also for smooth administration, MIS gives now first priority. 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 branch, zonal or circle offices. In every months bank collect more than 100 reports from the operational level."

Again he added the comment by comparing MIS practicing of UBL with SGPCBs:

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 SGPCBs is better than us. But, we and all FGPCBs are tying to implement MIS in each level. Actually, data collected from branch to corporate level timely and accurately are very chaotic for us. But we have used information systems as like as SGPCBs.

Again the management people of the corporate level have different thoughts about the practicing of MIS user understanding of MIS. Mr. Jahangir Alam explained:

> *At present bank has some specific format for bringing data from operational level to corporate 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 prepare a consolidated report through MIS. But at present bank use information systems in discrete format and there is no central MIS used to collection of data, processing, executing information like core banking software. In every months bank collect more than 100 reports from the branch but in corporate level only 10 to 12 MIS report depending and extracting information from all reports for decision making purposes.*

Again he added explanation of UBL status with other SGPCBs in Bangladesh:

> *SGPCBs 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 SGPCBs.*

4.1.2.4 Strategic Benefits of MIS:

Now we are living in the age of globalization and digitization. Business challenges stiff competitions among the firms in the domestic markets as well as international markets whether it is service providing organizations or merchandising or manufacturing organization. So getting competitive advantages over its competitors is not so simple task. Thus strategy may play vital role for achieving competitive advantages. Banking sector in Bangladesh faces different challenges in intra industry as well as inter industry environment in Bangladesh. So there are different factors are responsible doing success or failure in the banking business. In the digitized environment MIS may be played charismatic role in ensuring their targets in short run and long run. Stakeholder of the bank needed information which one is updated, timely, and accurate. So organization barely needed information systems application and MIS will play important role in the banking sector to achieve organizational goals.

DGM of IT division of UBL Mr. Sayem explained the essence of MIS in management level in following way:

> *"As the name suggest MIS is designed for management level of the organization. So bank of course will get the benefits from using MIS in management level. Management needs accurate data of the bank to understand the current performance of the bank but promptly. So corporate level depends on the circle and zonal office, and operational level to take new policy for comparing current performance level with past. So MIS will be helpful as there is a dynamic & pragmatic reporting system of transferring data from bottom to top level means management level."*

He also explained role of MIS in operational level of the bank by the following statements:

> *"Operational activities are the key activities of the banking business as deposit collection, withdrawal; loan and advance etc are under the operation dept. So success of the banking business depends on success of the operational dept. MIS speed the operational activities, prompt service, minimizing waiting time and waiting line with a low variAble cost. As for example online banking business minimized doubling works of same operational activities. In some cases understanding operational performance like access liquidity or shortage liquidity is very difficult side by side important for the bank or branches of bank and MIS report will help to do such operational report. Again MIS increase productivity of individual employee and minimize cost at standard level. He also explained at present cost is not important but in future cost will be minimized at remarkAble rate."*

He also explained role of MIS in increasing customers' satisfaction of the bank in following way:

> *"Actually customers' expectation is to get prompt, secured, reliable, low-cost service from the bank and in some cases customized service. MIS will help to the bank for giving such types of services. So, MIS practicing in our bank will be given benefit strategically and we already understand few symptoms to increase customers' satisfaction."*

Researcher identified that all the employees are not satisfied on using MIS. Actually those are understood about the systems are satisfied on using systems of MIS of UBL.

DGM of IT division of UBL Mr. Sayem added the essence of MIS in decision making process of management level people in following way:

> *"MIS supports in decision making process by giving all supportive inputs of decision. Correct, prompt, easier decision is possible through the MIS application. Cost effective and timely decision is also possible by using MIS in banking organization."*

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

> *"Since, MIS is reporting systems to support operational activities and decision making process, so top management relies on this report for any type of decision making and understanding original scenario of the bank. But MIS prepare report based operational level data and in some cases in the field level, data inputted wrongly lead to misleading the banking scenario which is the risk of the using information systems.*
>
> *Considering our country level IT infrastructure is not so strong and many cases network is vulnerAble. So data communication may not be possible in some cases and total systems of the specific branches may stop for indefinite time.*
>
> *Natural disaster may affect also system. But important risk in operational level is lack of technical education and experience in end user level may problems in reporting at source which one is major risk of the bank."*

He has given another statement on strategic benefit by using MIS in his bank compare with other SGPCBs:

"Private commercial banks' information systems stronger than the public commercial banks because their number of branches is too small compare with SGPCBs. They have competitive advantage in case of using MIS in different level. There employees capability, systems capability stronger than FGPCBs. But in case of numbers of customers UBL are superior to SGPCBs. If we are Able to apply MIS in full percentages we will get advantages over the SGPCBs and our bank trying to do so."

AGM and Project director of online implementation of UBL Mr. Rashid Uddin Ahmed explained the essence of MIS in management level in following way:

"MIS in management level of any organization plays an imperative role because of the changing circumstances and environment. Bank of course will get the benefits from the using MIS in management. Management needs correct data from the source level to top management for efficiently managing organization and increasing performance of the organization. MIS will help produce correct data in time. MIS also will be helpful as there is a reporting system of transferring data from bottom to top level means management level. In the near future management people/experts will highly rely on the systems rather than human being for making any type of decisions in the organizations."

He also added in his explanation about role of MIS in operational level of the bank by the following statements:

"Organizational performance mainly depends on the operational activities of the bank because the banking business comprises deposit collection, withdrawal; loan and advance etc are under the operation dept. MIS speeds

up/accelerate/gear up the operational activities, prompt service, minimizing waiting time/waste of time and waiting line with a minimum cost and accurate data. It is a great opportunity for end users to use the past data efficiently by using information technology and MIS can assist in this regard"

He also explained role of MIS in increasing customers' satisfaction of the bank in following way:

"Now customers get service within the second. It is not time consuming. It saves time for customer service and customer is also satisfied by getting such types of prompt, secured, reliable, low-cost service from the bank. No doubt about it that MIS practicing strategically benefit the bank to increase customers' satisfaction. But we are not Able to serve at present all over the branches as we have not MIS infrastructure in all branches."

He also added and explained that their employees are 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. It also minimizes psychological labor of the employees.

Mr. Rashid Uddin explained essence of MIS in decision making process of management level people in following way:

"For taking the correct and effective decision management has to rely on correct data in timely manner. MIS supports in decision making process by giving all types historical data side by side current data. So MIS is very useful in effective decision making within shortest possible of time."

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

"This is the risk in national level- not for our bank only. In our country collecting data is very problematic. If we make sure that the primary data is correct then the system will be effective one. This is the main risk for applying MIS in banking sector. Some risk in operational level about manipulation of data but such types of activities are decreasing day by day."

Mr. Rashid Uddin again explained how UBL enjoy strategic benefits by using MIS compare with other SGPCBs in following way:

"Nationalized bank developed enough MIS systems to use in their banking operations. I have no idea of use of MIS in other private banks. Because all are controlled by the Bangladesh bank, so trend is similar. But controlling SGPCBs is easier than FGPCBs. As our number of customers is large number so it is easier to get strategic advantage by MIS than SGPCBs."

Mr. Enamul Maola, AGM of IT division explained the benefits of using MIS in management level of the bank by the following statement:

"There are enormous amount of information available to today's manager and this had therefore meant that managers are increasingly relying on management information systems to access the exploding information. Management information services helps manager to access relevant, accurate, up-to-date information which is the more sure way of making accurate decisions. Bank of course will get the benefits from the using MIS in management. Management needs accurate data of the bank to understand the current performance of the bank but promptly. so corporate level depends on the circle and zonal office, and operational level to take new policy or comparing current performance level with past. So MIS will play important

role for producing effective management reports for management level people.

He also added in his statement that MIS not only beneficial for management level people of the bank but also operational level of the bank as it is support operational activities by minimizing time and cost with higher productivity than before.

Mr. Enamul Maola again explained by the following statement about the strategic essence of MIS:

"The management information systems are capAble of taking advantage of the computational ability of the company like processing, storage capacity among others. Based on this relevancy, management information systems can be used by any banks since today's bank managers need them to access information for managerial decision making and also management functions."

4.1.2.5 Infrastructure of the Bank:

There is no specified structure of IT division of UBL 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 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 division perform 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.

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

> *"Our many of the employees cannot understand even what's stand for MIS and they understand only MIS means just sending report from the operational 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 free flow of information from head office to operational level and vice versa. "*

Table: 4.1: Reasons for lately updating information on the website.

• IT staffs are not willing to show their self-interest about the newly updated information.
• IT staffs waiting for decision from their superior (immediate boss) or related top management.
• Lack of commitment of few top management people
• Secretary of M.D. or chairman or decision making body have 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 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 in the website."*

Web mail:

Bank's website has 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. UBLinstruction@Uttarabank.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 fact of disclose to all visitors of the site. This also designed by vendor company ISN.

Responsible IT officer for website Administration Mrs. Kaniz Fatema, Principal Officer of UBL 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 message 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 head of IT.
- Space allocation for individual staff of the bank
- Spam protection for each account holder
- Space management

Information Systems 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:

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.

Table:4.2 IT infrastructure of the UBL

Name Of Branch	No. Of CPU	No. Of Monitor	No.of Printer UPS	No.of Stabilizer
Lease Finance Dept,CD,CBD. (Credit Division)	14	3	7 11	-
BCCSD(PRD,AML,RMD,OPERATION,PROIVIOTION)	18	19	7 19	2
Transport Dept.(Est. Division)	2			
Engineering Dept.{Est. Division)	12	11	6 13	
Stationary And Records Dept.(Estd. Division)	5	5	3 J6	-
General Services Dept(Estd. Division)	6	8	6	
Training Institute(HRD)	20	20	3 22	2
HRD(Personne! , Test Key Dept)	15	15	5 16	_
Share Dept. (Board And Share Division)	0	1	6 8	-
Board Dept(Board And Share Div.)	26	24	17 23	-
Treasury Division(Asset , Liability Dept.)	23	23	9 26	-
Green Banking Dept.	1	1	2	-
LOCAL OFFICE		71	25 57	1

CORPORATE	36	38	15 22	-
Approval Dept. (Credit Division)	42	43	25 41	-
Administration, Monitoring Dept(Credit Division.)	8	8	1 8	-
CBS(1CT DIVISION)	11	13	3	-
CIBCell(Credit Division)	9	9	3 7	:
Card Dept.(lCT Division)	3	3	2 J4	-
IDfRemittance /Trade Service Dept)	62	65	23 58	-
ICCD(Compliance,Audit, Inspection Dept.)	20	20	7 20	-
CAD(Reconcilation,Accounts Dept.)	41	42	12 (35	:
Recovery Dept. (Credit Division)	17	17	7 16	.
Development ^Support Dept(lCT Division)	-	-		-
ICT DIVISION	53	46	8 !38	-

Source: Document of IT division, UBL

Bank now sufficiently developed hardware infrastructure al least for selected branches those will be converted off line systems to on line systems within a short period time. Mr. Shamsul Alam, AGM of IT division explained in this way:

> *"Hardware resources were not sufficient when started our operation online banking in the year 2008 but at present bank updated its hardware infrastructure considering current needs of the bank."*

Software resources:

Software is a single computer program or group of programs that serves a particular purpose. UBL has multi task and done through different software. At present many software of the bank are using web based like BACH, T24, EFT etc this are 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. Bank has available software resources and after full phase implementation of T24 software many specialized software will not be used. This situation explained Mr. Sayem, DGM and Head of IT division of UBL 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. "*

Networks:

Network consists of computer, communications processor such as modem, and other devices interconnected by communication media and controlled by communication software. UBL has LAN facilities in maximum branches. Except remote area branches bank used branch-banking software with the help of LAN.

In the corporate 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 government and irresponsible behavior of vendor or ISPs.

Human Resources:

DGM and Head of IT division of UBL Mr. Sayem explained their human resources 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."*

According to the organogram UBL have 18% vacant positions till date though last three years every selection process done successfully.

Online Banking (Core Banking)

Online banking is one of the important tasks of the ICT & IT division of the bank. They have strategic plan to get full pledge benefits of online banking. With this aim, they have started their project of online implementation. This process is start in August 2009, after completion of all procedures tendering Agreement sign with TEMENOS international company (Switzerland) and Flora systems local company commencement of work in January 2010. Now all the branches are online.

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

> *"The customers of the branches in online system will get the facility of phones banking, internet banking etc besides opportunity for making their banking transactions with any of the branches."*

4.1.2.6 Role of MIS department in improving perfromance:

DGM of IT division of UBL Mr. Sayem identified gap between needs and application MIS in UBL in 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 format basis of Bangladesh bank guidelines and we use our internal purposes.*

He also added:

> *If the MIS department performs its activities perfectly performance of the bank will improve tremendously.*

He recommended by following way:

> *"At present bank have 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 and all will be managed by MIS department"*

4.1.3 Data from the Operational level:

4.1.3.1 Concept of MIS:

In operational level deviation of understanding about MIS among the officers including branch manager is very high. Although different person have different views about MIS concept but most of them have unique understanding about MIS which focused on reporting systems. One branch manager said:

> *"MIS is the reporting systems of the bank on the prepared based on the requirements of management. Report mainly prepare on the based of management desire or instructions."*

In his explanation he emphasized on reporting which needs of management for strategic definition. Another branch manager explained that MIS mainly emphasis on reporting systems but actually assist in decision making process of the top management. He added:

> *"MIS means reporting systems to inform top management about the current activities of the bank."*

Few branch managers don't try to understand about in-depth meaning rather than practical application of MIS. DGM and Branch manager, Amin Court corp. Branch, Dhaka Mr. Md. Saiful Hasan said:

> *"MIS means information required for the top management in taking any type of decision of the bank which may be internal or external e.g preparing financial statement, setting up interest rate for deposits or advances etc.."*

Among the ten (10) branch managers only two (2) have misunderstanding about the concept of MIS and IT. They explained:

"Actually IT or MIS are the same things which are based on modern computer based systems."

Usually misunderstanding of IT and MIS among the users of the systems because of lack of technical knowledge or less used of IS in UBL. But in management level and Manager level in branch have no remarkable misunderstanding between these concepts.

4.1.3.2 Information Systems designer and MIS experts:

Again these terms differentiate by the few branch managers in different way:

Mr. Saifur Rahman said:

"IS designer is technically experts while MIS experts are expert in line of IS application in business."

Though both are the experts in his own area, one is related to IS preparation and other is related to IS application.

From the name of the term it is clear that both the terms have no same meaning but users of information systems and bankers have distinct idea. Though most of the users of the bank have same idea about the above mentioned term but a few people has totally different ideology on above mentioned concepts. Researcher identified this is actually happened for lack of technical knowledge.

4.1.3.3 Role of MIS in UBL:

Role of MIS in different banking organization vary because of user environment and MIS environment (Sub proposition -1 & 4, literature review chapter), even it differ in operational level. MIS practicing in UBL has no remarkable example but UBL has taken outstanding steps for implementing MIS in all level 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 UBL. Practice of MIS also differ because of understanding level MIS.

