

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the study

This is the world of competition and constantly changing the control and redesign is getting increasingly more important for organizations. The pressure of being more efficient is an issue of organizations in all sizes. How an organization redesign itself can be crucial when it comes to the future of the organization to produce value and to keep a competitive advantage. An organization that is failing to reinvent itself can lose the struggle on the competitive and constantly changing environment.

One way of reinvent an organization is the implementation of Computerized System (CS) such as a Management Information System (MIS). Designing a Computerized Information System (CIS) for organizations can be a challenge for the designer, because of the differences in organizational structures and cultures on every organization.

An organization is a group of people intentionally organized to accomplish an overall, common goal or set of goals. Business organizations can range in size from two people to tens of thousands. Members of the organization often have some image in their minds about how the organization should be working, how it should appear when things are going well. MIS supplies the fact information to the decision makers. It also supports and enhances the overall decision making process and increase the job performance throughout the organization. At the most senior level, it provides the data and information to help the board and management make strategic decisions. At other levels, MIS provides the means through which the organization's activities are monitored and information is distributed to management, employees and the members.

MIS is based on Information Technology (IT) that helps to optimize the use of scarce resources through intelligent information support for decision-making, and helps further in its implementation by supporting coordination effort without wasteful delays. Decision making has become a very complex process due to competitive environment, scarce

resources, strict timeline, and unavoidable compulsions to achieve goals. It is extensively used for decision-making; ease of operation, communication and record keeping and for obtaining higher productivity from the system in which it is put to use. This system should be accessible and usable at all appropriate levels of the organization.

Global changes are penetrating all societies and communities around the world, bringing more innovations, competition and introducing new trends, directions, and ways to do things differently. In this IT age, the Internet and the World Wide Web have introduced new ways of doing business and also brought many challenges and opportunities in the global market-place to the main players of the business. Today, the use of cutting-edge information and communication technology is becoming a cornerstone in dealing with the competitive pressure faced by different businesses around the world.

**One such technology that is gaining the momentum is MIS that has totally changed the way of doing business and traditional business perspective. All types of business organization and industries are re-engineering their business process to implement MIS in their core business practice to stay competitive in this dynamic business environment to earn more profit and minimize the ever increasing operation costs. It replaces old outdated slow methods by fast ones by allowing handling big and complex data and its structure with ease, which was never possible earlier. It helps to test the solution without implementing them. The distance and access are no longer technical or operational problems, as information stores anywhere can be used without its personal possession.**

**It has affected the work culture in organization and lifestyle of each individual. Hence, the study will focus on integrating the IT to design the MIS of Micro-credit program of Manushi.**

### **1.1.1 Introduction to Manushi**

Manushi was established in 1991 A.D. This is a non-profit and non-governmental organization. Its major program is to promote the poor, disadvantaged and marginalized women and men through training, facilitating and placing them in diverse gainful

activities including handicrafts and small business. This organization initially focused on the promotion of arts and crafts produced by the members of this program. Manushi has now grown and diversified its activities incorporating management and skill training, entrepreneurship development, **micro-credit for women**, health & environment, and gender concerns directly impacting on women's empowerment and community development. Its major goal is to promote gender perspective in sustainable development, enhance social and economic status of people through fair trade and put them in the forefront of human development.

**Micro-credit** program of Manushi was commenced in 1996, in collaboration with different development and financial institutions. This program is fully guided by the principles of the micro credit summit campaign for empowering women such as reaching the poorest, building financially self-sufficient institutions and ensuring positive and measurable impact on the lives of women and their families. Manushi is currently partnering with Rural Microfinance Development Centre (RMDC) for micro-credit activities. In recognition of its success in inspiring and promoting the marginalized women, the Micro-Summit Campaign honored Manushi With a 'Certificate of Appreciation' in 2001. As this thesis work is only concentrated on Micro-credit program of Manushi among many other programs run by Manushi, the term “**Manushi**” in this report shall be considered as the “Micro-credit program of Manushi” unless and otherwise stated.

### **1.1.2 Introduction to Micro-credit**

Micro-credit is a program extending small loans, and other financial services such as savings, to very poor people for self-employment projects that generate income, allowing them to care for themselves and their families. The micro-credit institutions deliver very small loans to unsalaried borrowers, taking very little or no collateral. These methods include group lending and liability, pre-loan savings requirements, gradually increasing loan sizes, and an implicit guarantee of ready access to future loans if present loans are repaid fully and promptly. Micro-credit emphasizes building capacity of a micro-entrepreneur, employment generation, trust building and help to the micro-entrepreneur

on initiation and during difficult times. Micro-credit is a tool for socioeconomic development.

Typical micro-credit clients are poor and low-income people that do not have access to other formal institutions. Micro-credit clients are usually self-employed, household-based entrepreneurs. Their diverse micro-enterprises include small retail shops, street vending, artisanal manufacture, and service provision. In rural areas, micro-entrepreneurs often have small income-generating activities such as food processing and trade etc.

Micro-credit service is commonly delivered by the non-for-profit and non-governmental organization. As though, Manushi is one of the organizations which is established to promote poor disadvantaged, marginalized people to help alleviating poverty line in Nepal. To form a group Manushi does an area survey whether the villagers are ready for the program or not by giving their introduction program to them. If they are ready, they start the program by giving them one week long Pre-Group Training (PGT). From the initial day of the PGT the group is formed.

Manushi was licensed by Nepal Rastra Bank (NRB) and Rural Micro-credit Development Center (RMDC). RMDC is such an organization which guides the micro-finance institutions for further extension, expansion and development. It is the guiding and monitoring body of the micro-finance institutions. It provides the capacity building training to the partnering micro-finance institutions as well.

### **1.1.3 Introduction to MIS**

When the concept of MIS was first introduced, its supporters envisaged a single system that would integrate all organizational functions. Others doubted the possibility of designing computerized information systems to support management planning and decision-making functions, particularly at the strategic level. Over the years the concept of a total system proved to be too complex to implement. Now MIS consists of a federation of subsystems, engineered as needed but conforming to the overall organizational plan, standards, and procedures. MIS continues to evolve.

The most fundamental element of MIS and the management process is information about the objectives, policies, resources, operations, and environment of the organization. In today's complex management environment, no individual manager can have sufficient personal knowledge to serve the diverse needs of the organization. Hence, the role of the MIS in an organization can be compared to the role of heart in the body. The MIS plays exactly the same role in the organization. The system ensures that an appropriate data is collected from the various sources, processed, and sent further to all the needy destinations. The system is expected to fulfill the information needs of an individual, a group of individuals, the management functionaries: the managers and the top management. (Fong 2006: 5)

MIS satisfies the diverse needs through a variety of systems such as Query Systems (QS), Analysis Systems (AS), Modeling Systems (MS) and Decision Support Systems (DSS). The MIS helps in Strategic Planning, Management Control and Transaction Processing.

Typically, Management Information System (MIS) is a computerized Information System, which is used within an organization. WorldNet describes information system as "a system consisting of the network of all communication channels used within an organization". A MIS may also be defined as "a system that collects and processes data (information) and provides it to managers at all levels who use it for decision making, planning, program implementation, and control".

In addition, information system is comprised of all the components that collect, manipulate, and disseminate data or information. It usually includes hardware, software, people, communication system such as telephone lines, and the data itself. The activities involve inputting data, processing of data into information, storage of data and information, and the production of outputs such as management reports.

**We can also define MIS by the following points:**

- **MIS is an organized or planned effort and not the result of some sporadic attempts.**

- **The primary function of MIS is to provide information.**
- **MIS is a facilitating or supporting system to aid managerial functions and not merely help operational tasks, that is, the MIS provides information that assists managers at different levels in the organization.**
- **MIS is formed from a number of components, including hardware, software, manual procedures, models, and a database.**
- **MIS is a system of users and machines, the users are as important to the system as the machines.**

To assure the effective management system, it has to rest on business information. The management performance improves if the business risk and uncertainties are handled effectively. If the information provided is adequate, one can deal with these factors squarely. The information support improves the lack of knowledge, enriches experience and improves analytical abilities leading to better business judgment.

So, if efficient information support is to be provided, it calls for a system with the goals of generating management information. A good MIS must furnish information to the managers to expand their knowledge base. He must know the adverse trends in business, the shortfalls and failures in the management process.

The MIS should provide the support to act and to act decisively. It should support management in terms of basic business information at the corporate level and meet the specific needs of the managers. It should highlight on the critical success factors and support key areas of management. MIS should have, wherever possible, decision support systems to help the manager in decision making.

MIS should be designed, viewing the organization as discussed earlier. MIS design should give due importance to the human side of the organization and its culture. The task and technology are the physical aspects of the organization which can be ascertained very easily. But culture and people are very difficult to assess from the design point of view. MIS design should give reports in line with the organization structure. This means that the main decision makers and the power centers must be recognized in the MIS.

The most pressing concern of management is the cost-effective utilization of human and economic resources, timely availability of quality information, and improved user experience. Hence, the focus of present study is to address the above concerns with the design of MIS for Manushi. The study entitled “Analysis of Critical Factors for Designing Management Information System for Micro-credit program of Manushi” analyzes existing system in detail, identify important processes, design and propose the system that is capable of achieving the core goal and objectives of the organization by easing the operations with reduced manpower timely and efficiently. The study also research on automating the manual processes that will simplify the day to day operations of Manushi, provide cost benefits in the long run and enhance the overall experience of end users. Thus, the study is mainly focused towards making the process of Manushi more automated with less human intervention that will fulfill the information need of everyone involved in the System.

The ultimate objective is to provide the good insight of Manushi to take their business to next higher level and stay competitive in the micro-credit financial institutions of Nepal with the lots of satisfied clients and employees.

## **1.2 Statement of the Problem**

In the present time the organization should have to penetrate through the tough to encourage, fraudulent market, mobilization of staffs and confusion in decision making to be a successful one. The organization that make decision faster and avoid external problems will have chance of being the successful one. Although this can be done manually, it will take considerably longer time. Because of the technical advancement and with the help of computerized system, complex tasks can be accomplished in no time. This factor is one of the most important resources in an organization. The major role of decision maker in this case is to make appropriate decision by rapidly analyzing number of the feedbacks provided by computerized system which would otherwise take longer time in manual system. There are so many problems seen in the paper-based manual system which needed to be changed by the computerized system In the course of

the study, there are lots of problems that are identified and major problems are described in the following points:

- ) Manual system is more error prone and requires huge manpower time due to rearranging and managing of the records in branch level as well as central level.
- ) The speed of information flow from different branches to upper level of management is severely restricted until personal meeting or status report is submitted by each branch office. Such meeting/submission of the report shall be done in timely manner.
- ) There is no clear and well defined way of solving control problems.
- ) No up to date record of the daily transaction are maintained at the branch offices.
- ) Error while calculating interest in loan or deposit which requires another round of thorough checking of the entire records.
- ) Due to the load on staffs, there have been increasing number of problem regarding deposit made by one member deposited in other member account
- ) Loan and saving ledger mismatch with main ledger and member's passbook not matching with office record.
- ) The worse of all, registers and ledger systems are not updated on daily basis.

### **1.3 Objective of the Study**

An organization is a group of people intentionally organized to accomplish an overall, common goal or set of goals. Business organizations can range in size from two people to tens of thousands. Members of the organization often have some image in their minds about how the organization should be working, how it should appear when things are going well.

An organization, whether it is small or a big, is a large system with many aspects and dimensions. They operate according to overall values or priorities in the nature of how they carry out their activities. When implementing or designing a CIS for an organization, there are many factors that should be taken into consideration. The factors can be found in the cultural and the structural aspects of the organization. These factors



might be overlooked but can be implemented to take into consideration to make a functional CIS for an organization.

In this research the focus is on small organization such as Manushi with less than one hundred actors working in the organization. Every organization has a different structure that may have different need when it comes to a computerized information system. The purpose of this research is to find factors that should be taken into consideration when designing or implementing a CIS for Manushi. The factors will be studied from both the cultural and the structural aspects of the organization.

CIS can be developed by automated system. It should be sufficient to meet the organization's business goals and objectives. This system should be accessible and usable at all appropriate levels of the organization. Major objectives of designing the MIS system for implementing in Manushi are as follows:

- ) Enhance communication among employees
- ) Provide efficiency and effectiveness in daily works
- ) Deliver complex materials throughout the organization transparently
- ) 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
- ) Help decision makers in gathering, storing, accessing external data, communicating, analyzing and modeling business phenomena.

CIS supplies the fact information to the decision makers. It also supports and enhances the overall decision making process and increase the job performance throughout the organization. At the most senior level, it provides the data and information to help the board and management make strategic decisions. At other levels, CIS provides the means through which the organization's activities are monitored and information is distributed to management, employees and the members.

The factors are going to be an aid for the designer of a CIS for a small organization. The factors can also be used to help for choosing the most suitable CIS in the market.

#### **1.4 Significance of the Study**

Every organization has its own objective and goal. To achieve these things it has its own type of defined tasks and own way of managing, directing and controlling of the tasks. But getting things done is not a big deal in this age. The efficiency, reliability, security, confidentiality and availability of information are the major challenge in today's competitive market. If we implement the CIS in this type of organization instead of manual system, we can expect more output with reduced manpower.

This study will help to design the architecture/software suitable for implementing in real scenario. The software analyst need not have to study the organization from scratch. The study will also suggest the organization that what type of changes in the organizational structure and culture is needed. The most important part of this study is to convince the management for the implementation of CIS in their organization by showing weak point of the manual system and how it can be overcome by using CIS. Similarly it will also provide information regarding the system that is most cost effective and affordable for implementing CIS. The implementation of the CIS will likely to remove all problems that are pointed in above section. In addition to that it will teach how important the information is and the technology embrace all the part and society, which cannot be separable from the management team and the organization.

#### **1.5 Limitation of the Study**

This research is the small effort for studying and analyzing Manushi which has limited time so it can not focus on all the areas and may not be able to explore many fields. This research work is done within limited timeframe during MBS dissertation. There are so many constraints while doing the work such as inadequate time, load shedding, resources etc.

The main focus of the research is to study the cultural and structural aspects of the organization. This research will only focus on small organizations with less than one hundred users but it can be extended as per the requirement. This is because big

organizations and small organizations may differ a lot for each other structurally and culturally. The following major limitations might be focused during the research process:

- ) One branch office placed at Kalimati and the head office placed at Gyaneshwor will be considered for case site assuming all the branch office will act in the same way as the branch office of case site.
- ) The study will only analyze the current manual system of Manushi and tries to recommend a suitable MIS for replacing the manual system.
- ) The study will be done in one case site and the environment of the whole organization is not on focus.
- ) No emphasis on how to implement the factors to the designing process
- ) Will study if the CIS will have any effect on the efficiency in only the case site.
- ) This research is basically based on the primary data, which is collected from questionnaire, interview and observation and it is assumed to be accurate and reliable.

## **1.6 Organization of the Study**

The present study has been organized in five chapters, the brief overview of each chapter are presented in short paragraph.

### **Chapter – I: Introduction**

This includes the background for the study, the statement of problem, objectives of the study, significance and limitations of the study and introduction of an organization that have been selected for the study.

### **Chapter – II: Review of Literature**

It establishes the conceptual framework for the present study. This also includes the concept, definition, uses of MIS & Information Systems which provide the good foundation for the rest of the study. Finally, the articles and thesis works of various authors were reviewed to draw the required inferences for the present study.

### **Chapter – III: Research Methodology**

This chapter formulates the research design as well as discusses the gathering of the data for the study. Next, the analytical tools used for the design of MIS for have been presented in detail.

### **Chapter – IV: Data Presentation and Analysis**

This chapter examines the existing information system, designs the MIS for Manushi, compare between the existing and proposed system to signify the relevance of the study and access the feasibility of the system. Finally, the major findings of the present study have been listed at the end.

### **Chapter – V: Conclusion and Recommendation**

It contains the conclusion drawn from the study and the recommendations made to the organization in the study.

The **Bibliography and Appendix** have been incorporated at the end of the study.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

Review of literature is an essential part of all studies. It is a way to discover what other research in the area of problem has uncovered. It is also a way to avoid investigating problems that have already been definitely answered. Literature review is basically a “stock taking” of available literature in one’s field of research. Hence the first step for proper review of literature is to prepare the conceptual framework of the proposed study, which creates the solid foundation for the remaining part of the study.

#### **2.1 Conceptual Framework**

##### **2.1.1 MIS Concepts**

Management information system is a computerized system that provides managers with the tools for organizing, evaluating and efficiently running the organization. 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 organization to run efficiently.

The development and management of information technology tools assist executives and general workforce in performing any tasks related to the processing of information. MIS and business systems are especially useful in the collation of business data and the production of reports to be used as tools for decision making.

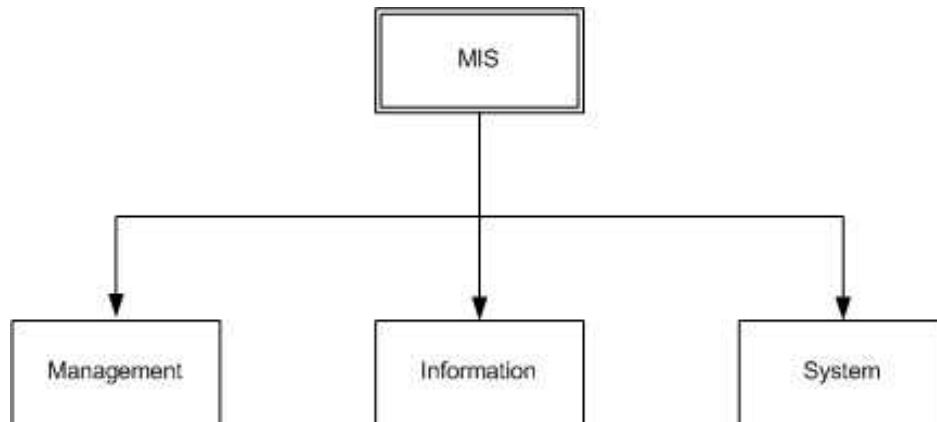
Generally, the combination of major three elements namely Management, Information and System is known as MIS. In order to make the concept more clear, each part of the elements are examined separately.

#### **Management**

Management is the art and science of getting things done through others, generally by organizing and directing their activities on the job. It is the process that visualizes the future, sets goals to be accomplished, has the ability to efficiently co-ordinate the existing

financials, human material and technical resources, decentralizes operation, builds a good team and has social responsibility towards the nation and its people.

Figure: 2.1  
MIS and its Elements

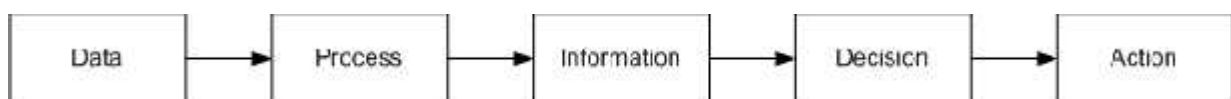


Management is the process of planning, organizing, leading and controlling the work or organization members and of using all available organizational resources to reach stated organizational goal. It is especially in dealing with matters of time and human relationship as they arise in organizations. It is an attempt to create desirable future keeping the past and the present in mind.

### **Information**

Information is the processed data which can be organized and presented so that the decision maker may take the necessary action. In other words, information is the result/product of processing data. (Adhikary, 2005:29)

Figure: 2.2  
Information System

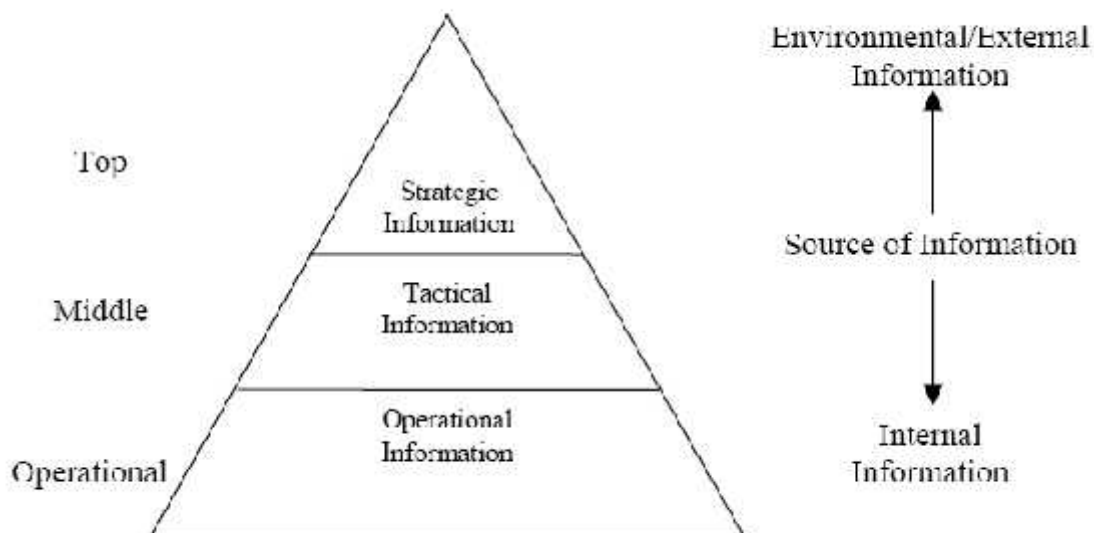


Information can be defined as the processed data, which improves representation of an entity, update the level of knowledge, reduces uncertainty, aids in decision making and has a surprise value. (Jawadekar, 2003:85)

Information as a concept bears a diversity of meanings, from everyday usage to technical settings. Generally speaking, the concept of information is closely related to notions of constraint, communication, control, data, form, instruction, knowledge, meaning, mental stimulus, pattern, perception, and representation. Many people speak about the Information Age as the advent of the knowledge age or knowledge society, the information society, and information technologies, and even though informatics, information science and computer science are often in the spotlight, the word "information" is often used without careful consideration of the various meanings it has acquired. (wikipedia.org)

According to the levels of management, information can be classified as the operational, tactical and strategic information.

Figure: 2.3  
Information Classification



**Strategic Information:** is the information required for the senior managers. They need information to generate regular reports, to prepare retrieval requests, and information which would assist in identifying problem areas and opportunities.

**Tactical Information:** is carrying out the programs and plans for the senior management. Typically, they need information, which would assist in analysis, planning and reporting. Middle managers time orientation is in the range between lower management and that of top management. They need information to obtain routine cross-functional summary reports, to identify nonfactual details, to identify factual details, to generate exception reports. (Adhikary, 2005:33-35)

**Operational Information:** is for monitoring the firm's daily activities. Lower managers are concerned primarily with the result of past operations and with conducting current operations. Lower manager's decisions usually are repetitive and structured. They need information to obtain operational data, to assist in scheduling of activities, to identify out of control situations, to generate performance and daily transaction reports.

## **System**

A system is a group of interrelated components working together towards a common goal by accepting inputs and producing outputs in an organized transformation process. Any object which has no relationship with any other element of the system is not a component of that system. A subsystem is then a set of elements which is a system itself and a part of the whole system. A system has three basic interacting components: Input, Processing and Output.

- **Input:** Involves capturing and assembling elements that enter the system to be processed. For example, raw materials, energy, data and human effort must be secured and organized for processing.
- **Processing:** Involves transformation process that converts input into output. For instance, a manufacturing process, the human breathing process, or mathematical calculations.

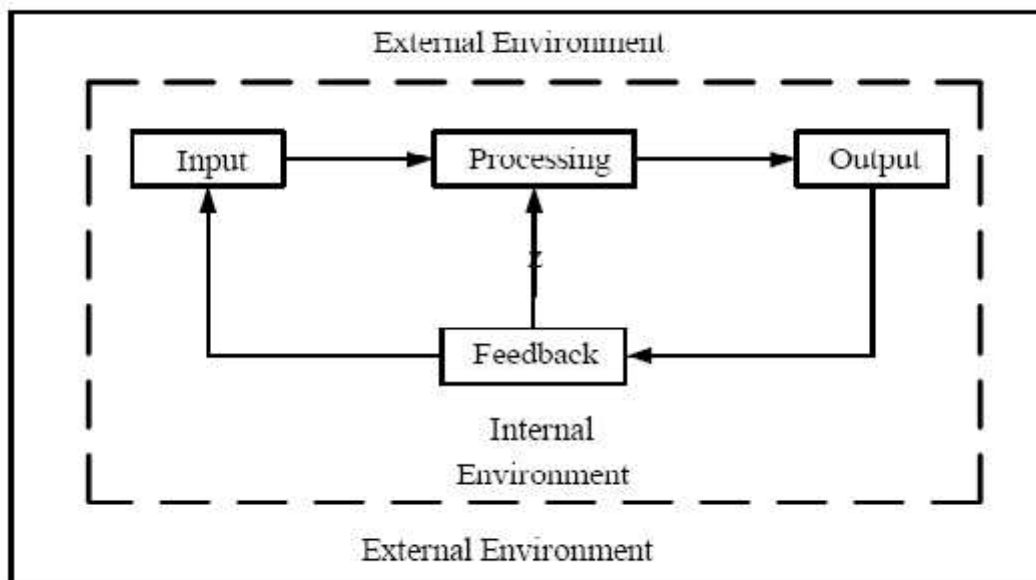


- **Output:** Involves transferring elements that have been produced by a transformation process to their ultimate destination. For instance, finished products, human services, and management information must be transferred to their human users.

The system concept becomes even more useful by including two additional components: feedback and control. A system with feedback and control components is sometimes called a cybernetic system, that is, a self-monitoring, self-regulating system.

- ) **Feedback:** Feedback is one of the monitoring tools which is used to determine the response of the system. For example, data about sales performance is feedback to sales manager.
- ) **Control:** Involves monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal. The control function then makes necessary adjustments to a system input and processing components to ensure that it produces proper output. For example, as sales manager exercises control when he or she reassigns sales persons to new sales territories after evaluating feedback about their sales performance. (O'Brien, 2004:8)

Figure 2.4  
Model of System



### **2.1.2 Application of MIS**

With computers being as ubiquitous as they are today, there is hardly any large business that does not rely extensively on their IT systems. However, there are several specific fields in which MIS has become invaluable.

#### **) *Strategy support***

While computers cannot create business strategies by themselves they can assist management in understanding the effects of their strategies and help enable effective decision-making.

MIS systems can be used to transform data into information useful for decision making. Computers can provide financial statements and performance reports to assist in the planning, monitoring and implementation of strategy. It provides a valuable function in that they can collate into coherent reports, unmanageable volumes of data that would otherwise be broadly useless to decision makers. By studying these reports decision-makers can identify patterns and trends that would have remained unseen if the raw data were consulted manually.

MIS systems can also use these raw data to run simulations – hypothetical scenarios that answer a range of ‘what if’ questions regarding alterations in strategy. For instance, MIS systems can provide predictions about the effect on sales that an alteration in price would have on a product. These Decision Support Systems (DSS) enable more informed decision making within an enterprise that would be possible without MIS systems.

Not only do MIS systems allow for the collation of vast amounts of business data, but they also provide a valuable time saving benefit to the workforce. Where in the past business information had to be manually processed for filing and analysis it can now be entered quickly and easily onto a computer by a data processor, allowing for faster decision making and quicker reflexes for the enterprise as a whole.

#### **) *Management by Objectives***

While MIS systems are extremely useful in generating statistical reports and data analysis they can also be of use as a Management by Objectives (MBO) tool.

MBO is a management process by which managers and subordinates agree upon a series of objectives for the subordinate to attempt to achieve within a set time frame. Objectives are set using the SMART ratio: that is, objectives should be Specific, Measurable, Agreed, Realistic and Time-Specific.

The aim of these objectives is to provide a set of key performance indicators by which an enterprise can judge the performance of an employee or project. The success of any MBO depends upon the continuous tracking of progress.

In tracking this performance it can be extremely useful to make use of an MIS system. Since all SMART objectives are by definition measurable they can be tracked through the generation of management reports to be analyzed by decision-makers.

### **2.1.3 Benefits of MIS**

The field of MIS can deliver a great many benefits to enterprises in every industry. expert organizations such as the Institute of MIS along with peer reviewed journals such as MIS Quarterly continue to find and report new ways to use MIS to achieve business objectives.

#### ***Core Competencies:***

Every market leading enterprise will have at least one core competency – that is, a function they perform better than their competition. By building an exceptional management information system into the enterprise it is possible to push out ahead of the competition. MIS systems provide the tools necessary to gain a better understanding of the market as well as a better understanding of the enterprise itself.

#### ***Enhance Supply Chain Management:***

Improved reporting of business processes leads inevitably to a more streamlined production process. With better information on the production process, the ability to improve the management of the supply chain, including everything from the sourcing of materials to the manufacturing and distribution of the finished product.

**Quick Reflexes:**

As a corollary to improved supply chain management comes an improved ability to react to changes in the market. Better MIS systems enable an enterprise to react more quickly to their environment, enabling them to push out ahead of the competition and produce a better service and a larger piece of the pie.