Mr. Saiful Hasan explained:

> *"Meaning of MIS may not understand by all users but everyone has at least considered MIS as computer based reporting systems. Again meaning of MIS in user level differs based on their working area, understanding and education level. Few branch managers have some misunderstanding about MIS practicing in UBL while maximum have 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 use 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. Saifur Rahman added about the MIS practicing status of UBL 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 SGPCBs in Bangladesh in considering 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 SGPCBs."*

4.1.3.4 Strategic Benefits of MIS:

Not only the bank but also each and every one business organization's success mainly depends on free flow of information regarding prompt and strategic decisions. MIS is one of the important systems for making data available to the decision maker. Banking business also recognized the role of MIS in considering free flow information among the top management people.

At present all the respondents (branch manager and top management people) of the UBL acknowledged about the importance of MIS in every steps of the banking activities. MIS can assists manager from the different dimensions of the bank to ensure smooth management or low cost & efficient operation or supporting strategic decision for the organization. In relation to the management support Mr. Saifur Rahman explained the role of MIS in following way:

> *"Without MIS in modern world management will not possible to take any decision. Now the world is most competitive any decision has to take in time, urgent and based on proper information. MIS will play a key role for serving management level to take efficient, timely, comparative decision within the organization. MIS will help to management by providing update information within a minute which was not possible in manual systems."*

Another branch manager also supports the decision of the above mentioned respondent and added following statement:

> *"As MIS used as a tool for making data available thus it worked as a supportive tool for top management people."*

Mrs. Shirin Akhter, Manager of the Gazipur Br. Added,

"MIS considered as substitute of key person of the management level those who provide key decisions information for taking important decisions of the bank."

Md. Saiful Hasan Manager & DGM of Amin court Br explain about MIS in slight different way:

"*MIS people have technical knowhow but not in mass level for managing organization efficiently. Again MIS worked in the banking organization just as a strategic tool to take prompt decision with minimization of data redundancy."*

Few branch managers explained about importance of MIS in customized way for banking sector such as for operational activities, for customer satisfaction, for employee satisfaction, for decision making supports.

Mr. Saifur Rahman said:

"Now the banks operate their activities more efficiently than before which is contribution of information systems. For finding cost of fund, profit levels of the can be calculated even for individual branch maximum within a day. After applying full scale MIS in all branches operational performance can be measured within a second. It is helpful also for smooth operation. We desire paperless office which is possible by using MIS. MIS speed the operational activities, prompt service, minimizing waiting time and waiting line with a minimum cost but accurate data. Now the customers get instant service any operational activities because of using MIS."

Out of fifteen (15) interviewed Top management executives and branch manager five directly supports the statement of Mr. Saifur Rahman while other seven branch manager explained a little bit different way like:

"MIS is the platform for making data available to the users of the systems and operational executives will take necessary data from the systems and update the data after completion of transaction performed."

He also added another statement about customer satisfaction in following way:

"Of course, service is the key point of customer satisfaction. Now customers get service within the second. It saves waiting time of customer and customer is satisfied by getting such types of quick, secured, reliable, low-cost service from the bank. So strategically bank will not survive in near future without customers' satisfaction and which will possible because of using MIS in bank."

4.1.3.5 Infrastructure of the Bank:

In operational level of UBL now they are stable enough to conduct IT based business transactions but they have not any rigid structure for application of MIS. 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 operational level and grasp the right to operating branch efficiently by using any systems given by the top management level. Researcher found different dimensions of Role of MIS in operational level with his observation and through in-depth interview with branch manager and others key person of the branch.

In operational level bank frequently faces problems in hardware because many users cannot understand if simple trouble shoot 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 problem mainly in the remote area branches but sometimes in urban area also.

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

> *"Now we have sufficient hardware for operating but for green banking means paperless banking we have not position in competition and in near future bank will face tremendous competition. So for taking competitive advantages bank have to increase hardware infrastructure in future."*

Mr. Md. Saifur Rahman, Manager, Ramna Corporate Branch of UBL explained the HR situations of the UBL 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. Bank has technical users and end users. Technical users design the systems and end users use the systems. But in every case, bank suffered from lack of expertise."*

Another branch manager and AGM of UBL 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. Sifaul hossain explained:

"Though we have a large proportion of business experiences employees but they have deficiency of using IS but we are not suffering for end users but we are facing problems of shortage technical person in operational level."

Online Banking (Core Banking)

UBL has taken incredible steps in implementing online banking among FGPCBs in Bangladesh. But its position not so satisfactory in competitive environment among FGPCBs, SGPCBs and TGPCBs because of its number of branches very much larger than other two categories o the Bank.

In regarding implementation of online banking within UBL different branch manager have different views explained in following way:

Mr. Md. Saiful Hasan, 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."

4.2 Prime Bank Ltd. (PBL):

This section of case description focused on SGPCBs represent by PBL. In presenting this case the judgment followed in the previous case were followed so that reader can compare the main issues of explanation on role of MIS department in the bank. The key issues are characterizing the different aspects based on collected data from the period of April 2013 to June 2013. 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 (UBL). Data presented sequentially based on research questions and objectives of the study.

Researcher selected prime bank as a representative SGPCBs.

4.2.1 Background of the PBL:

The backdrop of economic liberalization and financial sector reforms, a group of highly successful local entrepreneurs conceived an idea of floating a commercial bank with different outlook. For them, it was competence, excellence and consistent delivery of reliable service with superior value products. Accordingly, Prime Bank was created and commencement of business started on 17th April 1995. The sponsors are reputed personalities in the field of trade and commerce and their stake ranges from shipping to textile and finance to energy etc.

As a fully licensed commercial bank, Prime Bank is being managed by a highly professional and dedicated team with long experience in banking. They constantly focus on understanding and anticipating customer needs. As the banking scenario undergoes changes so is the bank and it repositions itself in the changed market condition.

Prime Bank has already made significant progress within a very short period of its

existence. The bank has been graded as a top class bank in the country through internationally accepted CAMELS rating. The bank has already occupied an enviable position among its competitors after achieving success in all areas of business operation.

Vision

To be the best Private Commercial Bank in Bangladesh in terms of efficiency, capital adequacy, asset quality, sound management and profitability having strong liquidity.

Mission

To build Prime Bank Limited into an efficient, market-driven, customer focused institution with good corporate governance structure. Continuous improvement of its business policies, procedure and efficiency through integration of technology at all levels.

It services with 138 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 April 17, 1995. The Bank provides class banking rather than mass banking with a broad range of financial services to its customers and corporate clients. The Board of Directors consists of eminent personalities from the realm of commerce and industries of the country. Prime Bank Limited is governed by a Board of Directors consisting of 21(twenty one) 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.

The bank organizes all the jobs considering their interrelationship and they are allocated in a particular department to control the system effectively. The departments are fitted for the particular works and the performance of a particular department is measured perfectly. Prime Bank Limited has following departments

Table- :4.3 Division of PBL

Human Resources Division	Logistic and Support
Finance Division	Information Technology
Audit and Inspection Division	Retail Finance Center
Internal Control and Compliance	Credit Division
Marketing Division	SME
Corporate Banking	Credit Admin and Monitoring
Consumer Banking	Corporate Affairs
Treasury	Card Division
Trade Service and Correspondent Banking	Recovery and Legal

History of IT progress:

Bank started its operation with the help of IT from the commencement of the bank in 2nd June, 1999. At present bank have 76 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 operational 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 PBL has taken a project of implementing online banking with centralized database using T24 software of Temenos international company of developing customized banking software.

4.2.2 Data from Corporate level:

4.2.2.1 Concept of MIS:

From the study of the PBL researcher identified few key points about user understanding level of MIS. Most of the employees of PBL in corporate level mainly in IT division have same idea about the concept of MIS. They differentiate their idea based on few key points and all of them have same views without any misunderstanding about MIS which focused

on reporting systems. SVP Head of business team in IT division of PBL Mr. Md. Sams Arefin explained about the concept of MIS:

> ***"****MIS is the reporting systems of the bank prepared based on the requirements of management to supports business decisions. MIS mainly create information availability on different aspects banking business while management level people will use information based on their requirements"*

In his explanation he highlighted on reporting which needs of management for business decisions. On the other hand another SVP & Head of IT, Engr. Md. Rafiqul Hoque Bhuiyan added another thing with reporting systems in the concept of MIS:

> *"MIS is the reporting systems of the bank that makes information available to users through collecting, processing, storing, and distributing information to support decision-making functions of the bank. All reporting have not to be intended to top management."*

Another key person of the PBL Mr. M. A. Yousuf Karim explained the concept of MIS in following way:

> *"MIS means collecting data from the root level of the bank and processes it and stores it and lastly transfer to the management level for operational supports, decision making purposes and for further use in future. Bank mainly benefited by using MIS because of its supporting operational in two ways: one is speed up services; another is cost reduction in data management."*

PBL employees are dynamic in using information systems thus they have no misunderstanding about concept of MIS whatever they holding position in the organization. Most of the employees explained MIS is the reporting systems to the top

management people by collecting data from the operational level of the bank to top management for making data available to the decision makers at any level of the bank.

From the observation in the corporate level researcher identified the following types of understanding among the officers of the PBL:

> *"Only a few officers in corporate level have misleading idea about the concept of MIS like partial idea or narrow idea about MIS not totally different views while most of the officers have unique understanding and clear concept of MIS which supports above explanation given by top management people. Those who have narrow idea about MIS, focused on Bangladesh bank guidelines like preparing SBS-2 or SBS-3 or CIB reporting only."*

Information Systems usually refers specifically to the software resources used to transform raw data into information from which decisions may be based on the organizational requirement. Information technology is the tools for presenting information to the users.

Researcher has found all of the employees in corporate 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 PBL Mr. Md. Sams Arefin explained about the concept of MIS:

> *"Information technology is the supporting tools for using Information Systems."*

Observation found that the employees of PBL 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 ness beyond their desk work.

4.2.2.2 Information systems designer and MIS experts:

Banking sector of Bangladesh showed dynamic change in using IT and IS. Now most of the banks have applied MIS for taking competitive advantage over the competitors. Information systems designer and MIS experts both have significant role in designing and applying MIS in banking business. But users of information systems and bankers have distinct idea about theses terms. In PBL the majority of the users have same idea about the above mentioned term but a few users have completely different thinking.

On the other hand another SVP & Head of IT, Engr. Md. Rafiqul Hoque Bhuiyan explained about the above mentioned concepts in following way:

> *"IT and MIS is totally different things, actually IS designer is the top most position of the technical side and MIS expert is the non technical users of the IS."*

Here SVP mainly focused on the technical and non technical side of the users of the IS of the bank. IS designer are the technically expert in designing or developing IS while MIS experts are the business experts using IT.

SVP Head of business team in IT division of PBL Mr. Md. Sams Arefin explained the concepts different way but mostly similar with the explanation of previous one:

> *"IS designer is the technical person while MIS experts are non technical users but technical resources."*

Another key person in the corporate level explained in short form like:

> *"MIS people have to know everything of business of the organization but may not expert in technical side."*

Researcher found a few differences among the officers of PBL about understanding on MIS experts and IS designer in IT division of corporate level.

Again people in the organization sometimes misrepresent about the concept of end users and technical users of the IS. But this type of scenario is not available in PBL.

Sayeda Rahman, AVP of PBL in IT division said:

> *"End users those who are works in the ultimate systems in the operational level but technical users' are designer who prepare the systems. Again top management people also users of the MIS as they have taken decision on available information."*

End users those are works in the ultimate systems in the field level not necessarily be an expert but technical users' have to expert in technical side. Technical users ready and troable shoots the systems for the end users but end users only use the systems in banks.

Another employee of the IT division said,

> *"End users those are works in the ultimate systems in the root level but technical users' are designer who prepare the systems and analysis part done by MIS experts."*

Again the management people of the corporate level have different views such as SVP Head of business team in IT division of PBL Mr. Md. Sams Arefin said:

> "*Only top management and head of branch manager, head of division, DMD, MD, board of directors are the users of MIS while systems developer mainly technical users of MIS."*

SVP Head of business team in IT division of PBL Mr. Md. Sams Arefin explained the comparison between MIS graduates and graduates from other discipline in the following way:

> *"Some top management people think IT division will manage MIS but it is wrong idea."*

He also explained:

> *"MIS graduates are graduates from the business discipline have knowledge on business and use of Information technology. They know how to manage business and application of MIS in business."*

From the observation of the researcher it has found that about 90% employees of PBL in corporate level have more or less same idea about the above mentioned concepts while others have limited views about these terms. But all of the top management people give unique idea about the terms.

4.2.2.3 Role of MIS in PBL:

Practicing MIS in banking organization is not same. It has differences of application among inter group or intra group of the banking sector of Bangladesh. Inter group MIS application means FGPCBs, SGPCBs, and TGPCBs application while intra group application means within the FGPCBs or within the SGPCBs or within TGPCBs. Practicing MIS in PBL may different from other SGPCBs in the banking sector. This study mainly focused on MIS practicing in PBL considering different dimensions.

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

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

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

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

SVP Head of business team in IT division of PBL Mr. Md. Sams Arefin 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 PBL."

Again he added the comment by comparing MIS practicing of PBL with SGPCBs:

"We are not thinking about FGPCBs rather SGPCBs. We want to be leader among the SGPCBs by using MIS in all of the bank."

Sayeda Rahman, AVP of PBL in IT division said:

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

Researcher concluded from the observation findings about the Role of MIS in PBL in following way:

PBL 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 PBL in corporate level try to use all types of IS efficiently.

4.2.2.4 Strategic Benefits of MIS:

Banking sector now replacing traditional systems with newly developed IS for taking competitive advantages in their area of operations. The entire areas bank tries to implement MIS in expecting strategic advantages. PBL also expecting MIS may give strategic advantages in operation, customer satisfaction, cost minimization, and others area of banking business. PBL also believe that MIS will play imperative role in the banking sector to achieve its vision and mission.

SVP Head of business team in IT division of PBL Mr. Md. Sams Arefin explained the essence of MIS in management level in following way:

> *"1st January business conference of the bank setup target, budget based on the MIS report. Top management needs accurate data for understanding current performance, future growth and also determining the end target for short term period as well as long term period of the bank which is possible to use by MIS."*

He also clarified role of MIS in operational level of the bank by the following statement:

> *"PBL wants to ensure success with operational efficiency of the bank because operational efficiency minimize the operating cost of the bank and ultimately increase EBT (earnings before interest expenses), minimizing total waiting cost of the customer and also cost of servicing. MIS speed the operational activities, prompt service, minimizing waiting time and waiting line with a low variAble cost. In some cases understanding operational performance like excess liquidity or shortage liquidity is very difficult side by side important for the bank or branches of bank and MIS report will help to do such operational cost.*

He also added role of MIS in increasing customers' satisfaction of the bank in following way:

> *"PBL has MIS applied in branch as well as corporate level office the bank. By using MIS bank can give customized service to the customers through SMS banking, i-banking etc. So, by using MIS practicing PBL can be strategically benefited to increase customers' satisfaction."*

Researcher identified that all the employees of PBL in corporate level are satisfied on using MIS. Actually those are happened because of users are understood the systems.

Sayeda Rahman, AVP of PBL in IT division said:

The essence of MIS in decision making process of management level people in following way:

> *"MIS supports in decision making process of the bank by giving all supportive data as input. Correct, prompt, easier decision is possible through the MIS application. Cost effective and timely decision also possible by using MIS in banking organization."*

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

> *"MIS is reporting systems to support operational activities and decision making process of the bank. So top management relies on this report for any type of decision making and understanding original scenario of the bank. But MIS prepare report based operational level data. So success or failure of the bank depends on correct data inputting into the systems.*

He has given another statement on strategic benefit by using MIS in his bank compare with other SGPCBs:

> *"SGPCBs have important information systems which is stronger than the FGPCBs because their number of branches is too small compare with FGPCBs. They have competitive advantage in case of using MIS in different level."*

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

> *"MIS in management level of the PBL will help to produce correct data in time. MIS also will helpful as there is a reporting system of transferring data from bottom to top level means management level. In the near future management people will rely on the systems rather than human being for making any type of decisions in the organizations."*

He also added in his explanation about role of MIS in operational level of the bank by the following statement:

> *"Bank performance mainly depends on the operational performance of the bank which mainly depends on the key functions of the bank such as deposit collection, withdrawal; loan and advance etc. It is a great opportunity for end users to use the past data efficiently by using IT and IS while MIS can assist to the bank to achieve this target."*

He also explained role of MIS in increasing customers' satisfaction of the bank in following way:

"Customers are always expecting fast and reliable service from the service provider. For ensuring operational efficiency with a satisfied customer service, there is no way other than using IS which can minimize time and cost in servicing. PBL has customer orientation and wants to take strategic benefit through increasing customers' satisfaction by using MIS."

He also added now the employees of PBL could not thinking about traditional customer servicing rather using IS. Employees of the PBL 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. Sayeda Rahman, AVP of IT division of the PBL explained the user of the PBL:

"MIS now plays a vital role in for management level people. In PBL 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 PBL 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 PBL by the following statement:

"PBL 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."

Researcher found from the observation in the PBL:

> *"About four fifth employees in the corporate 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 PBL also expecting by using MIS they will get competitive advantages.

4.2.2.5 *Infrastructure of the PBL:*

PBL 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

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 PBL try to develop some new systems and already implemented few of them with the consideration of developing centralize systems like:

i. Human Resources Systems;

ii. Payroll Systems;

iii. Provident fund management systems;

iv. Inter branch transaction reconciliation;

v. Foreign Bank a/c reconciliation A/C (Nostro A/C);

vi. Statement of affairs

vii. Loan classification etc.

PBL 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.

Online Banking (Core Banking)

On line banking is one of the important task of the ICT division of this bank. They have strategic plan to get full pledge benefits of online banking when they started their operations. Now bank enjoy full pledge online banking facilities.

Bank rely on Vendor Company just for set up central server and implementing software but others supporting task will perform by the bank's IT staffs.

Mr. Md. Sams Arefin, SVP and head of IT business team of PBL said:

> *"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 PBL 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.

4.2.3 **Data from Operational level:**

4.2.3.1 Concept of MIS:

Management information System is tied with human decision making such as decision support systems, expert systems etc. A DSS (Decision Support Systems) is a computer based system capable of analyzing an organizational (or business) data and then presents it in a way that helps the user to make business decisions more efficiently and effectively.

Sayem chowdhury, SVP and branch manager, Sylhet Branch said,

> *"MIS deals with people, information & technology. It is a managerial decision making tool."*

Mahmuduzzaman, Trainee Assistant Officer (IT) of PBL said:

> *"MIS is the key information systems for providing information to support operation, management and decision making function in an organization."*

Both of them emphasized that management information systems are distinct from other information systems in that they are used to analyze operational activities in the organization to help management in decision making by providing all operational data.

One IT officer of PBL said:

> *"Initially in businesses and other organizations, internal reporting was produced manually and only periodically, as a by-product of the accounting system and with some additional statistics and gave limited and delayed*

information on management performance. Data was organized manually according to the requirements and necessity of the organization. As computational technology developed, information began to be distinguished from data and systems were developed to produce and organize abstractions, summaries, relationships and generalizations based on the data. This development has reduced time and cost."

AVP & manager of Operation in Sylhet Br., Ratan explained:

"We use management information system to provide with a centralized report management application to save all the required report in a common place. It also saves time and cost. Our bank has achieved cost efficiency."

Other respondents emphasized in flow of information through management. Information flows in different ways in different subject areas. MIS helps an organization to flow all root level of information to the management level. Right people in right place will get information at right time.

SVP and branch manager of PBL also stated that,

"Management information system is the study of people, technology, and organizations. MIS is the system, which makes available the right information to the right person, at the right place, in the right form, at the right time, at the right cost."

Mr Md. Iman Ali, SVP and branch manager, Sylhet Branch said about MIS & IT in following way:

"MIS deals with people, information & technology. It is a managerial decision making tool. IT and MIS has clear difference form the technical side. In our branch day start and day end process perform by the technical person. "

Researcher found in operational level of PBL few 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.

IS Designer and MIS Experts:

Information systems designer is a technical person who designs the system. He sets the systems how it is to work. A designer gets the top most position in the sector. MIS experts are not technical person; they are business persons who use the technology designed by the designers. They have to know everything of the business & using IS. MIS experts will be hybrid people knowledge about IT and business. An MIS expert support the designer to design a computer program to simulate the problem solving behavior of a human.

Operation manager of PBL 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."

Again , IT Officer sakib al Hasan, Sylhet Branch said,

"Technical users are technically expert who creates the system structure in the organization. End users work in the system created by technical users. They know how to work with the created system."

Researcher found all of the employees have given relevant answers. They what differentiates from IS designer & MIS experts and technical user & end user. It also found that some employees in junior position have poor knowledge about these aspects which is really alarming.

Branch manager Kawran Bazar explained:

"MIS graduates are business people with technical knowledge. They need no training about IT whereas other discipline graduates have limited or no knowledge on IT & need high training before starting the job."

4.2.3.2 Role of MIS in PBL:

The factors which the customers consider before choosing a particular bank are the ease of doing the business, the quality of the personnel and service, the range of financial services. To develop customer satisfaction a bank need to increase its effectiveness through using MIS. From the very beginning PBL used online banking.

A.S.M. Fahmi, AVP of Green road branch stated:

"MIS has a lot of uses at present in our bank. Such as decision making, operational supporting etc."

At present PBL practicing MIS in different aspects but slightly differ branch to branch because of understanding level MIS:

Probationary Officer, Shakhawat Hossain Ibne Ahad, Sylhet Branch stated,

"By using MIS bank can get maximum benefit. All information goes to management level and it helps to decision making. Head office keeps all the news of all branches."

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

Researcher found the following scenario:

"Generally PBL 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."

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

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.

4.2.3.3 Strategic Benefits of using MIS:

MIS is one of the important systems for making data available to the decision maker. Banking business also recognized the role of MIS in considering free flow information among the top management people. MIS ensures the accuracy of information & helps to take the right decision. It helps management to take proper & prompt decision. It also help to the operational level people to ensure speedy and low cost customer service.

Another branch manager also supports the decision of the above mentioned respondent and added following statement:

> *"As MIS used as a tool for making data available thus it will helpful for minimizing operating costs of the PBL."*

4.2.3.4 Infrastructure of the Bank:

In operational level of PBL 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 Role of MIS in operational level.

Website and Web mail:

Mr. Imrul Kabir Chowdhury branch manager of PBL 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 PBL 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 PBL in operational level.

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 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 operational 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. Prime 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. Prime Bank is one of the leading SGPCBs in Bangladesh. The bank has sufficient hardware for employees. The hardware acquiring policy of the bank is also satisfactory.

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. PBL 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.

Sayem 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 Prime 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.

Network Infrastructure:

Network is important for a bank to communicate with head office and other branches. If the network of a bank is poor than 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 to the server or main branch or to the consumer etc. The network structure of Prime 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,

> *"PBL have very good network infrastructure. We have T&T and two private networks."*

Networking sometimes hampers because of external problems. The national networking is not good, that is why although the bank has 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, bank faces problem because of 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 national environment.

Human Resources:

Human resource is economically active person. 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, human structure should be strong. Perfect number of human resource reduces pressure on some few employees. PBL has perfect number of employees for their given desk.

Mr. Md. Sayem chowdhury, SVP and branch manager of PBL 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 to use the system and they maintain banking needs of IT users.

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

> *"Salary has a good impact 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 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.

<u>Data Resources:</u>

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 financial decision there may arise problem, if data are not kept with high security than 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 SGPCBs 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. Every day data are sent to the head office. At the evening time data are stored on 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 now a days it is reduced, because after storing data by a banker, it is rechecked by other two bankers."*

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

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. PBL 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 competitive environment with Foreign Commercial Banks.

AVP 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 PBL has no problems regarding online banking but 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"

One of the important employees of IT division explains in such way:

> *What will be the practices of MIS and impact of MIS on performance of the bank closely linked with the departmental role of MIS how employee will be ready to reply it.*

CHAPTER - FIVE

ANALYSIS OF DATA

5.0 Introduction:

In this chapter the results of the data analysis are presented. The data were analyzed based on descriptive findings in chapter four considering theory and proposition in chapter two.

This chapter organized considering two aspects are: theory or model discussed in chapter two and descriptive findings of two comparative case study in chapter four.

For the purpose of simplify the presentations, tried to develop a matrix containing theory and data in many cases. Each of the matrices is discussed in detail.

This chapter is divided into four sections are: User understanding and MIS concept; importance of MIS application in banking business; MIS infrastructure of the bank; and finally role of MIS department in improving performance of the bank. Again each section divided again into two sub section (one for UBL and another for PBL).

5.1 User understanding and MIS Concept:

This section describes and analyses the descriptive findings on the understanding level of user on concept of MIS. It actually evaluates what MIS stands for, how they important for banking organization, how differentiate from other IS and finally how users familiar with MIS. Understanding level and familiarity of users' about MIS discussed from the theoretical aspects and explanation given by users considering some key issues of MIS. The discussion in this section begins with the MIS in UBL (5.1.1) and followed by the MIS in PBL (5.2.2) and finally the summary of the chapter (5.3) which includes the rationale for the next chapter. Further details on each of the section are provided in the beginning of each section, mainly to minimize repetition of the information.

5.1.1 MIS in UBL:

This sub section is designed to analysis the MIS application, user understanding level in UBL. It is thought all of the users in corporate level and operational level at least have clear understanding about MIS and its impact in application in the bank. Theoretical discussion about MIS deals with in chapter two (2.2.1). The conceptual framework of MIS includes input, process, and output. It collects data as input, process these data and finally produce information as output to support operations, management and strategic decision of the organization. The findings on the MIS framework in UBL are organized in figure 5-1 and users understanding about MIS in UBL are organized in figure 5-2 but it requires further analysis to assess the impact of users understanding on role of MIS in 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 MIS framework and users understanding about MIS.

Component of MIS	**Descriptions**
Input	Data collected in operational level, prepared data sheet, stored manually as well as in computer (offline) in few cases stored data through online.
Process	A consolidated report is prepared by zonal office, circle office or corporate level based on the collected data in operational level.
Output	Produce report offline and online (only online linked branches) regularly send it top management for taking strategic decisions.

Figure: 5-1: MIS framework in UBL in practice.

Theory suggests that MIS will automatically accept data inputted into the previous system (TPS) to generate report and ***input*** have direct impact on the performance of MIS (Laudon

& Laudon 2004, Parker & Case 1993, McLeod & Schell 2004). ***Processing*** is the task of MIS that generate ***output*** based on the requirements of the organization (Laudon & Laudon 2004, Parker & Case 1993). But descriptions not sufficiently explain that how MIS works in the UBL. Description explain input-process-output of MIS framework which practices in UBL in discrete form. Reasons may be UBL till now mixed of online and offline branches and users perform instruction basis works. Again all users have not idea of data input, process, and output of the systems. From the following statement of one operational level user of the UBL, reflects what is framework of MIS in UBL:

> *"Our operational level technical users prepared different report based on the Bangladesh bank instructions and recorded data according to format given by top authority. After preparing report and send it to circle then zonal and finally head office produce summary report for taking decisions."*

This part analysis about the user understanding about MIS practices in UBL. Users of UBL mainly focusing on the three aspects of MIS are: reporting systems, support decision making, assist top management depicted in Figure -5.2.

Users' of UBL	**Descriptions**
Emphasized on	Reporting systems, support decision making, assist top management
Knowledge level	Limited knowledge of users in operational level but partial knowledge of users in corporate level.
Practices	Only selected users are running the systems.

Figure: 5-2: users understanding about MIS in UBL.

The findings on the users understanding about MIS are organized in figure- 5.2. The findings provide general support for the users' understanding about MIS identified in chapter two but it requires further study to identifying the gaps to understand and

application of MIS. In the discussion relevant theories are applied to explain the findings and necessary comments on the theories are made. The discussion begins with the MIS & reporting systems, followed by the supports in decision making, and finally assist to top management.

5.1.1.1 MIS & reporting Systems:

This sub section actually analysis the users' views on MIS and relationship of 'reporting systems' with MIS. MIS is the routine reporting systems. It routinely produces semi structured report based on the TPS data (Laudon & Laudon 2004, Sen 1978). Mainly systems generate information in a report format based on the requirements of the users.

In UBL, most of the users have same idea about MIS. They considered MIS in bank actually a reporting system from the bottom to top management. In corporate level, management people have different views about the above mentioned concept of MIS. All of them define it as reporting system but some define it prepare according to the management requirements or instructions while others considered it as a predetermined systems. Though all the people of strategic level and management level in head office of UBL paying attention MIS as a bottom up approach of reporting systems mainly based on top management requirements of the bank for supporting operational and decision making purposes, actually they fulfilled all of the criteria of MIS application in any type of organization.

In case of online banking, many cases reporting is not required because all types data are available in server system needed to generate report based on the requirements of the top authority of the bank and UBL already develop such types of the systems. So in each cases bank are practicing MIS but they have limited idea or no idea about MIS concept.

Few executives in corporate level consider MIS just reporting systems of the UBL according to the guideline of Bangladesh Bank like SBS-2, SBS-3, and CIB reporting as the Bangladesh Bank given instruction to all the banks to open MIS section to perform above mentioned task. Again MIS in operational level of UBL mainly considered as a structured format given by the MIS & IT department for sending performance report about few heads from the operational level to corporate level. It implies that all users have not same idea about MIS. Question may be asked: why all users have not same idea about the concept of MIS? Reasons may be for this problem that users of UBL not have formal education, training on IT and IS.