Further information about MIS can be found at the Bentley College Journal of MIS and the US Treasury’s MIS handbook, and an example of an organizational MIS division can be found at the Department of Social Services for the state of Connecticut.

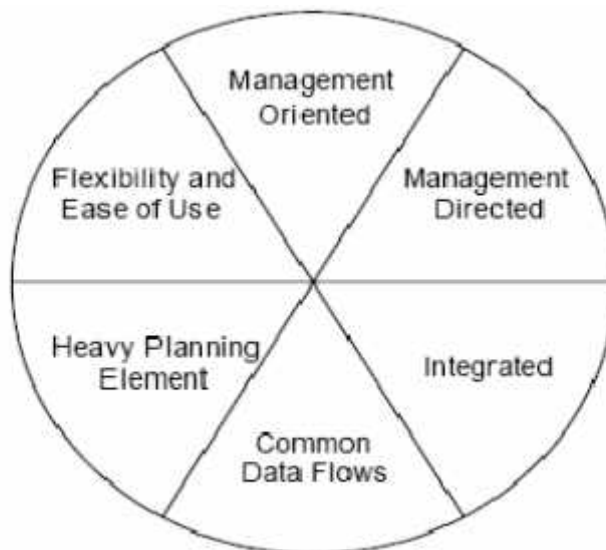
**2.1.4 Characteristics of MIS**

These are desirable characteristics of an MIS:

- An MIS supports transaction handling and record keeping.
- An MIS uses an integrated database and supports a variety of functional areas.
- An MIS provides operational, tactical, and strategic-level managers with easy access to timely but for the most, structured information.
- An MIS is somewhat flexible and can be adapted to meet the changing information needs of the organization.
- An MIS can boost system security by limiting access to authorized personnel.

(Adhikary, 2005:15)

Figure: 2.5  
Characteristics of MIS



### 2.1.5. Information System

The rapid evolution of computer technology is expanding man's desire to obtain computer assistance in solving more and more complex problems: problems, which were considered solely in the domain of man's intuitive and judgmental processes, particularly in organizations, a few years ago.

Information systems are becoming of ever-greater interest in progressive and dynamic organizations. The need to obtain access conveniently, quickly and economically makes it imperative to devise procedures for the creation, management and utilization of databases in organizations. Management information and information systems, in particular those related to effective decision-making processes in an organization, i.e. MIS, are regarded as valuable organizational resources. Simply put, an information system is a system for accepting data/information as a raw material and through one or more transmutation processes, generating information as a product.

It comprises the following functional elements, which relate to the organization and its environments:

- **Perception:** Initial entry of data whether captured or generated, into the organization;
- **Recording:** Physical capture of data;
- **Processing:** Transformation according to the "specific" needs of the organization;
- **Transmission:** The flows which occur in an information system;
- **Storage:** Presupposes some expected future use;
- **Retrieval:** Search for recorded data;
- **Presentation:** Reporting, communication; and
- **Decision making:** A controversial inclusion, except to the extent that the information system engages in decision making that concerns itself.

Information system is generally expected to provide not only a confrontation between the user and information, but also, the interaction required for relevant and timely decision making. Its main purpose is to satisfy users' information needs. Approaching information systems in an organizational content shows that it is a sub-system within an organizational system which is a "living and open" system. Academics interested in information works and information practitioners alike have defined information systems

in various ways but with basic ideas of people, information technology and procedures which enable the facilitation of the generation, use and transfer of information. Although information systems are considered to belong to an applied discipline, there is need for an understanding of their underlying basic concepts by information practitioners. (Adeoti-Adekeye, 1997:321)

The definition of information systems by Duff and Assad (1980) is considered to be adequate: “A collection of people, procedures, a base of data and (sometimes) hardware and software that collects, processes, stores and communicates data for transaction processing at operational level and information to support Management decision making.”

Certain deductions can be made from the above definition that:

- The definition covers the what, how and why of information systems;
- An information system can be manual or computer-based;
- That information systems have existed in organizations and always will;
- That an information system is supposed to support both the basic operations of an organization and its management;
- A distinction seems to be made between data for transaction processing purposes and information for decision-making purposes; and
- **The definition has provided what can be considered as basic concepts underlying information systems, namely: people, management, information, systems and organizations.**

The attributes indicated above can be considered as major attributes or essential elements for developing an information system concept in an organizational context. In order to understand the information system concept further, Salton (1975) highlighted the most important computer-based information systems as follows:

- Information retrieval system (IRS);
- Question-answering system;
- Database system (DBS);
- Management information system (MIS);
- Decision support system (DSS).

“An information system can technically define as a set of interrelated components that collect (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 also help managers and workers analyze problems, visualize complex subjects and create new projects.” (Laudon & Laudon 2004: 8)

An information system collects, processes, stores, analyzes and disseminates information for a specific purpose. Information systems are often at the heart of most organizations. For example, banks and airlines cannot function without their information systems. With the advent of electronic businesses (e-businesses), if there is no information system, then there is no business.

Information systems accept inputs and process data to provide information to decision makers and help them communicate their results. Now, a World Wide Web presence and activities are expected by consumers and decision makers. So, information systems have become critical for many organizations that in the past did not rely on them.

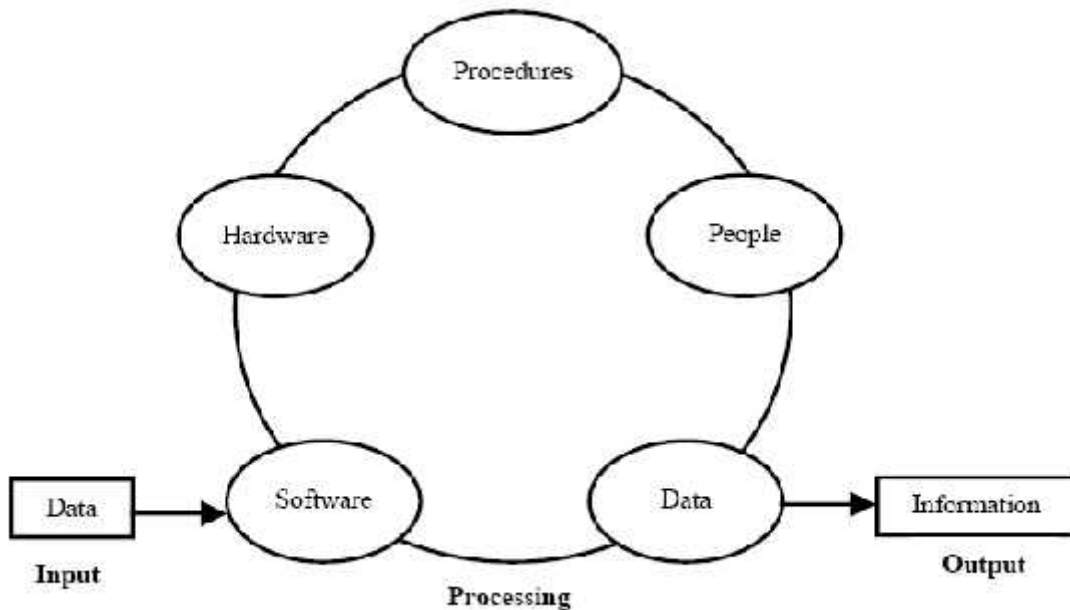
Information is data that has been changed into a useful form of output. An information system has five key components: hardware, software, data, processes, and people.

Interrelated components that collect, process, store and disseminate information to support decision making, control, analysis and visualization in an organization is the information system in organization. This system may contain information about significant people, places and things within the organization or in the environment surrounding it.

Three activities in an information system produce the information need for the organization. These activities are input, processing and output. The output has the control called feedback which will help the members of the organization to evaluate or correct the input stage. Typical figure of information system is given below. (Adhikari, 2005:32)

Organizations, both large and small are using information systems and networks to achieve more efficiently and competitiveness. Implementing an information system is one way for an organization to re-invent itself. Information systems are used to reach new markets and locations, reshape and re-coordinate the processes of the organizations.

Figure: 2.6  
Information System Components



There are many types of computerized information systems like transaction processing systems, management information systems, decision support systems, expert systems etc. As all information systems a computerized information system exists to serve, help or support actors in the real world. (Checkland & Holwell, 1999)

A computerized information system is a system that relies on hardware and software of computers to process and distribute information. As any viable system a computerized information system has an input, process and output. The figure below shows the interdependency of an organization and a computerized information system. The organization's structure, culture and design are interdependent with the computerized information system's software, hardware, database and telecommunication. (Checkland & Holwell, 1999; Laudon & Laudon, 2004)



Figure: 2.7  
Typical Computerized Information System

- **Feedback:** Is data about the performance of a system. For example, data about sales performance is feedback to sales manager.
- **Control:** Involves monitoring and evaluating feedback to determine whether a system is moving toward the achievement of its goal. The control function then makes necessary adjustments to a system input and processing components to ensure that it produces proper output. For example, as sales manager exercises

### 2.1.6 Computerized Information System (CIS)

Information technology has become a strategic necessity. The revolution in business caused by the Internet and its related technologies demonstrates that information systems and information technology are essential ingredients for the success of today's inter-networked business enterprise. Therefore, as tomorrow's managers, entrepreneurs and business professionals, business students must learn how to use and manage a variety of information technologies to revitalize business processes, improve managerial decision making, and gain competitive advantage. Thus, a CIS demonstrates how the Internet, intranets and extranets can give a business a strategic technology platform that supports electronic commerce and enterprise collaboration among the inter-networked enterprises in today's global business environment.

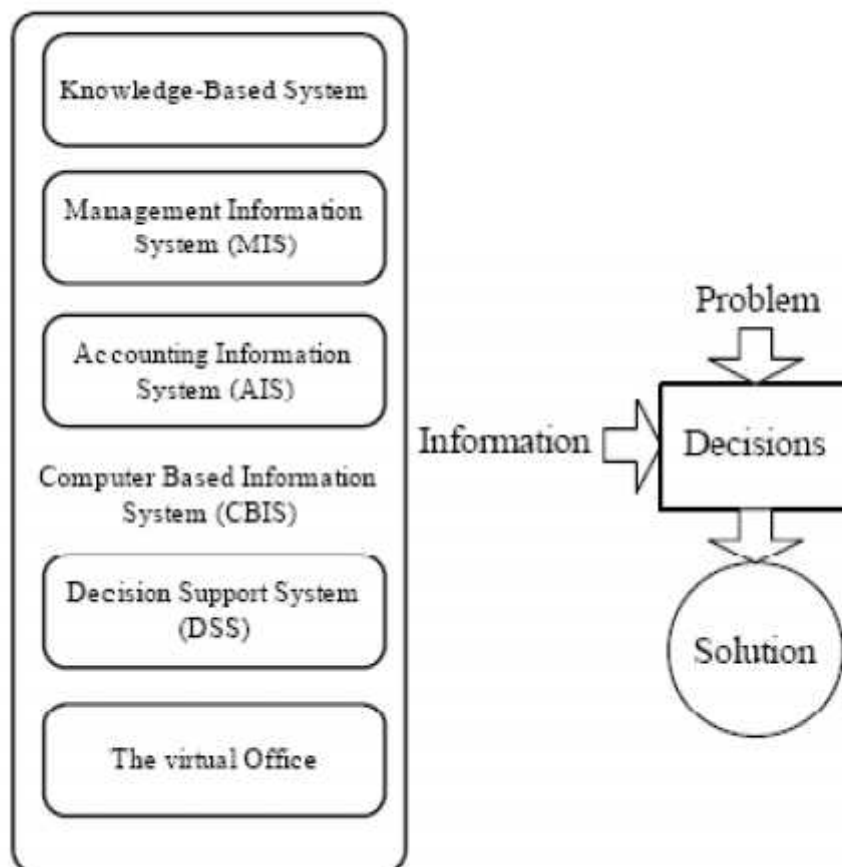
System is a collection of interrelated and integrated components and operates in a social context and with a computerized information system; the software usually includes

application programs, which perform specific tasks for users. And a CIS is a collection of components for disseminating information regarding specific purpose.

The major components of a CIS can include:

- (1) Hardware,
- (2) Software,
- (3) A database,
- (4) A network,
- (5) Procedures, and
- (6) People. (O'Brien, 2004:151)

Figure: 2.8  
Model of CIS



## 2.2 Review of Articles

**Cafasso, Rosemary** (1994 AD) in her article “Few IS projects come in on Time, on Budget” listed the following reasons have been given for why IT Development projects succeed or fail:

Top 5 reasons for success:

1. User involvement
2. Executive management support
3. Clear statement of requirements
4. Proper planning
5. Realistic expectations

Top 5 reasons for failure:

1. Lack of user input
2. Incomplete requirements and specifications
3. Changing requirements and specification
4. Lack of executive support
5. Technological incompetence

**Dhungana, Priya Darshan** (2057 BS) in his article “Management Information System: An Overview” defines MIS as the group of techniques of systematic and regular collection and presentation of information for making best business decision. MIS can be taken as the guideline of an organization because managerial decisions are made on the basis of timely reported information on this system. He emphasized on the establishment of advanced information system to collect, analyzes and presents data in time. As the information identifies and defines the problems and shows the ways of long term solution, each organization needs a reliable information system in each level.

**Tamrakar, Jyoti Ratna** (2002 AD) in his article “Importance of MIS”, view that the greatest achievement of last century is computer. The world now without computer is simply unimaginable. A work which takes many days to finish can be accomplished in a

few minutes with the help of computer. It seems that use of computer and other information technology gadgets is slowly coming of age in the country.

The primary function of MIS is to provide accurate, timely and relevant information needed for efficient decision making by the manager in an organization. As the information identifies and defines the problems and shows the ways of long term solution, each organization needs a reliable information system in each level of information has always been a valuable resource in personal corporate or social level irrespective of the level of development meaning full and interrupted information is the output of system. So for this MIS come into exist. So that MIS is one of the major Computerized Information System (CIS).

**Jerresand Martin**, in his article “Managing Your Information across the Enterprise”, opines if it were ever possible to get too much of a good thing, it’s certainly the case with information. The sheer volume of new information has dramatically increased the complexity of finding what you need. To ensure that the relevant content is delivered to each audience, they must start to manage content more efficiently and effectively. With easy access to the right content via an Internet portal, employees are more effective, make better decisions, and are more equipped to help generate new business or higher profits. In addition, easy access to the appropriate corporate or product information strengthens customer and partner relationships, decreasing costs and potentially increasing sales.