Mrs. Sayla of WASA branch explained,

> *"MIS is the systems that generate customized report based on the management requirements of the bank from the accumulated data and in the operational level we are actually source of data. But our all employees have not clear understanding about the concept of MIS even on reporting systems."*

But most of the employees in the operational level explained MIS is the reporting systems of the prepared based on management requirements or generate customized report or continuous reporting systems about the current activities of the bank. So they want to consider **'reporting systems'** is one of the important characteristics of the MIS in banking operations.

5.1.1.2 Decision making tool and MIS:

This sub section actually analysis the users' views on MIS and the relationship of decision making with MIS. MIS supports in decision making process by giving all types historical data side by side current data. So MIS is very useful in effective decision making within shortest possible of time (Gorry & Morton 1971, Dickson et al. 1977, Senn 1978, Manson

& Mirtoff 1973, Lucas 1973, Parker & Case 1993, Post & Anderson 2003, Simon 1977, Mock 1973). In UBL, most of the users have same idea about MIS. They considered MIS in bank actually a reporting system to top management for making decisions. In corporate level, management people have different views about the above mentioned concept of MIS.

Theory suggests that supporting decision making is very important aspects of MIS but it also supports operational and management level activities of the organization (Davis & Olson 2000, Gupta 1998, Leader & Mendelow 1988, Laudon & Laudon 2004). Though the theory explains in multidimensional aspects but description emphasize only on decision making. Again description of corporate level data and operational level data have not showed similarity. It implies that users of the UBL in different level have different views and focusing on viewable dimensions only. Figure -5.3 explained how they different in understanding level on MIS about different aspects.

One branch manager of UBL explained:

> *"Our many employees have limited knowledge on MIS application in bank. They know MIS means reporting to top management which will be used in decision making purposes in future but they don't know it helpful in operational level and management level or other areas of application of the bank."*

Users of UBL clearly understand key characteristics of the MIS. Decision making is one of the key characteristics of the MIS which understand most of the users of the UBL even limited or low knowledgeable users of the UBL.

5.1.1.3 Limited understanding of MIS:

All most all the corporate level employees are more concerned about defining MIS as a tool for decision making. Theory suggests MIS assist in operational activities, managerial

activities, decision making activities of the bank (Davis & Olson 2000, Gupta 1998, Leader & Mendelow 1988, Laudon & Laudon 2004). But discussion disclose it partial and limited way. Again the operational level employees of UBL have different thinking about MIS. Although the branch managers have hold more or less similar idea like had office level people about MIS but employees of the bank totally different idea about MIS other than few exceptional cases. One of the UBL employee of Ramna corporate Branch holding principal officer position explained MIS in following way:

> "*MIS means working with the computer."*

Few Branch managers explained the MIS systems of the branch and understanding level of their employees:

> *"We always got readymade systems and top management understands what my requirement is, so they provide us user friendly systems thus we have to know about use of MIS rather meaning or development of MIS."*

5.1.1.4 Misunderstanding about IS & IT:

IT refers to processes and devices that enable creation, gathering, processing, storage, presentation and dissemination of information while IS refers to the process of gathering, processing, storing, distributing, and use of information, and its associated technologies, in society and organizations (Davis & Olson 2000, Laudon 2004). Information systems exclusively facilitated operational and management functions (Lederer & Mendelow 1988, Miller 1980, Mason and Mitroff 1973). Discussion reveals that employees of UBL have different understanding in different level about the concept of IS & IT. All most all the employees in the corporate level under IT department have more or less similar idea except slight deviation about the concept of IS and IT.

Corporate level employees are able to differentiate between IT & IS. They have at least basic understanding about IT & IS. Most of the employees explained Information

Technology deals with the technology involved in the systems themselves while Information systems are the design or process of transferring information into systems. IT is a supporting tool for decision making through IS.

Project manager of the online banking in the corporate level explained:

> *"Information technology is the tools for collecting and processing information using information Systems."*

All most all the corporate level employees are able to differentiate IT and IS clearly in every aspects. Again, Operational level employees have different thinking about the concept of IT and IS than the corporate level employees. Some of the operational level employees have fully misunderstanding about these two concepts.

In operational level many bankers describe Information Technology and Information Systems different way than others. But manager of the operational level are Able to distinguish between IT and IS. From the observation it was found that utmost misunderstanding of IT and MIS among the users of the systems means operational level users in UBL. But in management people in corporate level and three forth (75%) managers among the different branch have no remarkable misunderstanding between these concepts.

5.1.1.5 Misinterpretation about IS designer & MIS experts:

Theory suggests users of the systems need clear understanding to take better performance from the systems. As the term related with concept of MIS, so those who have not clear understanding about MIS concept may have misunderstanding about the concept of IS designer & MIS experts. In UBL, above statement has proven as a right from the observation and interview data.

Mainly in corporate level of UBL, IS designer and MIS experts distinguished as technically experts and application experts or professional level workers and management level workers or IT people and hybrid (about IT and business) people. Operational level employees have bizarre idea about the above mentioned concept like computer expert, IT expert, system administrator, system experts etc. Thus they misinterpreted the above mentioned concept. These results actually reflect the user characteristics of the UBL. For example, education, technical knowledge, training, skill and experiences of using IT and IS of UBL users in operational level.

From the analysis of the collected data through the observation and in-depth interview method about user understanding of MIS concept from UBL following conclusion may drawn under the three head in figure – 5.3:

Study conducted	**Respondents**	**Area of the study**		
		Concept of MIS	*Relationship between IT & MIS*	*Relationship between IS designer & MIS experts*
Corporate level	Management People	√	√√	√√
	Operational employees	√	√	√
Operational level	Branch Manager	√	√	√
	Operational employees	×	×	×

Figure – 5.3: User understanding about MIS concept in UBL

(× = Limited or no understanding √ = Average understanding; √√ = clear understanding).

5.1.2 MIS in PBL:

This sub section is designed to analysis the MIS application, practices and user understanding level in PBL. It is thought all of the users in corporate level and operational level managers have to have clear understanding about MIS and its impact in application in their bank. Theoretical discussion about MIS deals with in chapter two (2.2.1) and the conceptual framework of MIS deals with in previous part (5.1.1). The findings on the MIS framework in PBL are organized in figure-5.4 and users understanding about MIS in PBL are organized in figure -5.5. The findings on the MIS framework on PBL and users understanding about MIS in PBL provide sufficient support to the conceptual structure of MIS identified in chapter two but it requires further analysis to assess the impact of users understanding on role of MIS in PBL. By considering different relevant theories discussion were made to explain the findings and necessary comments on the theories. The discussions in this section consist of MIS framework and users understanding about MIS.

Component of MIS	Descriptions
Input	Data automatically inputted when operational activities performed in operational level i.e. in the operational level of the bank. Only a few cases data input into the systems reporting purposes.
Process	Systems store data in the server through online from all remote computers in the branch and corporate level.
Output	Routine reports generate periodically and customized report prepared based on the requirements of the top authority.

Figure: 5-4: MIS framework in PBL in practice.

Descriptions also support theory sufficiently and explain that how MIS works in the PBL. Descriptions explain input-process-output of MIS framework which practices in PBL in

logical sequence. Reasons may be PBL started IT based operation from the in conception of the bank in 1995 and at present all the branches of the bank are connected real time online banking. All users of PBL are efficient and perfectly know input, process, and output of the systems. From the following statement of one operational level user of the PBL, reflects what is framework of MIS in PBL:

> *"Our all branches have two categories of users one is general user and another is technical user. Technical users are expert in case of understanding of and practicing MIS and general users also understand about the systems working in the organization and know what MIS stands for?"*

This part analysis about the user understanding about MIS practices in PBL. Users of PBL mainly focusing on the three aspects of MIS are: reporting systems, support decision making, making data availability for strategic analysis depicted in Figure -5.5.

Users' of PBL	Descriptions
Emphasized on	Reporting systems, support decision making, making data availability for strategic analysis
Knowledge level	Sufficient knowledge of users in operational level but competent knowledge of users in corporate level.
Practices	Practicing MIS in all the branches and corporate level.

Figure: 5-5: users understanding about MIS in PBL.

The findings on the users understanding about MIS are organized in figure- 5.5.

5.1.2.1 MIS & reporting Systems:

In PBL, the majority of the users in corporate level have same idea about MIS. They considered MIS in bank actually a reporting system from the bottom to top management. In corporate level, management people have unique views about the concept of MIS.

They explained MIS mainly create information availability on different aspects banking business while management level people will use information based on their requirements.

All the people of strategic level and management level in head office of PBL pay attention on MIS as a system for supporting operational and decision making purposes of the bank based on the continuous reporting from the operational level to corporate level.

PBL now fully applied real time online banking systems before the one (1) year it applied online banking systems through distributed databases. Now the bank wants to apply MIS in every level of the bank. PBL employees are conceptually strong and dynamic in using information systems thus they have no misunderstanding about concept of MIS. Most of the employees explained MIS is the reporting systems to the top management people by collecting data from the operational level of the bank to top management for making data available to the decision makers at any level of the bank. So they define MIS as a system for data collection, process, store, and retrieved based on the requirement of the bank for supporting operations, management and decision making functions.

Again in case of PBL branch, MIS considered as decision making tools, systems for supporting operation, management and decision is making function of the bank.

5.1.2.2 Comprehensible understanding of MIS:

In PBL, All the corporate level top management people have no misunderstanding about the concept of MIS but a few employees have partial idea about MIS but not misunderstanding about the fact.

In PBL almost all the employees have unique understanding and clear concept of MIS which supports above explanation given by top management people. Those who have narrow idea about MIS, focused on Bangladesh bank guidelines like preparing SBS-2 or SBS-3 or CIB reporting only and this actually happened because of the absent of foresight

knowledge of the employees as they don't know about any systems other than desk work of that person.

Actually in PBL few 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.

The officers of Prime Bank have a little knowledge about MIS.

5.1.2.3 Diverse understanding about IS & IT:

Employees of PBL have different understanding in different level about the concept of IS & IT. All of the employees in corporate level under IT division have clear understanding about the concept of IS and IT. Their understandings fully support the theory given by above mentioned experts.

Employees of other division in corporate level of PBL have also similar idea other than few exception of depth knowledge about IT and IS but all of them have clear understanding about the application of IS and IT.

Many of them simply distinguish between IT and IS. As for example:

> *"Information technology is the supporting tools for using Information Systems."*

Though the operational level employees of PBL have different thought about the concept of IT and IS but branch manager has no misunderstanding about these concept. Again they know better about the systems application. Branch managers of PBL have given also similar type of opinion about the lower level employees of the branches.

5.1.2.4 Misinterpretation about IS designer & MIS experts:

IT designer and MIS experts are totally different things, actually IS designer is the top most position of the technical side and MIS expert is the non technical users of the IS. This statement is actually given by different br. Managers of PBL. Few employees of operational level of PBL have some diverse understanding about the concept of IS designer & MIS experts because of their limited foresight other than the working environment. Even these group of employees also problems of understanding about the concept of MIS and relationship between IT & MIS. But this percentage not remarkable among PBL employees.

From the analysis of the collected data through the observation and in-depth interview method about user understanding of MIS concept from PBL, following conclusion may be drawn under the three head:

Study conducted	**Respondents**	**Area of the study**		
		Concept of MIS	*Relationship between IT & MIS*	*Relationship between IS designer & MIS experts*
Corporate level	Management People	√√	√√	√√
	Operational employees	√	√√	√√
Operational level	Branch Manager	√√	√√	√√
	Operational employees	√	√	√

Figure-5.6: User understanding about MIS concept in PBL

(× = Limited or no understanding √ = Average understanding; √√ = clear understanding)

5.1.3. Summary:

From the analysis of the theory and data description of two banks it is found, users' understanding about MIS in banking sector is not satisfactory even not matches with the UBL and PBL. Again in every aspects and every area, PBL (representative bank of SGPCBs) showed one step advance understanding about MIS and its related concept than UBL (representative bank FGPCBs). Thus users of SGPCBs are more understandable about MIS and related issues of MIS than FGPCBs. But both cases it is important to understand importance of MIS application in bank.

5.2 Importance of MIS application in banking business:

This section describes and analyses the descriptive findings on the strategic importance of MIS application in banking sector of Bangladesh and role of MIS in increasing banking performance and productivity of the individual as well as bank. Strategic importance will be discussed from different aspects like cost, service time, waiting time of customers, customer satisfactions, employees' individual productivity and overall productivity of the bank. It will be discussed also role of MIS for supporting operational level, management level, strategic level functions of the bank. The discussion in this section begins with the strategic importance of MIS in UBL (5.3.1) and end with strategic importance of MIS in PBL (5.3.2).

5.2.1 Strategic Importance of MIS in UBL:

This section actually designed to analyze the discussion about strategic thinking of MIS application in UBL. It is thought that MIS application in banking will give competitive

advantages to the bank in the banking industry. Theoretical discussion of the strategic importance of MIS application in banking business dealt with in chapter two (2.6) and issues related to UBL also discussed in previous chapter (4.1.2.4). Study focused different dimensions of giving competitive advantage to the firms by using MIS. Dimensions are cost; waiting time; waiting line; prompt decisions; and individual's productivity, quick operating, and customer satisfactions. It also focused on supporting process on different level like operational level, management level, and strategic level of the bank. MIS supports in operational level for supporting operational activities, in mid management level for semi structured reporting, in top management level for strategic decisions.

The findings of the dimensions of giving competitive advantages are organized in figure 5.7. This finding provides general support for the strategic role of using MIS in banks identified in chapter two but it requires further analysis to assess the pertinent benefits bank already enjoyed or expecting from using MIS in FGPCBs. The discussion starts with the benefits of MIS in operational level activities then management level activities and finally decision making functions of the strategic level of the bank.

STRATEGIC BENEFITS THROUGH MIS APPLICATION AT UBL

Dimensions	**Status**	**Operational Level (Operational Activities)**	**Management Level (Semi structured reporting)**	**Strategic Level (Strategic decision making)**
Cost	**P**	Minimization proved	Minimization proved	Minimization proved
	E	Will be minimized at minimum level.	Will be minimized at minimum level.	Will be fall down at lowest possible per unit.
Waiting Time	**P**	Customer waiting time minimized at	Reporting time minimized at	Decision making time minimized

		online branches at average rate.	average level.	but not satisfactory level.
	E	Will be minimized at minimum level or near about zero.	Will be minimized at minimum level.	Decision making time will be minimized at minimum level or near about zero.
Waiting Line	**P**	Customer waiting line also minimized at online branches at average rate.	Simple waiting line in report producing as MIS used partially.	Simple waiting line in decision making as MIS used partially.
	E	Customer waiting line will be minimized at zero or near about zero in all service stations.	No waiting for report producing.	Decision will made by top management with the help of MIS by zero waiting.
Productivity	**P**	Operational productivity increasing at average rate.	Management level productivity not measured.	Decision making productivity is visible but not measured.
	E	Will be increased at remarkable rate.	Will be increased at highest level.	Will give competitive advantages.
Customer Satisfactions	**P**	Simple consideration	Follow top management instructions	Tougher task as no. of branches are many.
	E	Will give priority issue.	Will be given highest priority based on top management instructions and operational infrastructures.	Key issues to be a leader in the industry

Figure 5-7: Present and expected benefits of MIS application based on different dimensions in UBL

Note: Expected: E Present: P

Many experts explain the role of MIS in different way and considered how the organization will get strategic benefits over time and how these advantages will endure? Theory suggests that few dimensions but not fixed may indicators in which way strategic advantages of the bank can be measured. Strategically all these factors are crucial for gaining competitive advantages over time (Karim, 2011).