**Bhattarai, Manohar K** (March, 2002) in his article “Formulation of Information & communication Technology Policy and Strategy Nepal” had put forward his view that possible areas of E-Commerce in Nepal Given inherent resource limitations and a scenario where developmental prospects of e-commerce are yet to be proven in the Nepalese context, an effort should be made to identify areas that stand to benefit more from ecommerce as an immediate strategy both (B-to-B and B-to-C) e-commerce. These could be the areas where Nepal has relative competitive advantage or the ones that could cash on prima facie interest that quite a number of people have in Nepal. Some of the areas could be Handicrafts, carpets and readymade garments, Digital products like

Nepalese music, computer programming and other IT related services, Food products, spices and herbal products, Hotels and tourism related services.

E-commerce has the potential to provide the following benefits to Nepal:

- ) Generation of foreign exchange, resulting in increased hard currency earnings the favorable impact on balance of payments situation
- ) Prospect for export trade diversification both in the range of commodities and country destinations.
- ) Potentiality for further strengthening of service exports (notably, travel and tourism) which contributed to 44.1% of total foreign exchange earnings in 1998/99.
- ) Development of e-commerce expertise within the country with far reaching future implications for economic development
- ) Expansion of Information Technology skills within the country
- ) Increased transparency
- ) Driver for Infrastructure development in the IT domain
- ) Improved government and business efficiency and
- ) Enhanced social development and welfare

Notwithstanding its potentials, the question of development of e-commerce cannot be addressed in isolation from other complex array of issues that provide a holistic framework for its development. This leads us to the fundamental question of as to what really entails in the creation of an enabling environment.

### **2.3 Review of Related Research Studies**

Researcher reviewed some unpublished master degree thesis for identifying variables relevant for research. This work helps to avoid any repetition. Researchers found that majority of the master's degree thesis are concentrated in the case study approach of organizations such as public, private, commercial, non-commercial etc. This section analyses and reviews the Master's Degree thesis and project works, related to the present study.

**Ishwar Acharya** (2002) has conducted research study entitled “Implementation of Management Information System in Royal Nepal Airlines Corporation” (a case study in marketing department). In his master’s degree thesis, he used both primary and secondary data and information but findings are based on primary data which are collected through observation, questionnaire and interview methods.

His major findings are as follows:

- Royal Nepal Airlines is one of the complex organizations due to its nature of service and wide area of marketing activities.
- Marketing Department of RNAC has a multidivisional structure but in reality the structure is ambiguous.
- The information system in marketing department is based on Traditional Paper-Based information and manually filling system. Manual flow of documents except computerized Reservation System of International flight ticket through ABACUS and other CRS software.
- Lack of capable manpower and IT experts to handle sophisticated information technology to maintain proper information system within the department.
- Centralization of authority, manual flow of documents and unnecessary political pressure generally creates obstacle to perform marketing activities smoothly.
- Information announced in Nepali medium through Radio Nepal regarding flight schedules by the marketing departments is quite traditional.
- Lack of proper informational infrastructure to communicate different domestic station causes problems in planning flight schedules.
- Use of micro computers in each division and units are off use. They are used to keep record to some extent and used to type materials whenever needed in order to submit the report to the department director and CEO, RNAC.
- Information does not flow systematically due to absence of Network based computerized Information System to coordinate and communicate different divisions and units of the Marketing department.
- Due to mishandling, misunderstanding and gap of information creates frequent flight delay, flight cancellation and changes in flight schedules.

- Network-based computerized information system is necessary for the systematic flow of information.
- Traditional paper-based information system creates delay in making decision. It should be eliminated through computerized information system.
- It is difficult to implement MIS due to lack of necessary infrastructure of the Marketing department of RNAC such as: equipment & accessories, technical manpower, IT experts and Budget for installation of new technology, and others.

Similarly, thesis entitled “A study on Micro Computers and Computerization in Nepal” - **Yadhav Pradhan** (1986) states that the computer has become very common in USA and Europe, computer have been part of their life because large number of services they receive are computer supported. Activities involved in business, universities and schools, government and all the communication media are supported by computer. Scientists, teachers, businessman, engineers, doctors and other professionals are also getting tremendous amount of help out of it, manufacturing, design, teaching, planning, decision making etc. are aided by the computer. All these employ computers to process vast amount of data.

The computers were developed to perform such task of swift calculation. The development and progress in these fields would have been impossible in the absence of these extra ordinary machines which can handle complex and tedious calculation in a short period of time which people cannot do or typically do not want to do. Through this research study, he found some interesting findings in the beginning era of computerization in Nepal.

His major findings are as following:

- There is an increasing trend and good scope for the use of micro-computers in Nepal. It is estimated that the total micro-computers at the end of 1986 will be approximately 610. The apple Mac computer have taken a good portion of market from the very beginning but it is estimated that IBM computers are going to be in number one position by 1987.

- Micro-computer users are mostly business organization, foreign projects, foreign organizations, government offices and corporation in Nepal.
- After the introduction of micro-computer in the organization, the average productivity has gone up to 51.5% in a particular field. A quite good numbers of users have said that there is no effect because they have not been able to use it because of lack of training or technical or administrative problem.

The computer users were motivated towards computerization, using micro-computers was due to the growing need of the organization and the low cost of micro-computers. Thus they are not buying it as a fashion.

- The micro-computer users/operators are trained for an average of 2.32 months only. About 81.2% users/operators think they need further training to carry out their jobs independently.
- There are 36 varieties of micro-computers available in the country ranging from very popular brand names to newly introduced computer and some compatibles.
- The computer users have procured their micro-computer considering mainly its price, brand name and company or availability.
- The major field of computer application by National Computer Center to its customers are mainly in accounts and banking; education; engineering; households family and social environment; health; agriculture and land; population and others.
- The micro-computers are utilized in a daily average of 5.25 hours. Most of the micro-computers are being used for the major fields like word-processing, accounting, statistical analysis, and software development.
- Most of the micro-computes have problem of power failure and diskette problem and loosing data. The other type of major problems is reliable maintenance and repair services.

**Lohoni, Ashok** (2005) carried out study on “Online College Management Information System (OCMIS) for Acme Engineering College.” Overview of his study is as under:–

The specific objectives of this research are:

To examine and analyze the existing information system of Acme Engineering College.



To propose the basis for developing an advanced MIS (Management Information System) for Acme Engineering College, by managing the associated relationships between the various entities such as students, teachers, courses, classes, sessions, programs, departments, other campuses and the University.

The study was carried out by using the following methodology:

The study was concentrated for development of OCMIS for Acme Engineering College, the basis for the analysis were the past records and problems. The question of primary data collection techniques did not occur at any point of the research. Secondary data was the type of data used in this research. The secondary data sources used for the present study included the various departments, library, labs and research and consultancy unit.

Similarly, principal, Vice-principal, key personnel, faculty members, administrative staff and the students also furnished the researcher with considerable amount of secondary data. Different Tools and techniques were used viz. Tables & Figures, Flowcharts, ER Diagram and Data Flow Diagram. His research findings are:

Lack of proper and timely information is one of the challenges for the college. So, Online College Management Information System (OCMIS) has been proposed for the college so as to cater its information needs. All the departments in Acme Engineering College are interrelated and interdependent. So, the need of a proper Management Information System (MIS) was felt from a long time for systematic and timely flow of information between them. OCMIS has been proposed to take care of this requirement. The beneficiaries from the proposed OCMIS will be the college, its departments, faculty members, staff, guardians, students and all those who directly or indirectly use the system. All those concerned will find the access and retrieval of the required data much easier and quicker than at present. OCMIS will certainly facilitate their jobs and help in improving their overall efficiency and effectiveness.

Introduction of OCMIS as an information system will transform the existing human based information system into a systematic and scientific one. This would certainly reduce various deficiencies in the present system such as delay in information flow, ill matching of generated data, irrelevant information and under utilization and poor

feedback. Earlier, the study and practice of OCMIS has been too few to mention. The present study will therefore be a milestone for practice and reference in future. Hence, the present study may be valuable not only for Acme Engineering College but also for other similar institutions.

The use of computerization information system OCMIS will certainly prove a leap for Acme Engineering College. The adopting and upgrading of the advanced technology has already been a necessity and challenge for leading engineering institutions like Acme Engineering College. So, it will be a source of motivation and inspiration for all concerned to upgrade their performance, efficiency and effectiveness.

The conclusions drawn from this research are:

To fulfill information requirements on different organizational and management levels MIS (Management Information System) has become a necessity in the near future and the proposed OCMIS is capable to handle the challenge. Access information needed for an efficient and effective management. The main aim of OCMIS is to make the tasks smooth and easier. OCMIS is one of the most important factors for the growth of the college in terms of better education, better facilities and better management.

Based on the above conclusion, Lohani gave the following recommendation:

It is evident that OCMIS has been proposed for Acme Engineering College to fulfill its informational requirements. It is also evident that there is a big challenge for Acme Engineering College for improving the present position to make strong gains in the competitive external and internal environment. The researcher feels that this study is significant in itself as it deals with the use of MIS in a large and complex organization like Acme Engineering College for effectively improving the work performance of each level of employees and decision-makers. So, the researcher strongly recommends that the findings of the present study, if implemented, can play a significant role in this critical situation for the enhancement and upgrade of Acme Engineering College. The shortcomings of this research are the data sources were limited reliable, that will ultimately affect the study and probably fails to design the appropriate system for the college.

Again the data used in the study were collected in the January to July 2005. Apart from that research failed to give proper guidelines for training and better utilization and performance of MIS.

**Ajit P. Bhattarai** (2003) has conducted research entitled “Performance of Management Information System in Kumari Bank”. His master degree thesis is fully based on primary data collected through observation, direct communication with respondents and by questionnaire method. In his master degree thesis he argues that most organization spend huge amount of resources in setting up MIS infrastructure but on other hand they have not been able to fully capitalize the benefits of MIS, therefore, he tended to study the utilization of MIS and the factors which affect the performance of MIS.

His major findings are as following:

- Majority of the users of the MIS consider MIS to be important.
- Majority of the users of the MIS consider that MIS helps in decision making.
- Use of MIS is directed more towards extraction of current information rather than historical information.
- MIS is fulfilling the information needs of the users to different degrees of satisfaction. Higher management is less satisfied than the middle management.
- Further improvement in utilization of MIS needs better communication and training between the various stakeholders.
- MIS users are comfortable using the product and have a good understanding of the system.
- MIS users are moderately satisfied with the MIS.
- There is ample room to increase the use of MIS.
- The factors which will improve the utilization of MIS are: “Good communication channel”, “Training to end user”, “Training to software personnel”.

**Bimal P. Adhikari** (2002) has conducted research entitled “Information Technology in Security Management”. In his master degree thesis, he considered both primary and secondary data but his thesis result is based on primary data. He used interview, questionnaire and survey method for data collection. As his thesis covered the huge

subject area, he chose different class of people as sample like farmer, labor, students etc. He argues that Finding personal information and their location instantaneously is extremely important to take immediate decisions in critical situations of security management.

This is the most critical information playing vital role in security management functions, however, need of the security management information is not limited to these information. Finding the geographical location i.e. address of the person or any object is also critical in the security management.

His major findings are as following:

- Most of the public use citizenship card as their ID card. Security personnel as well as the government offices use citizenship card as only reliable ID card which is widely used in public dealing and official dealings.
- The security personnel and government offices ask for citizenship card for the identification purpose but it is not reliable since there is no easy verification mechanism. It is difficult to identify the fake ID cards.
- Maintaining the personal information integrated with address and availability of the same online will be highly useful. This will help to know the real identity and highly discourage the disguising activity of the criminals and terrorists.
- Joblessness, poverty and ignorance are the major causes behind the terrorism. Eliminating the root cause and campaigning education program are the major way-out of solving the conflict problems.
- Many publics agree that because of absence of real ID card and information, they have to suffer difficulties and claim the lives many times. Citizenship card is used by common publics as ID while the job holders use office ID card instead.
- Majority of publics have no problem if government maintains personal information to maintain peace make the system transparent however, some claims that it is breach of privacy.
- Majority of the public highly recommend government maintain such information as soon as possible. Some who pay more interest and attention also claim that maintaining such personal information and using it will solve problem of conflict as well as

corruption and make administration more transparent and this is the root cause of the conflicts.

- The impact of security management information system in the security management will be strategic in nature. The information system will strengthen the planning and administration capability of the security management organization.

## **2.4 Research Gap**

In the above study, the researcher reviewed the different articles, Masters Degree Thesis and Projects and found that most authors has looked into why organization have absence of computer based management information system and suggested the solutions, some author try to look on the utilization side of existing MIS by studying the interrelationship among different variables to improve the overall performance of the organization. Most of the study is based on the system where there is no MIS system installed. Information system is based on traditional paper-based information and even lack of capable manpower and IT experts. Information does not flow systematically due to absence of Network-based CIS to coordinate and communicate different divisions and units of the organization. This research mainly focuses on “what will happen if MIS is installed?” Will it be beneficial if the MIS is implemented?”

Lately, some authors designed the system by identifying the requirement of the organization. As most of the researches are of theoretical aspect and some of the researchers has designed the system, but still those system failed to make use of latest advancement in the field of Information and Communication Technology (ICT).

In this thesis, instead of studying on that aspect, the current role of MIS at various level of management of the organization is studied. To study in this aspect, Manushi central office placed at Gyaneshwor is taken. It has not yet been introduced a computer based information system. All the tasks from operational to the strategic are done in delayed paper-based system. To get the knowledge of MIS implementation, flow of information, decision making, decision making and strategic planning Micro-credit wing of Manushi is studied. The gab of this study is that the data used are only primary data, which is

collected from observation, questionnaire and interview method. The conclusion and recommendation made in this study cannot generalize in other micro-credit institutions and from the review of literature it has been found that there is no any other research conducted on the same topic “Analysis of Critical Factors for Designing Management Information System (A Case Study of Micro-credit Program of Manushi)”

## **Chapter III**

### **RESEARCH METHODOLOGY**

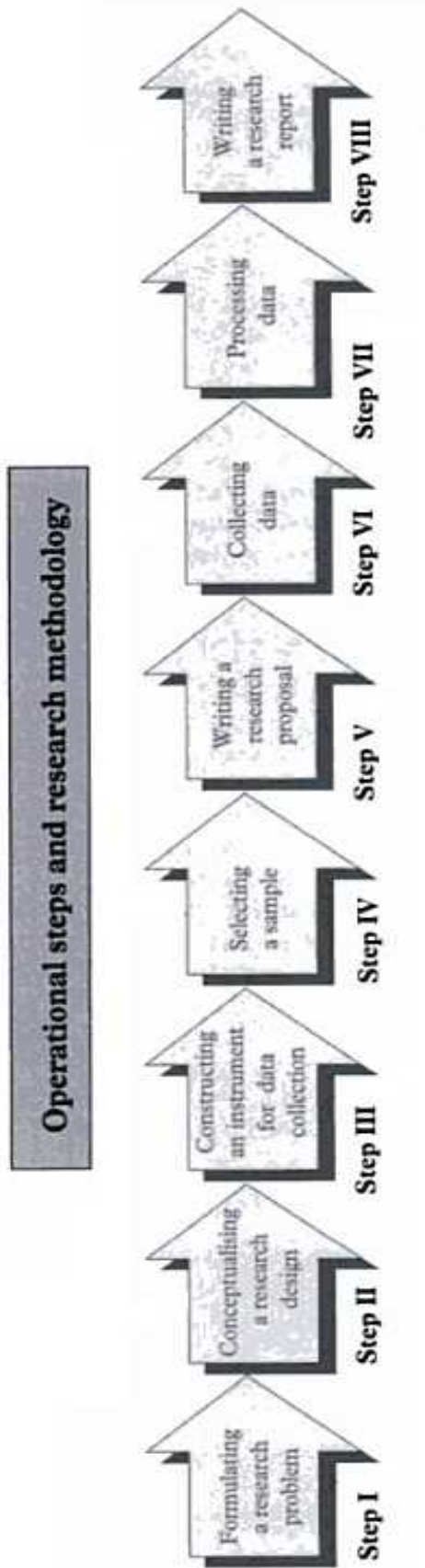
The research methodology of a case-site is a valuable tool for an in-depth research, where the research problem demands a deeper look at the case-site. A case study is a type of research that is made for “on the field studies” (small organization). Research Methodology refers to the various sequential steps adopted by a researcher in studying a problem of a case-site with certain objectives in view. It is a way to systematically solve the research problem by focusing to the nature and source of data, models and tools used.

#### **3.1 Research Design**

Research design is an overall framework or plan for the collection and analysis of data. It serves as a framework for the study, guiding the collection and analysis of the data. It is an integrated system that guides the researcher in formulating, implementing and controlling the study. This research design is based on the empirical part of research. In research design it is explained that how the paradigms are connected to the empirical parts. The research is designed in such a way that it would be more convenient for the researcher to collect the actual data and information during the research study. It describes the method and tools used to collect and analyze the collected data.

The objective of this research is to study the existing system of Manushi and design the MIS capable automated system. As the research entitled “Analysis of Critical Factors for Designing Management Information System: A case study of Micro-credit Program of Manushi”, the study will focus on designing the information system assessing the characteristics of the existing system. It portrays the facts, examines the existing system, uses the principle and proven practices of Computerized Information System, collects the requirements to design the system and proposes the new system and makes the evaluation and comparison.

Figure 3.1  
Block diagram of research methodology





### **Population and Samples**

Population refers to the entire group of people, events, or things of interest that the researcher wishes to investigate. And the sample is a collection of items or elements from a population or universe. Hence a sample is only a portion or subset of the universe or population. It comprises some observations selected from the population. With sampling technique a researcher can reduce the data to collect by limiting the collection from a smaller group rather than from the whole case site. The sample of this research is mainly chosen from the primary function of the case site.

At present Manushi provides its facilities and services to the valley and outside of valley through its 9 branches and central office at Gyaneshwor, Kathmandu. These 9 branch offices are physically located at Gyaneshwor, Balaju, Kalimati, Chautara, Melamchi, Barhabise, Nawalpur, Dolkha and Nuwakot. These branch offices have been serving their services to the poor, marginalized women with 50 employees for empowering them and helping for poverty alleviation; therefore it is not possible to cover the entire employees in this research since they are physically distant from each other.

In this regard, the central/head office of Manushi placed at Gyaneshwor and one branch office situated at Kalimati are taken as sample. In the central office of Manushi there are 5 dedicated and hard working staffs and Kalimati branch office has 7 working staffs. These two are taken as sample because all the branches of Manushi have same type of job as in Kalimati branch.

### **3.2 Sources of Data**

Data is the fundamental tool of any research study. The obtained data must be very reliable and meaningful so that the research will be accurate and fruitful. Data is the foundation of all research projects. It can be obtained from various sources. It depends on the objectives and necessity of the research report. The research design of the study was based on the exploratory design method. Thus, source of data collection were based on the primary and secondary sources. Keeping in the view of explorative nature of the study, primary source is the main source of information which is collected by undertaking

field visit to the case site. On the basis of the sources of data collection there are mainly two types of data. They are Primary Data and Secondary Data.

### **3.2.1 Primary Data**

Primary Data is the original data which is collected by the researcher for the first time from the related research. These data are collected for meeting the specific objective of the study. It can be collected through various methods such as interview, mail, questionnaires and observations. This report is fully based on the primary data. Primary data for the research study is collected mainly by questionnaire, interview and observational method.

### **3.2.2 Secondary Data**

The data that is collected by the previous researcher is known as secondary data. It provides the researcher with a considerable amount of useful information. For the research study, different secondary information has been collected from different sources. The secondary data can be collected from different sources including books, different articles, websites, related research study done by others etc. For this research the secondary data are collected from the annual reports, public reports, newsletters, brochures, organizational charts etc. of the organization.

## **3.3 Data Collection Methods**

There are various methods of collecting primary and secondary data. According to the nature of the study the following methods used for collecting primary data.

- 1) Questionnaire
- 2) Interview
- 3) Observation

### **3.3.1 Questionnaire:**

The main tool that is used in survey research is questionnaire. The questionnaire is an efficient data-collecting mechanism when the researcher knows exactly what is required and how to measure the variables of interest. In this process a list of questions are designed to gather responses from respondents on a given topic. Three different sets of

questionnaire are designed for different levels of management and for member group as well.

### **3.3.2 Interview:**

An interview is a face-to-face interpersonal role situation in which the interviewer asks the respondent questions designed to obtain answers pertinent to the purpose of the research problem. The work flow and environment is observed visiting to the branch office and the central office of Manushi and several questions were asked formally and informally to collect information from different level of management. In the course of interview the facial expressions, attitudes and interests of the respondents are noticed which is one of the necessary thing to know in this study.

### **3.3.3 Observation:**

Observation is the method of gathering information by participating to the system to observe events as they occur. Direct observation has the advantage of putting researchers into first-hand contact with “reality”. This is the most effective way of reliable information collection however it is time consuming and expensive.

## **3.4 Analytical Tools and Technique**

Data collected from the primary and secondary sources from the case-site are sorted and only the related data are considered for the analysis. They are further examined in relation to the objectives of the research. The main purpose of analyzing the data is to change it from an unprocessed form to an understandable presentation. The analysis of data consists of organizing, tabulating, performing statistical analysis and drawing inferences. In this research, according to the pattern, available data is presented in the form of tables and figures.

### **3.4.1 Tables and figures**

Tabulation is the process of transferring classified data from data-gathering tools to the tabular form in which they may be systematically examined. Figures are the symbolic representation of the processes or variables of the system. Not all the data can be

represented in figure. In the present study different tables, figures and charts have been used in order to clarify the significance and relevance of the problem in question. Only the necessary figures and tables have been presented.

### **Context Diagram**

Context diagram is the graphical representation of the system which shows the major entities that interact to the system. Its major objective is identifying the inside and outside entities that interact to the system. It is a common practice for a designer to draw a context diagram and this diagram is then further exploded to show more detail of the system being modeled.

### **Dataflow Diagram (DFD)**

DFD is an excellent communication tool for analysts to model process and functional requirements. One of the primary tools of the structured analysis efforts of the 1970's it was developed and enhanced by the likes of Yourdon, McMenamin, Palmer, Gane and Sarson. It is still considered one of the best modeling techniques for eliciting and representing the processing requirements of a system. It is a useful and easy to understand modeling tool. It has broad application and usability across most software development projects. It is easily integrated with data modeling, workflow modeling tools, and textual specs. Together with these, it provides analysts and developers with solid models and specs. Alone, however, it has limited usability. It is simple and easy to understand by users and can easily be extended and refined with further specification into a physical version for the design and development teams. The different versions are Context Diagrams (Level 0), Partitioned Diagrams (single process only – one level), functionally decomposed, leveled sets of Data Flow Diagrams.

It is a graphical representation of the flow of data through the system but it does not show the program logic and processing steps. A data flow diagram can also be used for the visualization of data processing. It is a common practice for a designer to draw a context-level DFD first, which shows the interaction between the systems and out-side and in-side entities of the system.

With Data Flow Diagram (DFD), users are able to visualize how the system will operate, what the system will accomplish, and how the system will be implemented. DFD can be used to provide the end user with a physical idea of where the data they input, ultimately has an effort upon the structure of the whole system from order to dispatch to restock how any system is developed can be determined through DFD. It illustrates the processes, data stores, and external entities in a business or other system and the connecting data flows. There are four components of DFD. They are External Entity, Process, Data Store and Data Flow

Components	Gane/Sarson Symbols	Description
External Entity		It is a person or group, which interacts with the system, something outside the system. It is not a user. e.g., Customer, Supplier, Government Agency, Accounting Department, Human Resources System, etc.
Data Flow		It is the directional movement of data to and from External Entities, the process and Data Stores. In the physical model, when it flows into a data store, it means a write, update, delete etc. Flows out of Data Stores mean read, query, display, select types of transaction.
Data Store		It is a repository of information. In the physical model, this represents a file, table, etc. In the logical model, a data store is an object or entity.
Process (Activity, Function)		Depending on the level of the diagram, it may represent the whole system as in a Context (level 0) diagram or a business area, process (activity), function, etc. in lower levels.

There are several common modeling rules for creating DFDs:

- ) All processes must have at least one data flow in and one data flow out.
- ) All processes should modify the incoming data, producing new forms of outgoing data.
- ) Each data store must be involved with at least one data flow.
- ) Each external entity must be involved with at least one data flow.
- ) A data flow must be attached to at least one process.

### **Entity relationship Diagram (ERD)**

Entity Relationship (ER) model is a conceptual data model that views the real world as entities and relationships. ER diagram is a specialized graphic representation that illustrates the interrelationships between entities in a database. It helps the analyst understand the organizational system. A basic component of the model is the Entity-Relationship diagram which is used to visually represent data objects. The ER model views the real world as a construct of entities and association between entities. ER diagrams often use symbols to represent three different types of information. Boxes are commonly used to represent entities. Diamonds are normally used to represent relationships and ovals are used to represent attributes. The basic constructs are:

**Entities:** Entities are the principal data object about which information is to be collected. Entities are classified as independent or dependent (in some methodologies, the terms used are strong and weak, respectively). An independent entity is one that does not rely on another for identification. A dependent entity is one that relies on another for identification.

**Relationships:** A Relationship represents an association between two or more entities. Relationships are classified in terms of degree, connectivity, cardinality, and existence.

**Attributes:** Attributes describe the entity of which they are associated. A particular instance of an attribute is a value. The domain of an attribute is the collection of all possible values an attribute can have. The domain of Name is a character string.

Objects	Symbols	Description
Entity		An entity is an object or concept about which you want to store information.
Attribute		Attributes are the properties or characteristics of an entity.
Key-attribute		A key attribute is the unique, distinguishing characteristics of the entity. For example, an employee's staff_id.
Multi-valued attribute		A multi-valued attribute can have more than one value. For example, an employee entity can have multiple skill values.
Relationship		Relationships illustrate how two entities share information in the database structure.

These are the basic symbols used to construct the ER diagram. It is a pictorial representation of the external and internal entities and the relationship between them. This construct shows the overall system process and relationship among them.

## **1.1.1 CHAPTER IV**

### **1.1.2 SYSTEM ANALYSIS, DESIGN AND DATA PRESENTATION**

Manushi is one of the social organizations which have been serving the poor, unemployed women to be independent by conducting vocational training and giving loan to them for starting their own small business or extending the existing business. To those people who are interested to start their own small business, Manushi is serving them providing different loans such as general loan, seasonal loan, central fund loan etc. without collateral but the members of their sub group have to provide guarantee before taking loan. And they can also save their money within the organization on monthly basis. There are different kinds of savings that are offering for the members of the organization. They are group savings, personal savings, central fund savings and welfare fund savings. It also conducts training program to their active members so that they can utilize the loan to start their own business.

Manushi has a team of professionals with experience of more than two decades in this social welfare, micro-credit program and handicraft programs. The general hierarchy of decision making is from top to bottom level of management.

#### **4.1 Organizational Structure**

Organizational structure is a formal system with formal rules, tasks and relationships. With this, the organization is controlling the relationships of the actors within the organization and also how the resources of the organization are used to achieve the goal of the organization. Organizational structure shows how the tasks are formally divided and coordinated. (Jones1995; Robbins 1196; Salaman 2001)

An organizational structure is based on a system with interlinked task roles and relationships of one role to another are defined by task-related behaviors. Organizational structure is used to control the coordination of the actors of the organization to reach the set goals and to control the means used to control actors in the organization. As an organization is established to reach set goals, the structure reshapes to increase the



effectiveness of the organization's control of the tasks to achieve the set goals. Control is the main reason for the organizational structure. (Jones 1995; Mintzberg & Quinn 1996)

To all organizations, a suitable organizational structure is formed that facilitates effective responses to problems of coordination and motivation. The problem faced can be from environmental, technological and human resources reasons. The structure of an organization changes and reshapes as the organization grows and evolves. The following figure shows the organizational structure of the Manushi. The management structure of Manushi is centralized/ hierarchical and elaborates strategic objectives in a top-down way until tasks, which define the work needed to realize the objectives, are identified for the operational level. The figure below shows the three level of management.

Figure: 4.1  
Levels of Management

The people at each management level determine the tasks needed to be carried out at the next levels. The people at the strategic level decide on the broad objectives for an organization. The management level acquires and arranges the resources to meet the goals and define the detailed tasks to be carried out at the operational level. The detailed tasks are then carried out by people at the operational level.

All the strategic activities like planning, defining policies, rules & regulation and making final decisions are made by the top (strategic) level of management. He is responsible for approving or disapproving the plans and programs and also responsible of estimation of annual budgets and priorities of the organization.

The middle level of management makes some decision according to the plans, policies and strategies made by the top level of management. They control the operation level of staffs and deals with daily work of the organization. The decision made by the middle level of management may be programmed or non-programmed depending upon the requirement of the organization.