5.2.1.1 Cost:

Cost can be direct factor among the dimensions to reach at competitive position. It has direct impact on profitability performance of the bank if they hold generic strategic group (Kozak, 2005; Hill & Zones 2000). Cost is one of the important dimensions and description also sufficient about the role of MIS in minimizing overall cost of the bank which one is the crucial factor to be a cost leader in the banking industry. It has proved a small percentages of cost minimized using MIS in operational, mid management, and also strategic level at present but operational and management level expecting at minimum level and strategic level expect lowest possible per unit cost in future. Again description not clearly explain how the benefit will enjoy whether in short run or long run but theory suggest it can be short run as well as long run (Karim, 2011). Figure 5.7 suggest currently UBL proved cost minimization of using MIS. Traditional systems cost and MIS implementation cost not easily separated. One top management executive of UBL said:

> *Bank of course will get the benefits from the using MIS in managing cost and ensuring productivity. But some of the senior employees of UBL are not Able to cope with the systems thus per transaction cost not show the original scenario of the cost of using MIS in the bank even in the online banking*

branch. But bank will get benefits after few years when truly MIS will be implemented throughout the bank and some senior traditional employees will get retirement.

Again theory has given outline how cost can be factor to achieve strategic benefits (Hill and Jones, 2000; Porter 1978; Karim 2011) but description also support about the dimension rather given emphasize on speed and quick responses from the systems for taking strategic advantages in UBL.

5.2.1.2 Waiting Time:

Theory explains waiting time management dimension has also direct impact of servicing organization to convince customers and ensuring customer loyalty (Sasser et al., 1979). Waiting is frustrating, demoralizing, agonizing, aggravating, annoying, time consuming and incredibly expensive (Maister, 1985). Waiting time management is a considerable factor for achieving strategic advantages. Online banking or electronic banking emerges as a tool of managing time individual customer as well as organizational level. That's why it is demanded technology in the banking business today (Shamsuddoha, 2008). Though the waiting time management of customer is important factor but description not sufficiently explain about the role of waiting time management to get competitive advantages in the industry. But the description emphasize on speed of services in the operational level which indirectly lead to waiting time management. Management level people and operational level people both are agree that implementation of MIS will save time as it will increase speed of services. Figure 5.7 explain waiting time minimized at operational level only in those branches whose are under online network, reporting time of mid management activities also minimized, and finally decision making time also get speed but not in satisfactory level. But the expectation is very much high. They are expecting waiting time in each level will minimum or near about zero. But the description has not clear about the

waiting time management system of the bank. It implies that process of measuring waiting time and waiting time standard setup is very important at present for UBL. The question may be asked: what is the standard of waiting time and how the waiting time will be managed? The reason for this problem may be that organization not concerned about waiting time management rather they are committed to increase speed of services. One branch manager of UBL explained:

> *"MIS increase the speed of operational activities, prompt service. Now the customers get instant service any operational activities because of using MIS. Though our main target is customer satisfaction but in offline branches this service is not possible."*

Next dimension but crucial factor is waiting line. Though waiting time and waiting line is directly related but theory suggest both are different in few aspects which are discussed in next.

5.2.1.3 Waiting line:

Theory outline the concept of waiting time and waiting line is directly related but reasons for waiting time and waiting line not same. Waiting time may increase because of speed of service and long queue while waiting line may increase because of speed of services and number of customer arrival (Chervany, et al. 1971; Sasser et al. 1979; Maister 1985, Ronal et al. 2001). Description also not clearly explains about the waiting line management. It has not discussed about customer arrival management and customer service management. If the organization is not position to manage arrival by decentralize of service station through online service or service provided by trained employees organization may fail to utilize competitive advantages (Sasser et al. 1979).

Figure 5.7 suggest currently UBL minimize waiting line at average rate in operational activities to the customers and there is also a waiting line in management level & top

management level for taking strategic decisions. The possible reasons may be most of branches are still now offline. Description only emphasize on waiting line minimization possible in operational activities of different branches because of increased use of IS. Offline branches are used IT for preparing report and sending to circle, zonal and finally head office for final reporting and strategic decisions. Description also reflect that users are expecting this waiting line will no longer when MIS will implement in full phase with the real time online banking. One offline branch manager said:

> *"We have face few problems in preparing report of MIS according to the instruction of Head office and Bangladesh bank timely as we have not online facilities but because of computerization and LAN facilities within the bank minimize waiting line in case of taking service of the client."*

5.2.1.4 Productivity:

The term productivity directly related to the efficiency, input and output. Theory suggests productivity is the key factor to take strategic advantages of any firm in the industry and MIS can play imperative role in any organization to achieve efficiency and effectiveness (Chervany, et al. 1971; Kozar 1972, Benbasat 1974). Theory also explains banking business already impacted by the use of information systems and there is an optimistic relationship between MIS application and productivity and cost savings (Kozak, 2005). Thus other theories suggest MIS has direct impact on input output relationship (Chandrasekhar and Sonar, 2008). Descriptions also clearly explain about the role of MIS in productivity of the individual as well as operational level and finally organization wide. Almost all of the branch managers and Top management people describe about the positive impact of using or practicing MIS in the UBL. Figure 5.7 productivity part suggest operational productivity of the UBL increased in operational level but individual productivity is questionable means selected employees productivity has increased those

are using IS but not all employees. In mid management level and strategic level, executives have understand that their productivity has increased but they have not used scale for measuring productivity actually how much increasing at present. Even decision making productivity not measured by considering cost of input and value of output. Figure also suggests all level are expecting by using MIS in future they will get highest level of productivity in UBL. It implies that process of measuring productivity of the systems is not so easy for UBL at present and standard of productivity is not defined clearly. Cost of input of individual and overall systems in terms of traditional and additional MIS implementation cost not easily segregated. Again standard of productivity may not known to operational level employees and also value of output measured partially. The question may be asked: why cost of Input in old system segregated from new system and why value output measured partially? The reason for this problem may be that their target only output and output measured partially only considering profits but not considered customer satisfaction, organization value in the competitive market.

One top management executive of UBL said:

> *"For taking the correct and effective decision management has to rely on correct data in timely manner. MIS supports in decision making process by giving all types historical data side by side current data. So MIS is very useful in effective decision making within shortest possible which lead to the increase profits of the UBL."*

Again he explained:

> *"In operational level with the help of MIS one can do many works which support to minimize number of employees and overall cost of the organization. So ultimate result of the Bank is profit increased."*

Another branch manager said:

"We have done doable of works per day than before. This is only because of using IS in our branch."

5.2.1.5 Customer Satisfactions:

Banking Sector 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. Social and economic disparity and lack of internet accessibility which creates digital divide is a great hindrance towards customer satisfaction of the business organization which ultimately results negative customer relationship management (Ali, 2010). Not only banking business but also all the services organization facing stiff completion and try to get competitive advantages through the specialized customer services to ensure customer satisfaction. So customer satisfactions are a key issue to attain strategic advantages in the industry (Shamsuddoha, 2008; Parasuraman et. al 1985; Zeithaml et. al 1990; Ravichandran et al. 2010; Anderson and Sullivan 1993; Bearden and Teel 1983; Bolton and Drew 1991; Cardozo 1965; Cronin and Taylor 1992; LaTour and Peat 1979; Oliver 1980). However customer satisfaction is important issue to attain strategic advantages but in the description this dimension is considered primarily or not got priority concern.

Figure 5.7(customer satisfaction part) suggest currently operational level of UBL considered MIS as a simple factor while management level has no separate decisions while they wait for top management instructions and top management considered it is a strategic issue but complex at present for increasing customer satisfaction. But expectation of top management of the bank in near future that this issue will give highest priority and it will be strategic issue to achieve competitive advantages. These indicate they are not self sufficient for considering customer as a key factor. The question may be

asked: why UBL not considered customers satisfaction as a key issue for ensuring strategic benefits at present? The reason for this difficulty may be that their MIS infrastructure is not sufficient which are only used in selected branches. Thus it is not possible to satisfy all the customers at a time. One operational level employee said:

> *"We have loose our competition because of large number of branches are under offline and we are not Able to compete with others SGPCBs in Bangladesh. But without customer it is not possible to achieve strategic advantages of UBL."*

Another Top management explained:

> *"Actually customers' expectation is to get prompt, secured, reliable, low-cost service from the bank and in some cases customized service. MIS will help to the bank for giving such types of services. So, MIS practicing in our bank will be given benefit strategically and we already understand few symptoms to increase customers' satisfaction."*

5.2.2 Strategic Importance of MIS in PBL:

This section actually designed to analyze the discussion about strategic thinking of MIS application in PBL and presented as like as previous section. Main differences between two is previous one analysis data collected from UBL which is representative case of FGPCBs and current one will analysis data collected from PBL which is representative case of SGPCBs. Theoretical discussion of the strategic importance of MIS application in banking business dealt with in chapter two and issues also discussed in previous chapter. Study focused different dimensions of giving competitive advantage to the firms by using MIS.

The findings of the dimensions competitive advantages are organized in figure 5-8. This finding provides general support how MIS strategically important for banking based on the theoretical discussion identified in chapter two but it requires further analysis to assess

the unique benefits of the bank which already enjoyed or expecting from using MIS in PBL. The discussion starts like previous section with the benefits of MIS in operational level activities then management level activities and finally decision making functions of the strategic level of the bank.

STRATEGIC BENEFITS THROUGH MIS APPLICATION AT PBL

Dimensions	**Status**	**Operational Level (Operational Activities)**	**Management Level (semi structured reporting)**	**Strategic Level (Strategic decision making)**
Cost	**P**	Cost minimized at significant rate	Cost minimized at significant rate	Cost minimized at significant rate
	E	Tried to be a cost leader.	Tried to be a cost leader.	Tried to be a cost leader.
Waiting Time	**P**	Customer waiting time minimized in all branches.	No waiting in reporting at mid management level.	Prompt decision making possible in top management level.
	E	Will be minimized at minimum level or near about zero in all branches.	Maintaining zero waiting in reporting process.	Decision making will depends on MIS resources only but MIS will ensure zero waiting in supporting top management.
Waiting Line	**P**	Small or no waiting at all branches and operational level head office.	No waiting line in report producing.	Simple waiting line in decision making because of decision maker's waiting.
	E	Will be minimized at minimum level	Maintaining no waiting line in	Decision making will depends on

		or near about zero in all branches.	reporting process.	MIS resources only but MIS will ensure no waiting line in case supporting top management.
Productivity	**P**	Operational productivity has proven in satisfactory level.	Management level productivity not measured.	Decision making productivity is visible but not measured.
	E	Continuing operational activities with highest individual productivity.	Will be increased at highest level.	Will give competitive advantages.
Customer Satisfactions	**P**	First priority	First priority	Key issue
	E	First priority	First priority	Key issue

Figure 5-8: Present and expected benefits of MIS application based on different dimensions in PBL

From the theory given by different experts explained in chapter two, previous section depicted few dimensions about the role of MIS in different way and considered how the organization will get strategic benefits over time and how these advantages will endure? Theory suggests that few dimensions but not fixed may indicators in which way strategic advantages of the bank can be measured. Strategically all these factors are crucial for gaining competitive advantages over time (Karim, 2011).

5.2.2.1 Cost

Theory explained that cost is one of the crucial factors that give competitive advantages over time in any type of organization. So banking organizations have to consider how cost can be minimized in every aspects of the banking activities like operations, decision making etc. It has direct impact on profitability performance of the bank if they hold generic strategic group (Kozak, 2005; Hill & Jones 2004). Cost is one of the important

dimensions and description also given emphasized on the cost minimization process by using MIS. Descriptions also support that PBL already enjoying cost efficiency through application of MIS. Figure 5.8 suggest currently PBL already prove cost minimization of using MIS at significant rate and their expectation in future they will be cost leader in the industry. PBL minimize cost in different level by using MIS. One top management executive of PBL said:

> *"Bank now enjoying cost advantages in different level like operations, reporting, decision making etc. Main target of the bank at present how competitive advantages will come through the cost among SGPCBs rather FGPCBs as SGPCBs are more competitive in using MIS."*

Though the theory has given outline how cost can be factor of achieving strategic benefits (Hill and Jones, 2000; Porter 1978; Karim 2011) but description emphasize not only cost but also other dimensions like speed of services and quick responses from the systems for taking strategic advantages.

5.2.2.2 Waiting Time:

In the discussion in previous section given explanation how waiting time management is important to gain competitive advantages over competitors in service industry like banking sector. Discussion supported by different theory in referencing waiting line management. Theory highly emphasize on waiting time management for achieving strategic advantages (Sasser et al. 1979; Maister 1985; Shamsuddoha 2008). According to the Figure 5.8 PBL already ensure customer waiting time minimization in all branches as well as reporting and decision making in corporate level, now they have target to zero waiting in every cases. Even descriptions address the issue of waiting time minimization by using MIS in all level of the bank. Description also emphasize on speed of services in the operational level which indirectly lead to waiting time management. They are

expecting waiting time in each level will minimum or near about zero. Though the system automatically minimized the waiting time of customers but the description has not clear about the waiting time management system of the bank in operational level. It implies that process of measuring waiting time and waiting time standard setup is very important at present for PBL. The question may be asked: what is the standard of waiting time and how the waiting time will be managed? The reason for this problem may be that top management aware about the systems but operational level employees may not aware but the employees are committed to perfect utilization of the systems.

One branch manager of PBL explained:

> *"MIS plays a very imperative role to increase operational efficiency of the bank. Our all employees are committed to do their assigned duty and this is possible because of systems given by the bank. In some cases employees don't know about ins and outs of the systems but they can do anything with the systems. But our top management understands what requirements of a branch."*

5.2.2.3 Waiting line

Waiting time and waiting line both has direct impact on customer satisfactions of any service organization which has direct impact on competitive advantages of the firm (Sasser et al. 1979; Maister 1985). Theory suggests some cases waiting time may short but long waiting line has psychological impact on customers thus it requires minimizing by decentralization of services (Maister 1985, Ronal et al. 2001

Discussion support also theory about waiting line management which has strategic impact of the bank and PBL also recognize the benefits of using MIS for managing waiting line. Figure 5.8 suggest PBL has no waiting line in operational service to the customers in general but some cases in pick our may be small queue in customers waiting line. Bank expecting it will be zero within shortest possible time. At present bank has waiting line in

report produce as systems produce report and input given by responsible employees of the bank. In case of decision making there is no waiting also but decision some cases wait because of decision makers waiting. Description also reflects that top management is expecting this waiting line will no longer when the MIS will implement in full phase.