Operational level of management is responsible for the daily work where actual work is done. This level include branch managers, account associates, admin staffs etc. in the case of Manushi. This level of management is not allowed to take any decision regarding the planning, organizing, forecasting. They perform the decision made by the top and middle level of management. This level requires information about the daily tasks.

#### **4.2 Analysis of Data and Information Used**

This study entitled “Analysis of Critical Factors for Designing Management Information System (Micro-Credit Program of Manushi)” uses huge amount of Primary data. Primary data has been used to identify the requirements/problems of Manushi and the technique used for collecting this primary data is through questionnaires, interview, observations, informal discussion with the staff members and the different level of management of Manushi. The secondary data has been collected from the Internet, Manushi’s website, analysis of existing system and the past records of the organization. The analysis of the existing system provides the clear view on the flow of information and critical processes of Manushi. This acts as a basis for the proposed research and design. Similarly this also indicated the flow of information required in the future and the subsequent changes necessary in the existing system, which acts as a guiding factor for further study.

Manushi is adopting top-down structure of management. There are seven board members in this organization. All the final decisions of the organization and planning are made by this strategic level of management. In the case of Manushi, strategic level of management includes board of directors, who are responsible for all the strategic level of activities like define all the policies, rules & regulations, determine strategies, approves and disapproves plans and programs. This level of management estimates annual budgets and priorities of Manushi.

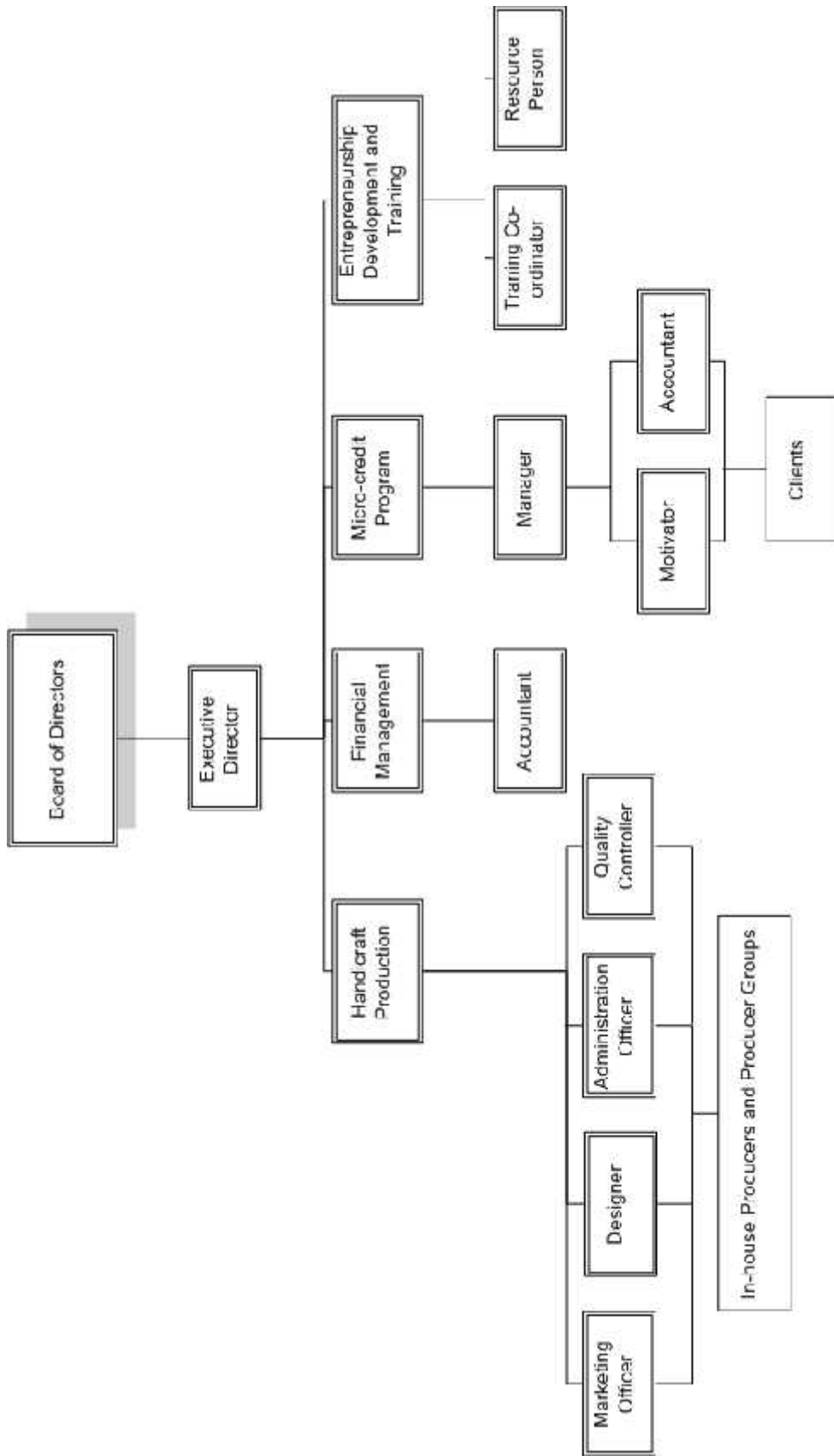
The Middle Level Management, in case of Manushi, general manager and managing director account manager make some decisions according to the plans, policies & strategies made by the Strategic Level management. These peoples control the operation Level staffs and deals with daily work of the organization. The decision made by the Middle Level Management may be programmed and non-programmed depending upon the requirement of organization.

Operational Level of Management where the actual work is done. This level includes branch manager, account officers, motivators and other administrative staffs. These peoples are not allowed to take any kind of decision. They perform the decision made by the Strategic & Tactical Level Management. People in this level require information about the project and tasks.

There are many types of organizational structures. This is the way of dividing the organizational tasks roles to the work force. Organizational structure affects many aspects in the organization such as the competitive advantage, the organization's ability to be flexible and manage diversities, the efficiency of the organization and the control of the organization's environment. It is important to continue being effective and successful as the organization and its surrounding environment reshapes and changes, which makes the designing of the organization vital for an organization's lifespan.

Manushi's organization structure is centralized, where all the control is centered to one actor. The delegation of authority is through the top to down and the information flow is

from bottom to top level of management. Figure 4.2 shows the organizational structure of Manushi.



### 4.3 Existing System of Manushi

*“Organizations are systems of inter-dependent human beings.”(Pugh 1990)*

“System is an orderly grouping of independent components linked together according to a plan to achieve specific objectives”. (Riwin 1997:8) The system provides a meaningful framework for describing and understanding the features and problems of the subject. In other words, collections of components, which are interconnected, and work together to realize some objective, form a system. There are three major components in every system, namely Input, Process and Output.

Figure: 4.3  
Basic Components of a System



### 4.4 Analysis of Existing System

With the analysis of primary data, we can easily find out that Manushi uses manual process for all daily administrative and management tasks. It has been using one computer in central office at Gyaneshwor only. The computer is not been fully used as much as it should. The computer is being used for writing/typing letters, saving files and some calculation with Microsoft Word and Excel. No database has been maintained in computer systematically, so searching for the particular information and extracting some document is very tedious even for experienced and dedicated staff. All the transactions like ledger posting, generation of balance-sheet, report generation, record keeping are done manually.

The communication channel between the central office & branch office and among branch office is done via telephone. If any formal notice has to be circulated among them then the only viable solution is through telephone or the physical meeting of the person to person. Central office or the top level of management is out of informed about all the branches till managers' meeting once a month.

Manushi has set up its organizational website that contains the overall information about Manushi, the purpose of which is mainly seems to be marketing of handicraft items. The website contains very less amount of information about other program including micro-credit.

The conclusion of the analysis of the existing data record and retrieval technology as well as information extraction of Manushi is manual and paper-based which is very time consuming. Plus due to delay, the performance of the overall system is not satisfactory because the manual process is very error prone. In addition to that we can also see the problem of data redundancy during record keeping which can further delay the retrieval of information, so if database has been maintained by implementing DBMS, these redundancies will be removed to some extent.

Since the communication is done through the telephone call and meeting only, there may be huge amount of information gap between different level of organization. Since phone call is verbal in nature, the information given by phone cannot be used for different cases like in the case of monetary matter and in the case of company policy. The meeting is very hard to organize and time consuming. The organization is in developing phase, we need to develop it in more manageable form by implementing computerized system. In order to ensure better economy, efficiency and effectiveness of Manushi, modern information technology must implement as IT embrace all side the development. This study helps to design a prototype of MIS for implementing it in Manushi.

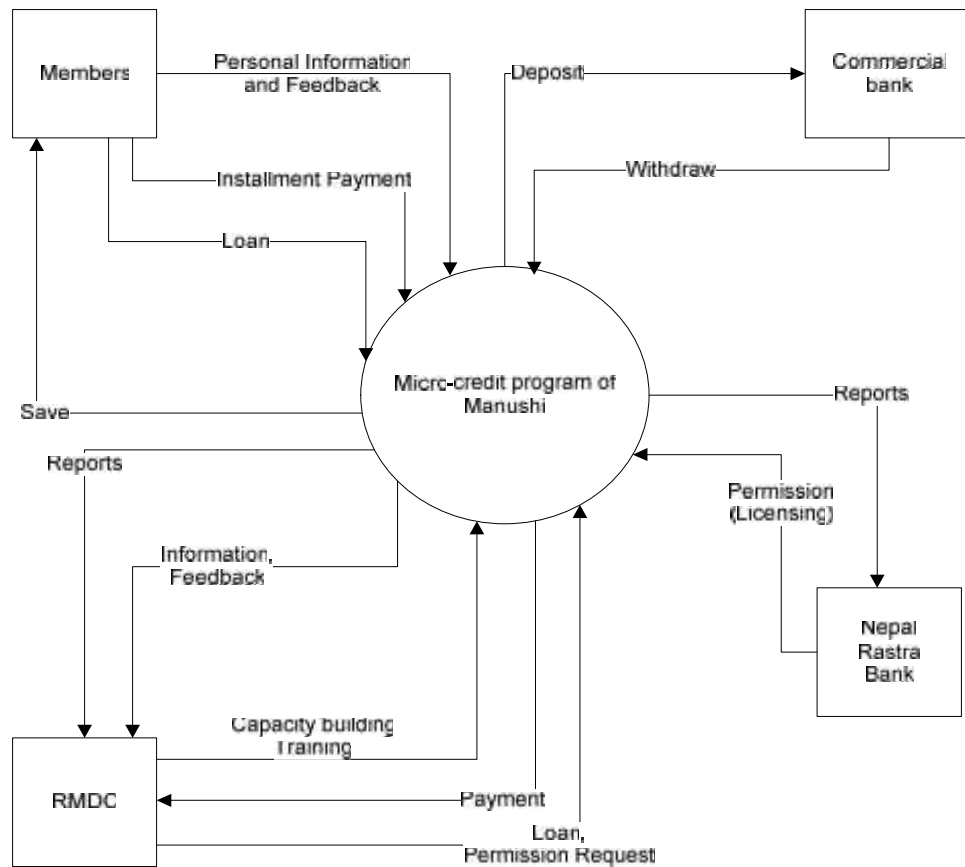
The major entities that directly or indirectly interact with Manushi are Nepal Rastra Bank (NRB), Rural Micro Finance Development Center (RMDC), members of Manushi and a number of commercial banks. The context diagram in the fig. 4.4 shows the overall scope of Manushi.

Manushi has been licensed from NRB and RMDC, which are the regulating and monitoring bodies of all the micro-finance institutions in Nepal, for the operation of micro-credit program. Commercial banks accounts are used to deposit and withdraw

money, that have been deposited by or loan requested by the member of the Manushi. As the most essential component and entity of Manushi is the Members, without which the establishment of Manushi is meaningless. Considering these entities, Manushi is continuously revising the strategy, policy, manages the resources, make future plans and decision as per the guideline of NRB and RMDC.

The researcher has studied the overall system of Manushi by visiting several times in the organization and the information were gathered through different methods such as observation, interview and questionnaire. A list of three different set of questionnaires were prepared which is presented in Appendix-I. Most of them have paid their effort in answering the questionnaire. These responses were analyzed, and the summarization of these responses is presented in the Appendix-I.

Figure: 4.4  
Context Diagram of Existing System of Manushi





In the course of system and the organization study, researcher had found many critical factors that could resist in adopting new system in the organization. The researcher had interviewed and done formal and informal discussion with the staff members and the management. As the management always looks for the cost effectiveness, it does not want to invest huge money for changing the system as the existing system also working in its own way.

So there are many critical factors that the researcher found in the course of system study and analysis. Some of the major critical factors may be summarized as below.

- The management does not tend to trust about the new system easily. Gaining trust level with the new technology and new system is very challenging for the analysts.
- Not all the management level personnel are aware of the new technology and system, so they feel hesitate to go for new technology that they are not comfortable with.
- People by nature, have the thought of “Old is Gold”. Of course, there’s going to be that group of people with the time-tested and well-known “resistance to change syndrome,”
- Some of the organization’s staff members felt frightened of loosing their freedom, choice of skipping jobs and to worst losing their job because of the new technology and system.
- Some of the incompetent staff members may go to against of adopting the computerized MIS because they are unaware of the computer knowledge and resist the decision to adopt the new system.

#### **4.5 Limitation of Existing System**

As above analysis concludes that the existing system of Manushi is manual, time consuming, error prone and difficult to communicate, some major limitations are pointed out by the study that I had done over the period of time:

- J All the processes of the existing system are manual. Each process involves lots of time consuming paper-based tasks that are very hard to maintain the information on the paper files.
- J Information retrieval for decision making and report generation process is difficult as the information is maintained in the paper on different locations. It is very hard to generate
- J Weekly, monthly and annual reports because many paper files have to be searched to generate one report. If top level of management asked for random report of the organization then it is again more difficult. Improperly generated report leads to improper decision making and organizational planning.
- J Record keeping system of the existing manual system is very traditional. It causes data redundancy as the same data has to be entered many times on different papers which is the extra burden and wastage of time for the user. That time could be used for another fruitful job. In this system, there are lots of chances of occurring human error and it is very difficult to find out such errors.
- J In this system the same data have to be posted many times on different files that cause the data entry the time consuming task. Report generation is also time consuming and difficult. To generate one report, all the files necessary to generate the report have to be brought on the same table. This is very traditional and old fashion of doing the job. Today's technology has come up with more advance system which is able to generate any type of report in no time.
- J Communication and coordination among different branches and the central office is possible only through telephone and physical meeting conduction. Physical meeting conduction is not often possible since there are so many branch offices at distant location. And the formal information could not be circulated with telephone. There may be information gap between various levels in the organization.