One top management MIS executive said:

> *"After implementation of real time online banking we will erase the concept of waiting line. Operational activities will be distributed more efficiently through SMS, internet, mobile banking. Mid management reporting will update automatically and decision makers will not wait for any information rather information will stored before decision making situation arising. Thus we think about DSS rather MIS in PBL."*

5.2.2.4 Productivity:

Any firm in the industry can expect strategic advantages without ensuring efficiency and effectiveness. According to the theory, MIS can play essential role in banking organization to increase competitive advantages (Kozar 1972, Benbasat 1974). Theory also explains how MIS contribute positively to increase individual performance and overall productivity of the firm. Descriptions of PBL also clearly explain about the role of MIS in increasing productivity of the individual as well as operational level and finally organization wide. Almost all of the branch managers and Top management people describe about the positive impact of using or practicing MIS in the PBL. Figure 5-8 productivity part suggest operational productivity of the PBL's increased in considering operational activities of the bank at satisfactory level but in management level and strategic level productivity of the firm could not measured perfectly but productivity progress is visible for every stake holder of the bank. Above figure also suggests, PBL expecting each level of banking activities will ensure highest level of productivity through MIS application in future. One branch manager of PBL said:

"Our employees now doing three or four folds of works comparing works load of the bank of three years back but they leave the branch at last two hours before than past. This is actually happening only for using IS in the bank."

5.2.2.5 Customer Satisfactions:

In the modern competitive world, all the service organizations facing stiff competitions in satisfying customers needs which is the key considerable factor to ensure competitive advantages. Banking Sector is very important sector in the service industry. Theory also supports that not only for taking competitive advantages but also to survive organization has to be consider customer satisfactions level on their provided services (Parasuraman et. al 1985; Zeithaml et. al 1990; Ravichandran et al. 2010; Anderson and Sullivan 1993).

Descriptions also clearly explain about the pattern of the customer satisfaction and have given a specific concern on this dimension. Figure 5-8(customer satisfaction part) suggest currently operational level and management level of PBL has given priority concern about MIS application to increase customer satisfaction. They will continue to give priority on wrapping customer satisfaction in future. Strategic level executive also consider this dimension as a key issue to take strategic advantage and their expectation is to continue this operation in future also. Though they have given priority issue in customer satisfaction but they are not leader in banking industry in this issue. These indicate they are not in position to handle all customers' needs perfectly or they have lacking in customer relationship management. The question may be asked: why PBL not in position to handle all customers' needs perfectly? Though PBL have solid MIS infrastructure and it is updating, but not a leader in customer satisfaction in the competitive industry. So PBL may have limitations in other area of management like administration policy, marketing policy etc.

One top management employee said:

> *"At present we have not problems in IS. We are ready give all types of services to the customers but we are not position to serve all customers in all corner of the country because of our limited branch network considering many other branch networks and we are re thinking about our financial policy but within shortest possible time we will ensure our competitive advantages."*

Another Top management explained:

> *"We are trying to give full satisfaction of the customers though perfect utilization of our current MIS infrastructure."*

5.2.2.6 Strategic Groups:

Though SGPCBs are stronger in using MIS in their banking operation and some cases they are not thinking about the competition from FGPCBs. They think SGPCBs are their competitive group but theory explain different way that the future impact of IS will not vary significantly with the banking groups (Rawani & Gupta 1999). But the discussions not clear about strategic group of PBL in using MIS in future.

5.2.3. Summary:

From the analysis of the theory and data description of two banks it is found, both the banks given strategic importance of MIS in different aspects like cost, waiting time, waiting line, productivity and customer satisfactions. In every cases, PBL (representative bank of SGPCBs) showed one step advance in current conditions and future expectations on above mentioned aspects than UBL (representative bank FGPCBs). Thus users of SGPCBs are more competitive than FGPCBs. But both cases it is need understand practicing level of MIS.

5.3 MIS infrastructure:

This section describes and analyses the descriptive findings on the MIS infrastructure of the banking sector of Bangladesh. MIS infrastructure will be discussed from different aspects like Users' participation, development environment, operational environment, human value judgment, and MIS environment of the bank. The discussion in this section begins with the MIS infrastructure of UBL (5.3.1) and end with MIS infrastructure of PBL (5.3.2).

5.3.1 MIS infrastructure of UBL:

This sub section actually designed to analyze the discussion about MIS infrastructure of the UBL. It is thought that bank have to have IS infrastructure for smooth application of MIS in bank and to get give competitive advantages to the bank in the banking industry. Theoretical discussion of the MIS model & proposition and infrastructure of MIS dealt with in chapter and issues related to UBL also discussed in previous chapter. Study focused different propositions of MIS model relate MIS infrastructure of the bank. Propositions are Users' participation, system development environment, operational environment of the bank.

The findings of the different dimensions relate to MIS model & infrastructures are organized in to different figure shown in next part sequentially. The discussion starts with Users' participation of UBL and followed by system development environment, operational environment of the UBL.

5.3.1.1 Users' participation of UBL:

This part mainly designed to discuss the Users' participation of the UBL. Generally it is considered that users of any systems should have every capability to work with the systems and knowledge about the systems. Theoretical discussion about the Users

participation discussed in chapter two (2.2) and factors of the Users participation explained in sub proposition -1 (one) in chapter two. Factors of the Users' participation considered education of users, training of users, IT knowledge of users, and users' friendly systems which determine the use process of the systems and impact on the MIS performance and finally on bank's performance.

The findings on different factors of Users' participation of the systems organized in figure-5.9. The discussion begins with the educational qualification of the users and followed by training taken by users, IT knowledge of users and ends with systems' user friendliness of UBL

Factors	**Operational Level**	**Mid Management Level**	**Strategic Level**
Educational Qualifications	**Below Average**	**Average**	**High Average**
Training	**Inadequate**	**Inadequate**	**Adequate**
IT knowledge	**Inadequate**	**Inadequate**	**Inadequate**
Systems friendliness	**Not trouble-free (online banking)**	**Limited trouble (online banking)**	**Trouble free**

Figure – 5.9: Users' participation of UBL

1.1 Educational qualifications of the UBL users:

Educational qualification is one of the important personal characteristics of the users that affect the performance of the systems and finally affect performance of the organization (Lucas 1973, 1975; Mock 1973). Though the model suggest educational qualification determine employees level of understanding of MIS and adopting in system utilization but

description not clearly explain how educational qualification may affect the systems' performance and ultimately on bank performance.

Figure – 5.9 suggest Educational qualification of UBL users' vary from different level of the bank. In operational level most of the employees educational qualification not up to the mark rather below average. Thus employees of the UBL those would be the users of the systems but all are the part of the systems but not 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 users' educational qualification also average and within shortest possible time it will be improved. In strategic level all users educational qualifications high average and up to the mark but not excellent. It implies that UBL cannot consider the qualifications of employees to increase the system's performance.

Theory suggests all employees who are part of the systems should have above average educational qualification to understand the systems and operate with the systems. But most of the old UBL 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 UBL not considering above standard qualification of users? The reason for this problem may be UBL not consider qualification of users in utilization of the systems.

One top management executive of UBL 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 old employees educational qualification not suit with current banking business transactions of UBL, but present recruitment policy consider the required educational

qualification of the employees of UBL. Thus, this factor will not create any hindrance on performance of the systems and overall performance of the bank.

1.2 Training level of UBL users:

Consideration 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). Model suggests training of the users on IT and other banking functions directly impact on the performance of the MIS and overall performance of the bank. But description clearly explain that UBL users have not taken sufficient training to use the systems and some cases training not effective to get effective output from the systems.

Figure – 5.9 suggest training taken by UBL users' is not adequate in operational and management level but strategic level people has sufficient training to understand IT, MIS and managing systems of the bank.

One of the senior level employees said:

> *"Our most of the old employees not taken training on MIS and few have taken training as a time passing rather increasing efficiency. Only newly recruited employees perform all MIS works in the UBL."*

1.3 IT knowledge of UBL users:

In the competitive service industry organizations have to have competiveness in providing service to the clients (Chan 2005; Boulding et al. 2005). 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 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). Model suggests IT knowledge of users directly impact on the performance of the MIS and overall performance of the bank. But description plainly explain that UBL users have not sufficient knowledge on IT to use the systems and some cases IT training not effective for the users of UBL. Description showed only 30% users of UBL are the computer users and trained but many of them are not trained to use any type. But descriptions showed newly recruited employees have basic knowledge of IT and computing.

Figure – 5.9 suggest IT knowledge of UBL users' is not adequate in every level of the bank according to their requirements. In strategic level they may have basic 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 and strategic level employees have IT and MIS knowledge to use the systems efficiently.

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 UBL have deviation in knowledge of IT which affect use process of the systems of the bank, thus performance of MIS and overall bank is not satisfactory.

5.3.1.2 Information systems development environment of UBL:

This part mainly designed to discuss the systems development environment of the UBL. It is thought that systems developer should have competency to develop a reliable and user friendly systems. Theoretical discussion of system development environment discussed in chapter two (2.2) and factors of the systems development environment explained in sub proposition – 2 (two) in chapter two (2.8). Factors of the systems development environment consist of technical education of IS designer, methods of IS development, training system analyst and developer, experiences, motivation, and management of IS development & maintenance.

The findings on different factors of systems development environment of the systems organized in figure-5.10. The discussion starts with the technical education of the systems analyst and developer and followed by methods of IS development, training of system analyst and developer, experiences of system analyst and developer, motivation of system analyst and developer, and ends with the management of IS development & maintenance of UBL.

Factors	**Outcome**
Technical education of the systems analyst and developer	Adequate
Methods of IS development	Not suitable

Training of technical people	Adequate
Experiences of technical people	Limited
Motivation of technical people	Inadequate
Management of IS development & maintenance	Not satisfactory

Figure – 5.10: Systems development environment of UBL

2.1 Technical education of the systems analyst and developer of UBL:

Technical education is one of the key factors for the technical people like systems analyst, systems designer, systems developer. It is thought that all technical people will have sufficient technical education to develop effective systems. Model suggest performance of the bank depends on systems performance while systems performance depends on development process of the systems and it is somehow depends on the quality of information systems education of systems developer. Description not focused on the technical education of the systems developer because it is precondition for technical person entry into the bank. But description not clear about the quality of education of IS developer.

Theory suggest that development process of the IS directly depends on the technical education and institutional education of the IS designer or developer (lves and Olson 1984; Yadav 1983).

Figure – 5.10 suggest technical education of UBL technical person is adequate for development of any systems but the quality of the education not explain here. It implies that UBL technical users' quality may not proved. The question may be asked: why UBL technical users' quality not proved? The reason for this problem may be UBL technical

users have not got chance to show their technical expertise as the bank depends on out sourcing for development any type complex systems rather simple one.

One top management executive of UBL said:

> *"Though we have a large proportion of business experiences employees but they have deficiency of using IS but we are not suffering for end users but we are facing problems of shortage technical person in the bank."*

On the other hand one technical user said:

> *"Our top management have not rely on us for development any type of complex systems for UBL."*

Since the technical users of UBL not directly involved in development of the systems, thus it is not so easy to measures impact of technical education on development process of the systems of UBL.

2.2 Methods of development of IS in UBL:

One of the important variable of IS development environment is development methods and techniques of IS e.g., systems development methodology, intervention techniques which directly affect performance of the systems (Ives et al. 1980; Mock 1973; Alter 1975). Model suggests that methods and techniques of IS development affect on development process of the systems within the bank. Though the theory directly explains the role of methods and techniques applied in the systems development process but description is fully in sufficient to describe the role of methods and techniques of IS development in UBL.

Figure – 5.10 suggest methods of IS development in UBL not suitable because they depends on outsourcing. Though the UBL not directly involved in in-house production of complex type of systems, but UBL directly intervene with the out

sourcing parties of the bank. It implies that UBL think about systems development process with the interaction of third parties of the bank.

So it is fact that methods and techniques of IS development directly impact on the system development process and performance of the systems.

2.3 Technical training of UBL users:

Organization can increase awareness about the importance of continuous learning, the degree of motivation to broaden knowledge and develop individual skills through training (Blaga & Tripon, 2011). Technical training mainly provide for increasing technical skills of the employees. Model suggests training of technical person in the bank impact on the development process of the systems which directly impact on the performance of the MIS and overall performance of the bank. Description also clearly explain that UBL technical users have taken sufficient training to use and develop systems but they use systems efficiently while they have limited scope to develop new systems. Again descriptions narrowly define the training relationship with developing systems, performance of MIS, and finally with performance of the UBL.

Figure – 5.10 suggest technical training taken by UBL technical users' is adequate for developing new systems for the bank. It implies UBL has no problems in arranging training session for technical person and technical person has no problems in taking training.

Theory suggests if the technical people take training on their related issues they will be efficient in developing systems and systems will be error free (Ives et al. 1980; Mock 1973). In UBL technical people have not showed their efficiency in developing systems. They just develop simple systems which can be performed without institutional education but complex systems perform through outsourcing.

The question may be asked: why UBL depends on out sourcing for developing systems for UBL? The reason for this problem may be UBL decision makers not rely on UBL technical person for developing any type complex systems for the bank.

One top management executive of UBL said:

> *"Our technical people have not showed their technical expertness, how we can rely on them? Systems development should not be trial and error basis."*

Since the technical users of UBL not directly involved in development of the systems, thus it is not so easy to measures impact of technical training on systems development process of UBL.

2.4 Experiences of technical people:

Experiences directly impact on performance of any person in the organization. Technical people are not beyond the organizational environment. With the increases of experiences, efficiency of the employees also increased (Iyaniwura and Osoba 1983; Oyeranti 2000). Model developed in the chapter two (2.8) suggests that technical experiences of the employees have straight impact on the development process of any IS within the bank which reliably impact on the performance of the MIS and overall performance of the bank. But discussion not clear about the impact of experiences employees on development process of the IS and ultimate impact on the performance of the systems and performance of the bank. Figure – 5.10 suggest experiences of UBL technical users' are limited for developing new systems for the bank.

Theory suggests if the technical users stability not ensured in-house IS development process will not reliable and effective. Thus many organizations give priority to maintain technical users in the organization (Blaga & Tripon 2011; Ives et al. 1980).

The question may be asked: why UBL technical users' experience is limited? The reason for this problem may be: UBL technical users' job experience is low or UBL IS using history is not old or technical users' turnover is high. In practical, IS using history of UBL not new. They are the leader in using computerized systems and IS among the FGPCBs and job experiences of some UBL technical users is not low. It implies that technical users' turnover is high in UBL.

One top management executive and technical users of UBL said:

> "*We have not utilized our technical people those entering into UBL as fresh graduates. Once upon a time they lost their spirits to develop new things.*"

If UBL try to utilize their technical users, it is possible to develop and maintain efficient IS in UBL and once upon a time these experienced technical users will play important role in developing effective systems for the bank which ultimate impact on the performance of the bank.

2.5 Motivation of technical people:

Motivation is the willingness to exert high levels of effort toward organizational goals conditioned by the effort's ability to satisfy some individual need. Top management of the organization motivate by providing an environment that induces organization members to contribute (Wiersma 1992; Deci 1975; Baker et al. 1988). Motivation not needed only for technical people but also for general employees. But it is a pre condition for somehow different workers like the technical people. Model developed in the chapter two suggests that ideal motivation of the technical users have direct impact on the development process of any IS within the bank which dependably impact on the performance of the MIS and overall performance of the bank. But discussion not emphasize in the previous chapter on motivation of technical users which may impact on development process of the IS and

ultimate impact on the performance of the systems and performance of the bank. But discussions narrowly explain about the technical users' expectation or lack of motivation from the top management to technical users which may impact on performance of them.

Figure – 5.10 suggest motivation of UBL technical users' are inadequate for trying their level best in development process of the systems for the bank.

Theory suggests if the technical users' spirits of contribution is important for in-house IS development process of the organization. Thus many organizations give priority to motivational policy of the organization (Wiersma 1992; Deci 1975; Deci 1971; Fransman 1998; Baker et al. 1988). The question may be asked: why UBL have not different motivational policy for technical users? The reason for this problem may be: In UBL pay structure, technical users' has not different designation or top management not agrees to categories them as a special. In practical technical users job responsibility is different from general users and they are comparing with business people in the bank. It implies that UBL has not different motivational policy for technical people.

One mid level technical users of UBL said:

"Our job responsibility is totally different from others. We have not followed official time table but we have any special benefits for extra servicing."

ABL top management would rethink about motivational policy of the bank which may focused some on technical people who will develop and maintain total IS of the bank which will play important role in developing and maintaining effective systems for the bank which ultimate impact on the performance of the bank.

2.6 Management of IS development & maintenance:

Management of IS development & maintenance is another key variable of IS development environment e.g., IS development planning and control systems which also directly affect

performance of the systems (Sullivan 1985; Rawani & Gupta 2002; Ives et al. 1980). Model suggests that management of IS development & maintenance affect on development process of the systems within the bank. Though the theory directly explains the role of management of IS development & maintenance applied in the systems development process but description is fully in sufficient in relation to management of IS development & maintenance in UBL.

Figure – 5.10 describe management of IS development & maintenance which includes IS development planning and control systems in UBL not in satisfactory level.

Theory suggests if the organization not maintain development and planning policy its systems development process will face hindrance and finally affect on performance of the systems (Ives et al. 1980).

The question may be asked: why UBL have not satisfactory IS planning and development policy for maintenance and development of IS in UBL? The reason for this problem may be: UBL planning and development policy relate to IS development may not strictly followed. As they have shortage of MIS people, they have depends on third party for planning and development of IS. Again, UBL is passing transition period from traditional to real time banking and some cases parallel systems working in some branches. For this reason, there is deviation between actual works done and planning and maintenance policy.

5.3.1.3 Operational environment of UBL:

This part mainly designed to discuss the operational environment of the UBL. Usually it is thought that performance of the systems and performance of individual mainly depends on the operational environment of the organization. Theoretical discussion about the operational environment discussed in chapter two (2.2) and factors of the operational

environment explained in sub proposition -3 in chapter two (2.8). Factors of the operational environment consists of hardware resources, software resources, data resources, networks resources, IT workers, and support personnel which determine the operation process of the systems and impact on the MIS performance and finally on bank's performance.

The findings on different factors of operational environment of the systems organized in figure-5.11. The discussion begins with the hardware resources, software resources, data resources, networks resources, IT workers, and ends with support personnel of UBL.

Factors	**Operational level**	**Corporate level**
Hardware Resources	(Fully insufficient)*	Not sufficient
Software Resources	Fully Sufficient	Fully Sufficient
Data resources	Managed	Managed
Networks Resources	Sufficient	Sufficient
Support personnel	(Fully insufficient)*	Not sufficient

***** Sufficient in some selected branches and not sufficient in others but considering future all are fully insufficient.

Figure – 5.11: Operational environment of UBL

5.3.2 MIS infrastructure of PBL:

This sub section in fact designed to analyze the discussion about MIS infrastructure of the PBL. In the current competitive environment, it is thought that IS infrastructure is the precondition for smooth application of MIS application in banking sector. Theoretical discussion of the MIS model & proposition and infrastructure of MIS dealt with in chapter two and issues related to PBL also discussed in previous chapter. Like UBL, study in this

section also focused different propositions of MIS model relate MIS infrastructure of the bank.

The findings of the different dimensions relate to MIS model & infrastructures are organized in to different figure shown in next part sequentially. The discussion starts with Users' participation of PBL and followed by development environment, operational environment, human value judgment, and MIS environment of the PBL.

5.3.2.1 Users' participation of PBL:

This part mainly designed to discuss the Users' participation of the PBL. Users are key stakeholders of any systems, thus users of any systems should have competence to work with the systems and knowledge about the systems. Theoretical discussion about the Users participation discussed in chapter two and factors of the Users participation explained in sub proposition -one in chapter two. Factors of the Users' participation already discussed in previous subsection of UBL. Similar factors are considered for analysis of Users' participation of the PBL.

The findings on different factors of Users' participation of the systems organized in figure-5.12. The discussion begins with the educational qualification of the users and followed by training taken by users, IT knowledge of users and ends with systems' user friendliness of PBL

Factors	**Operational Level**	**Mid Management Level**	**Strategic Level**
Educational Qualifications	**Average**	**High Average**	**High Average**
Training	**Partially**	**Adequate**	**Adequate**

	adequate		
IT knowledge	**Partially adequate**	**Adequate**	**Adequate**
Systems friendliness	**Trouble free**	**Trouble free**	**Trouble free**

Figure – 5.12: Users' participation of PBL

1.4 Educational qualifications of the PBL users:

Educational qualifications determine the users capability of using IS, thus it is one of the important indicators of performance of the systems and performance of the bank (Lucas 1973, 1975; Mock 1973). Model discussed in the chapter also suggest that educational qualifications of an individual positively correlated with IS using in the bank. Description in the previous chapter about this issue not clearly explain how educational qualification may affect the systems' performance and ultimately on bank performance.

Figure – 5.12 suggest Educational qualification of PBL users' not tremendously varied among the different level of the bank. In operational level almost all employees' educational qualifications average in the banking industry. Thus employees of the PBL not facing tremendous problems in using systems because of their general education allow basic knowledge of using systems and understanding banking. Again in management level and strategic level users' educational qualification also high average and up to the mark even in a few cases excellent. It implies that PBL recruitment policy to entry into bank is average or above average considering educational qualifications requirement of banking industry.

Theory suggests all employees who are part of the systems should have above average educational qualification to understand the systems and operate with the systems and

almost all the PBL's employees have standard general education. Thus the PBL has not mentionable problems in various levels in the bank.

One top management executive of PBL said:

> *"Our all employees' educational qualifications up to the mark. Thus the bank not facing any problems regarding using any systems and their performance are well."*

Since the old employees of PBL educational qualification match with the systems requirements and to understand the systems, thus, this factor will not create any hindrance on performance of the systems and overall performance of the bank.

1.5 Training level of PBL users:

Training creates people perfect on his job and ensures efficiency of any individual (Tripon & Blaga, 2010). Model suggests training of the users on IT and other banking functions directly impact on the performance of the MIS and overall performance of the bank. But descriptions clearly explain that PBL users have taken training that partially adequate for running the systems in operational level. Again all employees not trained in operational level means in operational level. Only those are technical person in branch have taken training for using systems efficiently. But description sufficiently explain how employees' training determines the use process of the systems, while descriptions narrowly define the training relationship with use of systems, performance of MIS, and finally with performance of the PBL.

Figure – 5.12 suggest training taken by PBL users' is partially adequate in operational but in management level and strategic level people has sufficient 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 MIS in PBL. The question may be asked: why all PBL users not trained on using MIS? The reason for this problem may be PBL not consider MIS training is the key factor to increase operational efficiency of the firm.

One of the senior level employees said:

> *"In PBL, each branch only few selected employees are IT knowledgeable employees but they do not know about 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."*

In PBL all employees at branch have to be trained for minimizing dependency of each other between two groups are business people and technical people.

1.6 IT knowledge of PBL users:

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). Model suggests IT knowledge of users directly impact on the performance of the MIS and overall performance of the bank. But description clearly explain that PBL users have sufficient knowledge on IT to use the systems to providing services to the customers based on the current needs but they are partially adequate in IT knowledge while management and strategic level people of PBL have sufficient knowledge on IT & MIS. But descriptions clearly showed all the employees of PBL have basic knowledge of using computers.

Figure – 5.12 suggest IT knowledge of PBL users' is not perfectly adequate in every level of the bank according to their requirements. In management and strategic level they have adequate 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 and strategic level employees have IT and MIS knowledge to use the systems efficiently. But all operational level employees of PBL not advance knowledge and training on IT & MIS. It implies that PBL users in all level 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 PBL all operational level employees have not taken sufficient training as the management policy only IT people will get advance training on IT & MIS.

One top management executive of IT division said:

> *"In PBL 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 corporate 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 operational level and responsible for troable shooting the systems in operational level, identifying the problems in the systems, communicating with the corporate level, day start of the bank and day close and some cases doing some business task. Thus others users in operational level are not efficient using IT or MIS and they depend on IT people."*

Since users of PBL have deviation in knowledge of IT which affect use process of the systems of the bank, thus performance of MIS and overall bank may not achieved in future. Thus bank's needs to change policy to develop hybrid people rather technology or business oriented.

1.7 Systems friendliness:

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). Model discussed in the chapter –two suggest easy access into the systems have direct relationship with the performance of the systems. Descriptions clearly explain that users of PBL not facing any type of problems in using systems and it have impact on the performance of the PBL. But descriptions given outline that PBL 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 for another place.

Theory suggests systems should be design considering the users capability of using systems thus they accept any type of change in the existing systems (Nelson et al. 2005; Gorla et al. 2010).

Figure – 5.12 suggest system using at operational level, management level, and strategic is trouble free. It implies that systems using in PBL fully perfect in all levels.

PBL create specialization on using systems by technical and non technical people. But it may create problems in case of unavailability of technical people in operational level. Thus MIS people (hybrid knowledge) may be better solution in smooth operation in operational level.

5.3.2.2 Information systems development environment of PBL:

This part mainly designed to discuss the systems development environment of the PBL as like as previous one (5.3.1.2). Whatever the business environment, systems developer should have ability to develop a reliable and user friendly systems to fulfill every requirements of the business. Theoretical discussion of system development environment discussed in chapter two (2.2) and factors of the systems development environment explained in sub proposition – two in chapter two (2.8). Factors of the systems development environment of UBL also considered for PBL.

The findings on different factors of systems development environment of the systems of PBL also organized in figure-5.13. The discussion initiates with the technical education of the systems analyst and developer and followed by methods of IS development, training of system analyst and developer, experiences of system analyst and developer, motivation of system analyst and developer, and ends with the management of IS development & maintenance of PBL.

Factors	Outcome
Technical education of the systems analyst and developer	Adequate
Methods of IS development	Suitable
Training of technical people	Adequate
Experiences of technical people	Sufficient
Motivation of technical people	Inadequate
Management of IS development & maintenance	Satisfactory

Figure – 5.13: Systems development environment of PBL

2.7 Technical education of the systems analyst and developer of PBL:

Technical education is one of the key factors for the employees of the organization to solve technical problems and managing technical task of the organization. It is general philosophy that all technical people will be technically sound means they have sufficient technical education to develop effective systems. Model suggest performance of the bank directly related to the systems performance while systems performance depends on development process of the systems while quality of information systems depends on education of IS developer. Descriptions clearly explain PBL has not problems on the technical education of the systems developer as they have proved their efficiency in developing many systems for the bank and already used in PBL.

Theory also given outline that development process of the IS directly depends on the technical education and institutional education of the IS designer or developer (lves and Olson 1984; Yadav 1983).

Figure – 5.13 suggest technical education of PBL technical person is adequate for development of any systems. It implies that PBL technical users' quality is not questionable.

One corporate level technical users said:

> *"We are capable of doing any works with the systems. According to the instruction of the head of IT we can design any systems for the bank and many systems already used in the bank those we have already developed."*

Since the technical users of PBL directly involved in development process of the systems, thus the systems performance is better than vendor as there is no middle man in systems analyst and systems development of PBL.

2.8 Methods of development of IS in PBL:

Model suggests that methods and techniques of IS development have direct relationship on development process of the systems within the bank. Description also sufficiently explain the role of methods and techniques of IS development in PBL.

Figure – 5.13 suggest methods of IS development in PBL suitable because the bank mostly depends on the internally developed software and PBL directly involved in in-house development of complex type of systems. It implies that PBL is the right track in developing systems by using different methods and techniques applied in the bank.

Theory suggests IS development methods and techniques e.g., systems development methodology, intervention techniques which directly affect performance of the systems (Ives et al. 1980; Mock 1973; Alter 1975).

As the description support the theory and no problems in the IS development methods and techniques, so bank would focused on IS maintenance with development in PBL.

2.9 Technical training of PBL users:

Model explains the relationship of technical training and the development process of the systems which directly impact on the performance of the MIS and overall performance of the bank. Descriptions also clearly explain that PBL technical users have taken sufficient training to use and develop systems and they showed their performance in developing new systems. But descriptions narrowly define level of impact of training on developing systems, performance of MIS, and finally with performance of the PBL.

Figure – 5.13 suggest technical training taken by PBL technical users' is adequate for developing new systems for the bank. It implies PBL has no problems in arranging training session for technical person and technical person has no problems in taking training.

Theory suggests technical training is the part of increasing efficiency of technical skills of individual employees mainly provide for increasing technical skills of the employees (Blaga & Tripon, 2011). If the technical people take training on their related issues they will be efficient in developing systems and systems will be error free (Ives et al. 1980; Mock 1973). In PBL technical people have showed their efficiency in developing systems. Most of the systems of the bank other than T24 software of the bank developed, by the PBL's internal technical people.

2.10 Experiences of technical people:

Experiences have direct impact on the employee performance of any organization while technical people are not capable of doing routine works without any experiences. Thus with the increases of experiences, efficiency of the employees also increased (Iyaniwura and Osoba 1983; Oyeranti 2000, Porter 1985; Hill & Jones 2004). Model discussed in the chapter two (2.8) suggests that technical experiences of the employees have direct impact on the development process of any IS within the bank which consistently impact on the performance of the MIS and overall performance of the bank. Discussion also clearly portray about the impact of technical experiences of employees on development process of the IS and ultimate impact on the performance of the systems and performance of the bank. Figure – 5.15 suggest experiences of PBL technical users' are sufficient to develop new systems for the bank.