## **4.6 Common Errors**

### ***Common errors in branch offices:***

- 1) Attendance: Attending even the staff did not present in office or absence even the staff is present in office.
- 2) Leave approved without leave application and leave applications not filed properly.
- 3) Staffs going to fields without filling up field book.
- 4) Circulars from head office could not reach branch office in time.
- 5) No leave record maintained for the branch manager and rights not delegated to other staffs when branch manager is on the leave.
- 6) Going out of office/area without travel order.
- 7) Proper job description not given to staffs.
- 8) Job evaluation of staff not managed properly.
- 9) Staffs those were responsible for the daily office work at central office was not changed for a long time.

### ***Common errors in account and record keeping:***

- 1) No up to date record of the daily transaction.
- 2) Single staff for raising, checking and approving the same voucher.
- 3) No supporting document for the including in the voucher.
- 4) Stationary items not listed in register and stock of stationary items not verified.
- 5) No upper limit of the amount that has to be kept in the branch office or the amount deposited is greater than the specified amount.
- 6) No asset registers maintained and no timely depreciation of the assets.
- 7) Wrong date, amount, amount in letter etc during filling voucher form or missing approval signature.
- 8) Error in calculating interest in loan or deposit.
- 9) Not updating important register and ledgers.
- 10) Money not deposited in bank daily or only partial amount is deposited in the bank.
- 11) Deposit made by one member deposited in other member account.
- 12) Loan request, approval and granted amount is not matching.

- 13) Loan and saving ledger mismatch with main ledger and member's passbook not matching with office record.
- 14) Error in money denomination in the actual and recorded amount.
- 15) No matching of the bank balance.
- 16) Advance given for staff without approval.
- 17) Filing system not properly managed.
- 18) Payment made against the purchased goods without approval.
- 19) No classification of the defaulters depending upon the default amount or not listing of bad debt in time.
- 20) No agreement made on annual program and budget.

#### **4.7 Major Finding of the Existing System**

After observing the system and analysis of the system processes, there are so many findings determined. Among them some major findings are listed below:

- ) The present system processes of Manushi are human oriented manual system. All the transactions are still paper-based which has difficulty in accessing the required information on timely manner. The use of limited number of computer is just limited for typing.
- ) The account of the organization is not maintained in computer that causes the difficulty is accessing the account records, transactions etc.
- ) Record keeping of the micro-credit finance is tedious as the same data has to be recorded many times in different files, which causes unnecessary burden to the staff members. The data redundancy is not a good idea in present scenario.
- ) The communication and staff coordination among all the divisions of the management is not satisfactory as the main medium of the communication is telephone and physical meeting conduction. The physical meeting conduction takes longer period and is not possible to set up the meeting any time. The telephone communication can circulate only limited informal information.

## **4.8 System Analysis and Design of Proposed System**

There are a number of activities involved in analyzing and designing a system. Primary objective of this phase is to identify the major problems & analyze them to build a new system that satisfies the user requirements.

### **4.8.1 Requirement Analysis of Proposed System**

Requirement analysis is a description of the needs and desires for the system. Requirement Analysis must ultimately result in a specification which unambiguously describes what has to be done in the system. In this phase, the existing system has been observed and discussed with users to familiarize themselves with it and to get a better idea of what the new system will be required to do. New ideas have also been discussed and evaluated with arguments and positions about the new system to be designed. The informal discussion with the management helped to refine the requirements. There are a number of solutions to overcome all the short coming of the traditional paper-based system. Some of the probable solutions may be the following models.

1. File Server Architecture
2. Client/Server Architecture (Distributed Data and Application based Architecture)
3. Internet-Based Architecture

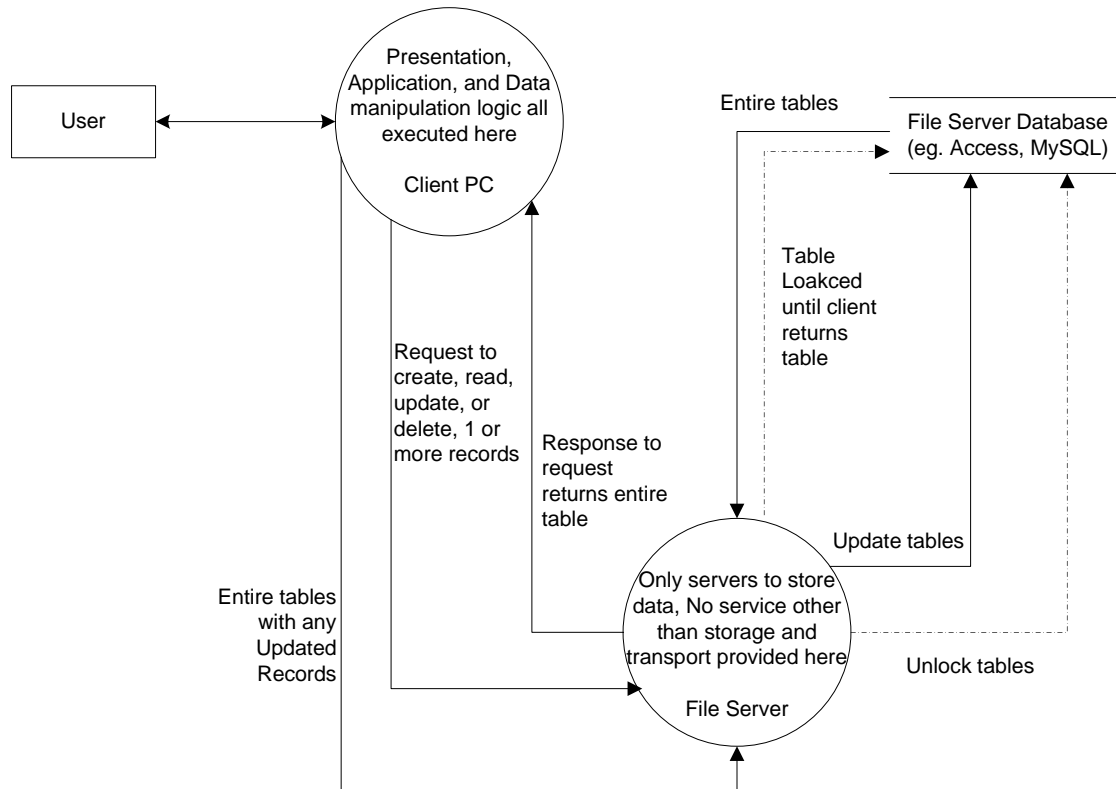
#### **4.8.1.1 File Server Architecture**

File Server System is a LAN-based solution in which a server computer hosts only the data layer. All other layers of the information system application are implemented on the client PC. In this system other non database files such including word processing, documents, spreadsheets, images and graphics, engineering drawings, presentations etc could be shared across the network. A data flow diagram of the file server architecture is shown in the figure 4.5.

File server architectures are practicable only for small database applications to be shared by relatively few users because if the application wants to examine only one record in the database, the entire file or table of records must be first downloaded to the client PC where the data manipulation logic will be executed to read the desired record. Some of the mission critical information systems can be implemented with file server technology.

The server tools such as Microsoft Access can be used to develop fairly robust application for small work groups and to rapidly construct prototypes for more robust client/server architecture.

Figure 4.5  
File Server Architecture



#### 4.8.1.2 Client/Server Architecture (Distributed Data and Application based Architecture)

Client/Server system is a solution in which the presentation, presentation logic, application logic, data manipulation and data layers are distributed between client PCs and one or more servers. The client computers may be any combination of personal computers or work stations connected to the network. A server in the Client/Server model must be more powerful and capable than a server in the file server model. In fact, mainframe computer can play the role of server in a Client/Server environment. The network servers running Client/Server capable operating systems such as UNIX,

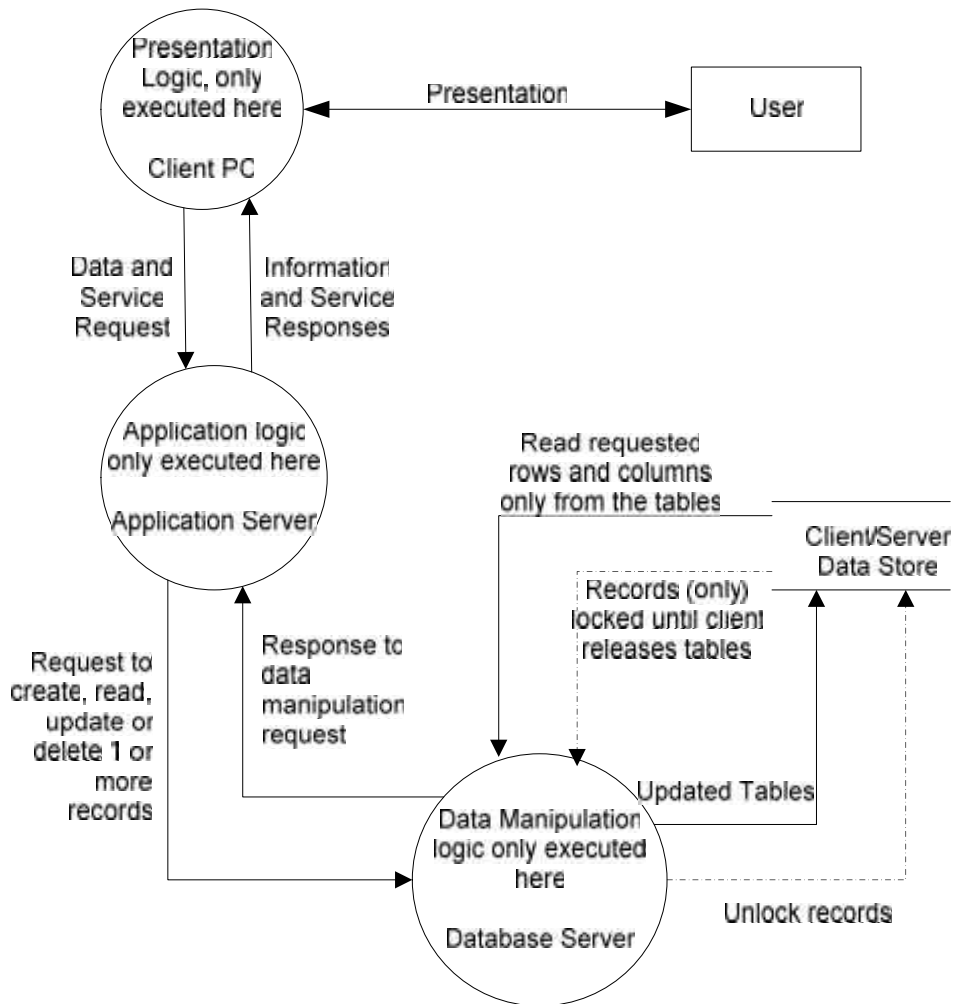
Windows 2000/2003 servers, Enterprise Editions, or Linux. There are basically three flavors of Client/Server solutions.

1. Distributed Presentation
2. Distributed Data
3. Distributed Data and Application

Here the Distributed Presentation and Distributed Data are not considered for this research.

A distributed data and application system is the solution in which the data and data manipulation layers are placed on their own server, the application logic is also placed on its own server and only the presentation logic and presentation are placed on the clients. This solution uses the same database server from all the clients but it has got an application server as well. The application logic to place in its own server, that logic need only be maintained on the server instead of all the clients. The physical data flow diagram of this architecture is shown in the figure 4.6. In this system the clients execute a minimum of the overall system's components. Only the user interface and some relatively stable or personal application logic need to be executed on the clients. This simplifies client configuration and management.

Figure: 4.6  
Client/Server System: Distributed Data and Application



#### 4.8.1.3 Internet-Based Architecture

Internet-Based Architecture is the latest evolution of client/server model that is rapidly reshaping the design thought processes of systems analysts and information technologists.

The Internet-based system is a multi-tiered solution in which the presentation and presentation logic layers are implemented in client-side Web browser using content downloaded from the Web server. This presentation logic layer then connects to the application logic layer that runs on an application server, which subsequently connects to the database server on the backside.



The Internet extends reach of our information and transaction processing systems to include potential customers, customers, partners, remotely located employees, suppliers, government and even competitors.

The greatest potential of this Internet technology may actually be its application to traditional information systems applications and development on intranets. An intranet is a secure network, usually corporate, that uses Internet technology to integrate desktop, work group, and enterprise computing into a single cohesive framework. In this technology everything runs in or from a browser – this includes traditional information systems applications we need for our job such as data entry, report generation, financials, procurements, human resources etc. Because everything runs in a Web browser, there is no longer a need to worry about, or develop for, multiple different computer architecture or worry about different desktop operating systems. A physical data flow diagram for Internet-based computing architecture is shown in the figure 4.7.