According to the theoretical explanation, technical users' efficiency mainly depends on the in-house IS development process of the bank and their experiences which may ensure systems creativity and reliability (Blaga & Tripon 2011; Ives et al. 1980).

If PBL try to utilize their technical users efficiently, bank would be given them better scope in future and once upon a time these experienced technical users will play important role and bank will be pioneer in developing and implementing new systems in the bank without any risk.

2.11 Motivation of technical people:

Motivation is one of the crucial factors that influence on commitment of the employees and directly or indirectly impact on the performance of the individuals and groups. Model developed in the chapter two (2.8) suggests that perfect motivation of the technical users have direct impact on the development process of any IS within the bank which consistently impact on the performance of the MIS and overall performance of the bank. But discussion narrowly describe about the impact of motivation of technical users which may impact on development process of the IS and ultimate impact on the performance of the systems and performance of the bank.

Figure – 5.13 suggest motivation of PBL technical users' are inadequate for trying their level best in development process of the systems for the bank.

Theoretical explanation clearly identify that technical users' spirits of contribution is important in development process of IS in the organization (Wiersma 1992; Deci 1975; Deci 1971; Fransman 1998; Baker et al. 1988). The question may be asked: why motivation for technical users of PBL not sufficient? The reason for this problem may be: PBL pay structure has not different categories for technical and non technical users' and has not different designation or top management not agrees to categories them as a special.

But technical users of PBL have implied expectation of getting extra advantages than general users in different level. It implies that PBL has not different motivational policy for technical people.

One top management IT people of PBL said:

> *"Our technical people are more responsible than other SGPCBs and they have commitment for serving bank differently but they have secret expectation of fringe benefits from the bank."*

PBL top management would rethink about motivational policy of the bank which may focused some on technical people.

2.12 Management of IS development & maintenance:

Management of IS development & maintenance has some impact on development process of the systems within the bank explain in the model discussed in chapter two. Description also clearly explain about the IS development & maintenance of PBL which sufficiently explain that IS development & maintenance of PBL is adequate. Theory suggest management of IS development & maintenance is another key variable of IS development environment e.g., IS development planning and control systems which also directly affect performance of the systems (Sullivan 1985; Rawani & Gupta 2002; Ives et al. 1980).

Figure – 5.13 describe management of IS development & maintenance which includes IS development planning and control systems in PBL in satisfactory level. That's why management of IS development & maintenance in PBL positively impact on performance MIS and ultimately performance of the bank.

5.3.2.3 Operational environment of PBL:

This part mainly designed to discuss the operational environment of the PBL. Theoretical discussion about the operational environment discussed in chapter two (2.2) and factors of the operational environment explained in sub proposition -three in chapter two (2.8). Factors of the operational environment consists of hardware resources, software resources, data resources, networks resources, IT workers, and support personnel which already used to discuss operational environment of UBL and these factors will determine the operation process of the systems and impact on the MIS performance and finally on bank's performance.

The findings on different factors of operational environment of the systems organized in figure-5.14. The discussion complete with the chronological presentation of different factors of figure 5.14.

Factors	**Operational level**	**Corporate level**
Hardware Resources	Fully Sufficient	Fully Sufficient
Software Resources	Fully Sufficient	Fully Sufficient
Data resources	Managed	Managed
Networks Resources	Sufficient	Sufficient
Support personnel	Not sufficient	Sufficient

Figure – 5.14: Operational environment of PBL

5.4 Role of MIS department in UBL and PBL

This part mainly designed to discuss the role of IT or MIS department in improving performance of the bank. Theoretical discussion about the role of IT or MIS department detailed discussed in chapter two. Role of MIS department actually role of MIS not

different but what will be the application of MIS depends on departmental in the organization. Theory showed and description also sufficiently supported that MIS mainly played a vital in minimizing cost, smoothing operations, providing timely needed information, and ensuring customer satisfaction.

Findings from the descriptive case study of UBL and PBL showed that both the banks currently enjoyed and expected more in future from IT or MIS department in improving overall performance of the bank.

The discussion complete with the chronological presentation of different factors of figure 5.15.

Factors	**UBL**	**PBL**
Cost	Average	Satisfactory
Operations	Satisfactory	Satisfactory
Timely information	Satisfactory	Satisfactory
Customer satisfaction	Average	Satisfactory

Figure – 5.15: Role of MIS department in improving performance in UBL and PBL.

CHAPTER - SIX
IMPLICATIONS AND CONCLUSIONS

6.0 Introduction:

This thesis has been organized into six chapters which were structured, unified, and focused on solving one research problem (Chapter - One). The first chapter set the scene by introducing the core research problem and outlined the path that the reader will travel towards its conclusion. Chapter two identified from the existing body of knowledge, research gaps and theory. Then, by using various methods try to achieve objectives in chapter three. Descriptive cases were presented in chapter four. Again chapter five describe about findings from practical case described in chapter four. Finally, implications and conclusions about the research explain in this chapter.

Theories related to role of MIS in different organizations also relevant to the MIS application in bank because of the purpose of the organization and also the nature of the study. Efforts have been made to consider few theories related to MIS application, role of MIS in different aspects of the organization. The discussion of this chapter will show that each theory is suitable for specific findings and appears to be satisfactory in every aspects of MIS application. An attempt is being made to suggest possible modifications of the chosen theory where appropriate. In practical terms, a number of implications for users in MIS department and all levels (Operational level, Management level, Strategic level) in the bank who involved in using, designing and development, maintaining of the MIS. Moreover, there are some valuable insights for the studied bank and future researchers.

The discussion of the chapter begins with theoretical implications (6.1) and followed by practical implications (6.2) for the users of the systems of UBL, UBL and the new researchers, conclusions of the study (6.3), Limitations (6.4) and finally, the summary (6.5).

6.1 Theoretical Implications:

This section is presented to examine the theoretical implications of the comparative study. The nature of the research suggests theories relating to scope, functions, and strategic importances of MIS application 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 findings related to literature (6.1.1) and also the relationship with proposed model (6.2.2).

Certainly there was evidence in the application of MIS which introduced as a new and emerging field of Business. There were clear links between the stories told by the participants and the theories associated with brief discussed in the literature review (Miller 1980, Manson & Mirtoff 1973, Lucas 1973, Mock 1973, Gorry & Morton 1971, Parker & Case 1993, Mcleod & Scell 2004, Gupta 1998, Post & Anderson 2003, Zmud 1984, Ives et al 1980, Laudon & Laudon 2004, Davis & Olson 2000, Sen 1978, Dicksen et al. 1977, and Simon 1977). For almost all participants it was possible to identify stages, phases or tasks associated with these theoretical models but in discrete form. Frequently the specific words were used by the participants, “computer based systems, Data collection, process, reporting, and bottom up approach, operational support, and decision making support”. The brief responses varied depending on a range of variables, including technical education, knowledge about IS, Job experiences, IT training taken, user friendly systems, and working environment. No-one followed a clear-cut process which matched perfectly any of the theoretical stages or phases – the stages overlapped for some; participants regressed at times; some internalized their responses until a later date; and some picked up the contagion of brief from others. Each individual experienced the brief differently and at different paces but there is little doubt that this was a significant emotion experienced by

most of the participants involved in this study.

There was a clear evidence of ample scope to utilize the MIS department to fulfill unique needs of the organization. There was a clear evidence of the strategic role of MIS department in business organization (Robson 1997, Benjamin 1984, Earl 1989, Silk 1991). They explained how MIS create importance in business organization at the given time. From the discussion with the participants and observation found also banking organization think about strategic essence of MIS for the business organization in the modern competitive business arena.

Observed Bank already enjoyed few benefits in operational level to strategic level through practicing MIS. Participants explained it as quick decision support, prompt reporting, reliAble data, customized service, low cost service, substitute decision maker, timely decision etc. (4.1 & 4.2). Next phase will discuss about the proposed model and its proposition and deviation of the theory with proposed model.

From the analysis of the theory of MIS given by different theorist, researcher found individually all the theory are partially applicAble for practicing MIS in any service organization like banking organization. From the observation and in-depth interview researcher found few gap in theory of MIS and practice banking organization. Some scholars explain IS and MIS used as an alternative form of one another (Dickson et al. 1977, Miller 1980, Lucas 1973, Gorry & Morton 1971). Compare with other theory of MIS, Ives et al. (1980) defined more widely than others. This theory mainly focused all the aspects of user environment, operational environment, and development environment.

6.2 Practical Implications

The findings of the study have a number of implications for FGSGPCBs and SGSGPCBs and for TGSGPCBs also that those who have or have not MIS or IT department.

However, all these practical implications must he considered in the light of the limitations of the study that are covered in the next section. The implications of this study can be organized in four ways. First the implications (first the implications for users of the bank (6.2.1), then for the MIS department, then for the studied bank (6.2.2) and finally for future researchers in this field (6.2.3).

6.2.1 Implications for the users

The study focused on role of MIS department in improving performance of the bank in the banking sector of Bangladesh. So, main beneficiaries of the systems are the users of the systems. Study found huge gap between expectation and current practice of the bank according to theoretical explanation discussed in chapter two and participant views in chapter four while chapter five focused on findings from analysis of that issue. Study findings also help to the users for minimizing their problems which will lead to improve performance of the bank.

6.2.2 ***Implications for the MIS department of the bank***

From the study MIS department will get maximum benefits. Theory supported how the MIS department contributes in improving performance and data description and analysis also supported it but some cases MIS department of the bank not played key role because of their lacking in users, operations and IT infrastructure. So this study will guide to the department for improving their surrounding factors which will lead to improve overall performance of the bank.

6.2.3 ***Implications for Studied bank***

Bank will get benefit from 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 will help to the bank for setting

their policies to strengthen departmental role in improving performance of the bank. Again these study findings are more practical and theoretically proved.

6.2.4 *Implications for the future 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 by findings of the study . Again they can be started their new research based new idea generated through this study but not proved considered limitations for this study.

6.3 Conclusion

The overall objective of the study was to find out role of MIS department to improve performance level of the organization in the banking sector of Bangladesh. The main aims were i) current MIS practicing and needs of in the banking sector Bangladesh; ii) To identify factors that affect activities of the MIS department in the bank. iii) to consider implications of these findings for the theories of MIS application.

In order to achieve these ends literature of MIS application were reviewed in chapter two and identified few factors of 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 MIS practicing from the two banks (one from FGPCBs and another from SGPCBs). The descriptive findings on both the case study were presented in the chapter four of this thesis. Then the relevant theories were applied to explain the findings in chapter five. Having applied the theories, role of MIS in FGPCBs and SGPCBs were analyzed giving attention to the outcome of data (chapter –five). Finally two hypotheses were 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 previous section.

Now questions are: what conclusions can be drawn from the study and what suggestions can be made for future study in the departmental role of MIS? The rest of the chapter will focus on the answering above questions.

On the basis of the data description and analysis of those data, the central conclusions of the study are: Role of MIS department not unique in the banking sector of Bangladesh and performance of the bank mainly depends on critical role of the MIS department of the bank. Again critical role of MIS department depends on few factors like user's participation, operational process, and IT infrastructure (Ives et al.1980) which was proved theoretically and practically.

Each of the components has same type of impact in both cases though FGPCBs and SGPCBs both are not in same position in the practicing level of MIS in the bank. Turning to another central conclusion based on the analysis, this research hypothesized that:

i. Competences of each type variable have related type of impact on the departmental role of MIS.
ii. Departmental role of MIS has positively related with overall performance of the bank.

Discussion related to the process of development of these two hypothesis mainly discussed in the chapter –four and support by the analysis in chapter five which is empirical foundations of this study.

The discussion in this section begins with the understanding level of MIS, scope of role of MIS, and finally results of MIS practicing level in UBL and PBL.

6.4 Limitations of the study:

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 SGPCBs and one leading FGPCBs but not considered any TGPCBs. MIS application in emerging SGPCBs not have any complexities because of small number of branches and located mainly in urban areas while many leading SGPCBs may not have such types of opportunities. Again nature of the complexities may be similar in emerging SGPCBs and leading FGPCBs but there is a variation in the degree of complexity.

Thirdly, size of the studied bank in SGPCBs is small in terms of number of users, number of transactions, investment thus individual SGPCBs is not fully representative in terms of number of users, number of transactions.

Finally, this study mainly focused on only one organizational issue, that is, direct factors of departmental role of MIS application. There are other organizational issues that have a relationship with performance of practices of MIS and may have impact on overall performance of the bank.

Considering these limitations In view of above limitations and also on the basis of the findings of the study, certain recommendations are given bellow:

6.5 Recommendations

Firstly, this research has given special attention to improving performance with a significant role of MIS department. It leaves open the question of level of impact in practicing MIS. Possible areas of research include the impact of MIS practicing in banking sector.

Secondly, this research observed that users are not uniquely skilled in using IS in different level and within level of the bank. Thus use process of MIS differs individual to individual and branch to branch. This actually happened because of their training, education, technical knowledge etc. which was considered as users' environment of the MIS and it has impact on the use process of MIS and ultimate relationship with the practices of MIS. Moreover, the level of impact of MIS on bank not measured through direct factors. Thus it might be possible area to conduct research in future: impact of users' environment of MIS on performance of the organization.

Thirdly, research considered top management support but not analyzed the level of impact of top management support thus future study might be in the impact of top management support on improving role of MIS department in the organization.

Fourthly this research has specially focused on the IT infrastructure of the bank and found positive relationship with the practicing level of MIS of the bank but research

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Appendix - A

Sample In-depth Interview Guide

Research Title:
Role of MIS department in organizational performance: A comparative study on commercial banks in Bangladesh

Researcher:

Md. Saiful Hasan

IN-DEPTH INTERVIEW GUIDE

Department of Management Information Systems

University of Dhaka

Dhaka-1000, Bangladesh

Name of Interviewer **: MD. SAIFUL HASAN**

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
- Difference of Information Systems Designer and MIS expert
- Difference of Technical users and End Users

STRATEGIC ESSENCE:

- Benefits
  - Management
  - Operations
  - Decision making
- Risk
- Comparison of MIS graduates with any other discipline

FRAMEWORK:

- Current practices of MIS
- Existing infrastructure of IT & IS
  - Hardware
  - Software
  - Networks
  - Human resources (technical users & End users)
  - Data management
- Needs of expansion
- Problems faced

Appendix - B

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: How MIS beneficial to management level of your bank?

Question: How MIS beneficial to operational activities of your bank?

Question: Do you think MIS can assist to increase customer satisfaction of the bank and how?

Question: Do the employees of your bank are satisfied by using MIS?

Question: How MIS beneficial to decision making process of your bank?

Question: Do you find any risk of using MIS in banking sector especially in your bank?

Question: will you get strategic benefit by using MIS in your bank compare with other PCBs?

Question: How can differentiate MIS graduates than other discipline or others?

Question: What are the roles of MIS department of your bank at present?

Question: By comparing MIS practicing with SGPCBs, what is your position?

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 you bank has needed to expand IT infrastructure or have any gap between existing structure 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?