#### **4.9 Basic Requirements of the Proposed System**

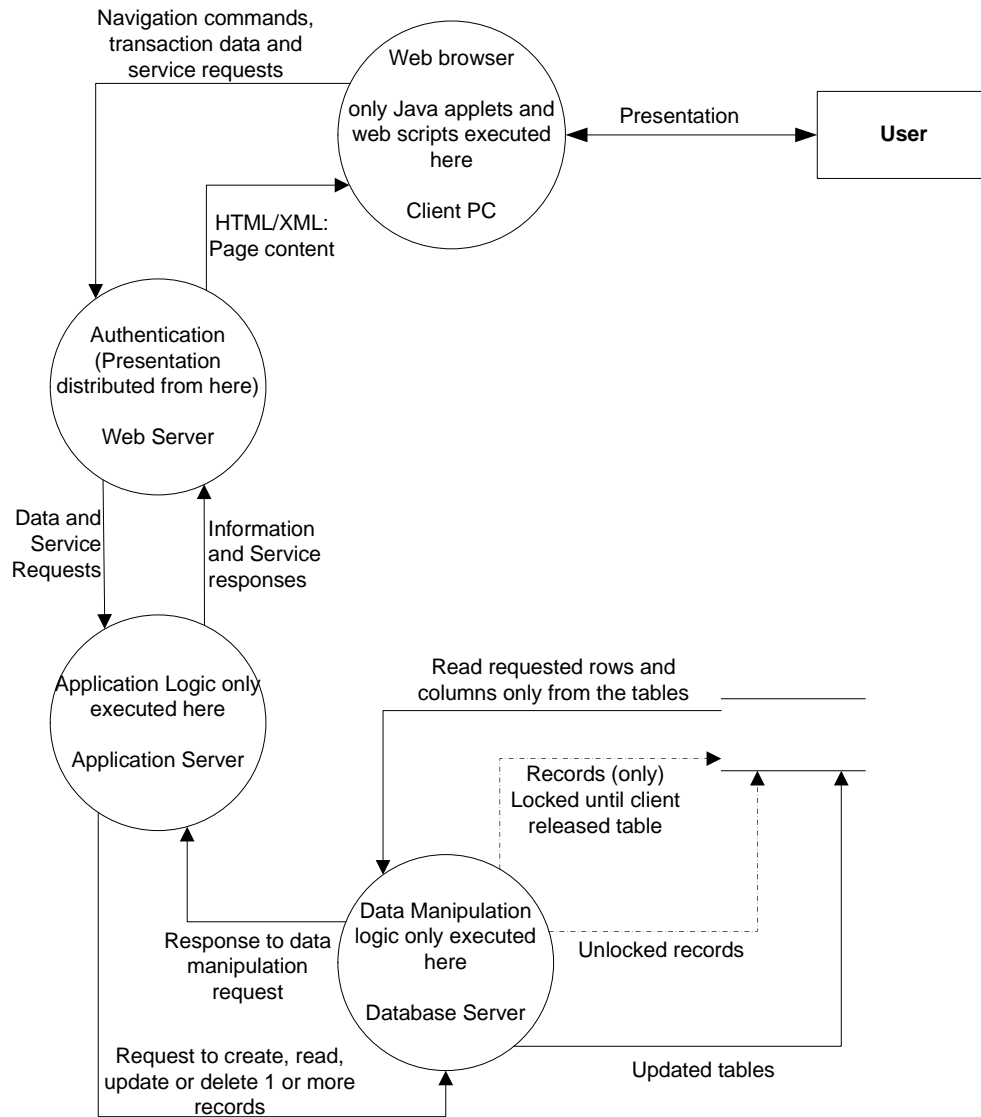
There are some requirements determined while studying and analyzing the existing system of Manushi. The final functional and non-functional requirements of the proposed MIS system are as follows:

##### **4.9.1 Functional Requirements of the proposed system:-**

Functional requirement is a function or feature that must be included in the proposed system to satisfy the organizational need and be acceptable to the users and the managements. Some major functional requirements of the proposed system are listed below:

- The system should be capable of account management such as members' registration, validation, checking the status, profile management etc.
- The proposed system should not violate the existing system rules and regulations
- The required reports such as monthly growth, transactions of each branch or the overall organization, dynamic reports generation should be done properly.

Figure: 4.7  
Internet-based Computing System



- Browsing and searching with different variables such as members' name, branch name, etc.
- Communication and coordination between every division of the organization should be prompt, reliable and efficient.
- Update of required information and parameters should be efficient and easy

#### **4.9.2 Non-functional requirements of the proposed system:-**

A non-functional requirement is a description of the features, characteristics and attributes of the system as well as any constraints that may limit the boundaries of the proposed system. Some major non-functional requirements of the proposed system are as follows:

- All the tasks must be performed in timely manner
- The new system should be simple and the user interface should be user friendly
- The performance of the system should be excellent.
  
- It should be able to accommodate users at different physical locations.
- It should be secured, reliable, flexible, expandable and efficient to handle.
- System down-time should be very minimum
- It should be cost effective and initial cost should not also be very high.

#### **4.10 Application Modeling**

Application modeling is an attempt to formalize and simplify how complex systems are designed. Properly stated, application modeling is the process of identifying and documenting the logical and conceptual requirements of an application. This usually involves an examination of the application's data and programmatic relationship, and then subsequently the use of some of the aforementioned patterns to implement them.

One of the most popular techniques for application modeling is to use Unified Modeling Language (UML), a pictorial system to represent how processes and components interact with one another.

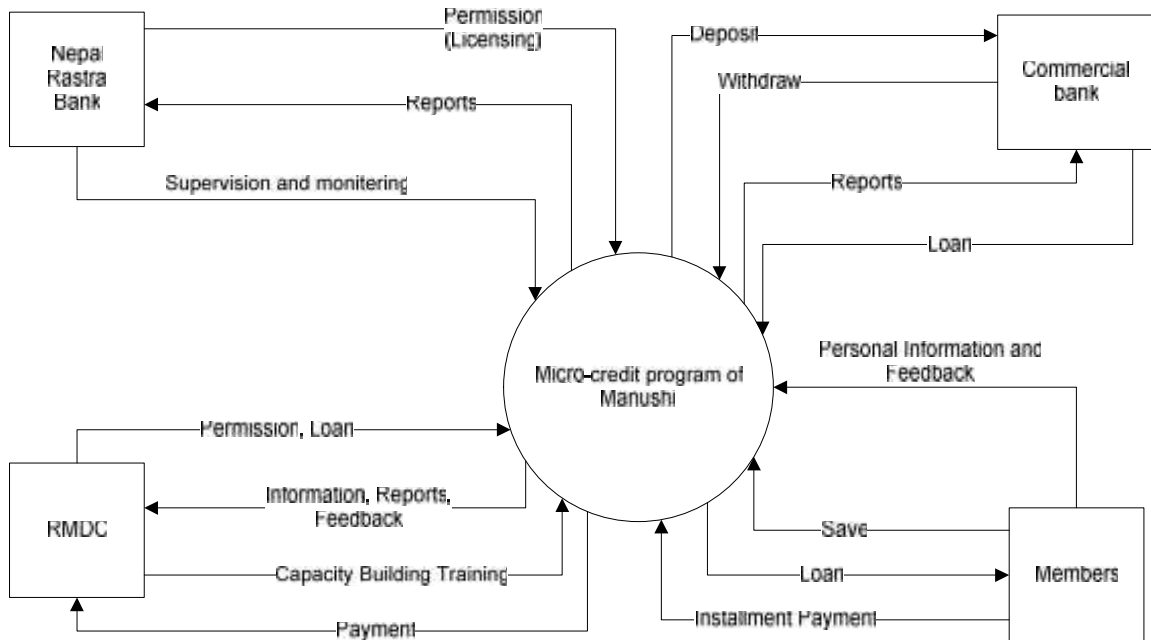
Because UML diagrams are graphical, they are effective at communicating an application's "high-level" architecture. With UML, one can easily represent existing and business processes, application data structures, and user-input parameters. In other words, UML diagrams can easily represent what an application does and how users are to interact with it. As the application evolves, such diagrams can be successively tweaked and overhauled so as to represent the subsequent versions.

The existing system of Manushi is studied and the major entities and processes are determined. The figure below shows the context diagram and data flow diagram of the existing system. The data flow diagram consists of major entities that directly or indirectly interact to the system. Here the major entities are Members, RMDC, Nepal Rastra Bank, Commercial banks. And major data flows between these entities and the system is shown in the figure 4.7.

#### **4.10.1 Dataflow Diagram (DFD) of Proposed System**

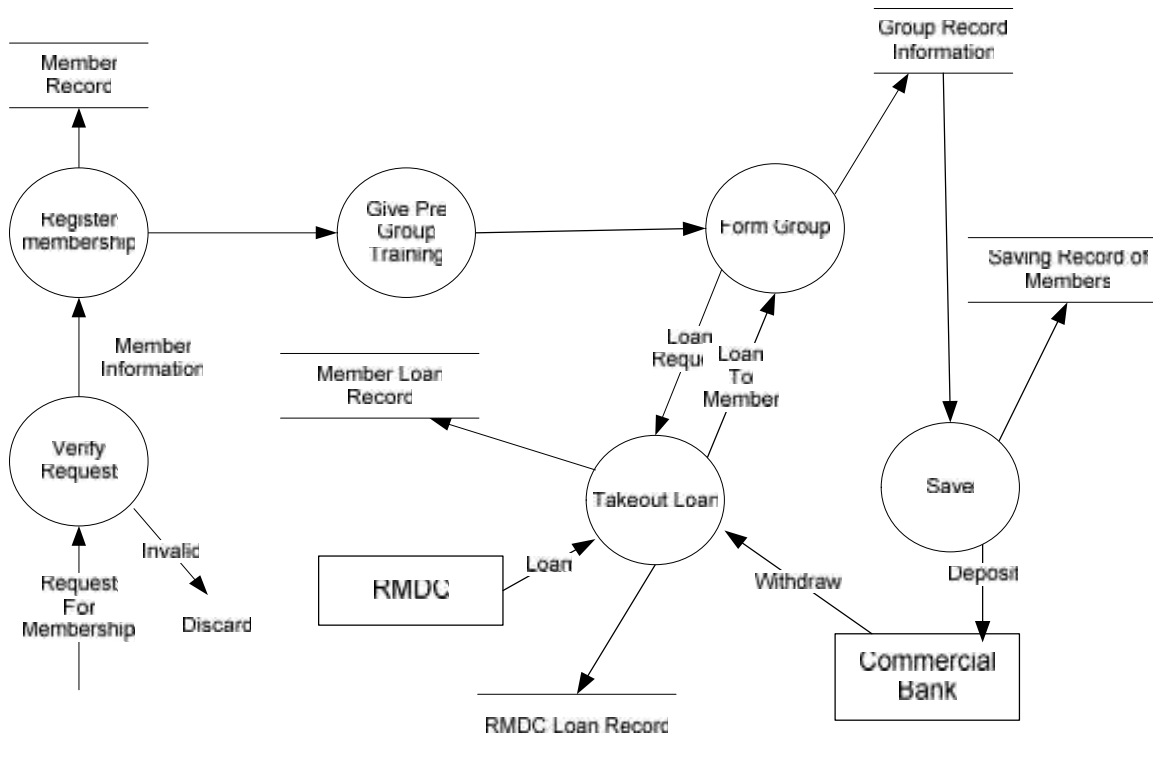
Dataflow diagram is a graphical representation of the “flow” of data through an information system. It is one of the essential perspectives of the structured-system analysis and design method. DFDs can also be used for the visualization of data processing. DFD shows the flow of control through an algorithm, allowing a reader to determine what operations will be performed, in what order, and under what circumstances but does not shows what kinds of data will be input to and out put from the system and where the data will come from and go to.

Figure: 4.8  
Context /Level 0 Diagram of Micro-credit Program of Manushi



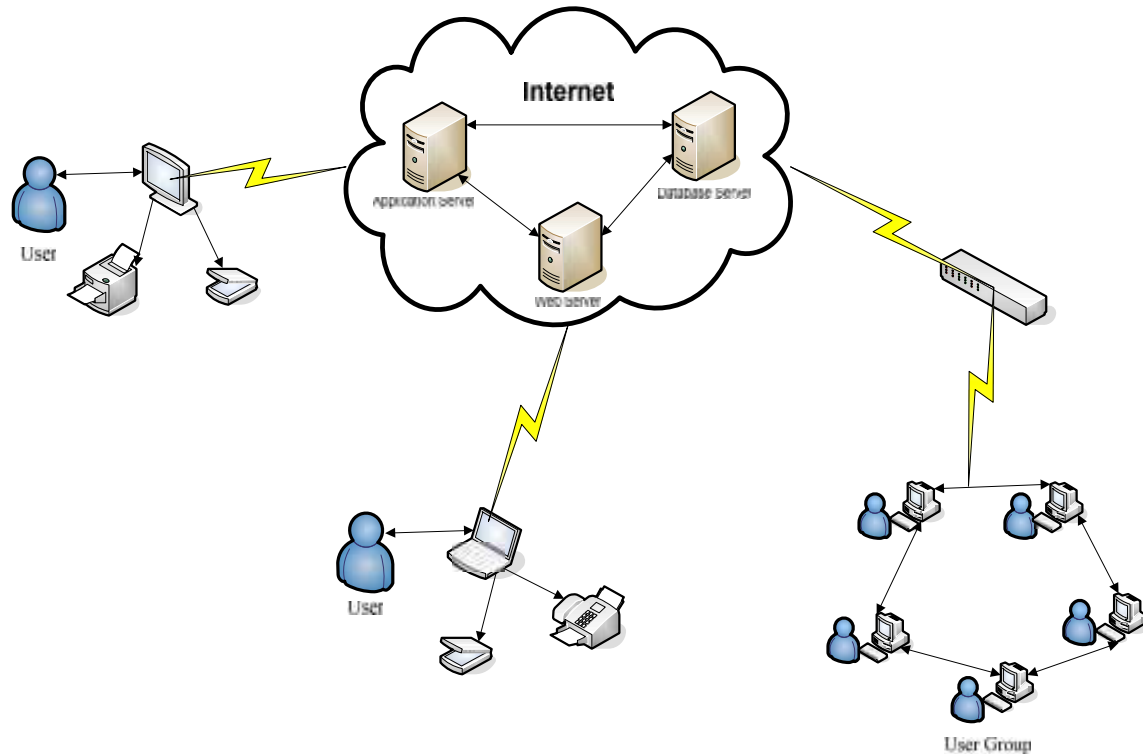
It is a common practice to draw a context-level data flow diagram first, which shows the interaction between the system and external agents which act as data sources and data sinks. The Context Diagram/Level 0 diagram has shown the overall scope of the system. It has not shown what exactly happens to the system and how the entities react with the system. The following Data Flow Diagram/ Level 1 diagram shows the system processes and how they interact to the system. Figure 4.9 shows the Level 1 Data flow diagram of the Manushi.

Figure: 4.9  
Level 1 Data Flow Diagram of Micro-credit program of Manushi



In the proposed system, the application is placed on public Internet as a web server so that it will be accessible from all places via Internet. Centralized database will be maintained in such a way that it will be accessible from application server only but not for the end user. End user access the application by using web browser and Internet connection thus eliminating the need of expensive dedicated link. As Manushi already maintained its website giving information about its services and programs, the same can be used for this purpose as well. Figure 4.10 simplifies and represents the overall view of the proposed system.

Figure 4.10  
Internet based system accessed by end users



#### 4.10.2 Physical Database Design (Data Dictionary)

Database is made up of a group of tables that stores data regarding the entities. And a table consists of a group of attributes (fields) that describes about the object/entity of the system. The tables of the system are designed in such a way that all the appropriate information about the different elements can be stored and used as required by the system. Tables have a group of sections that are explained as follow:

- **Table Name:** This section has the name of the table that is used to identify it in the database.
- **Table Description:** this section contains a brief description about the table. It describes the element about which the table contains information.
- **Serial No.:** Each field within a table is assigned a serial number for the ease of referencing it in the document.
- **Field Name:** This section contains the name of the field in the database.
- **Data Type:** This section contains the data type of the field. The data type indicates the type of data that the field contains.
- **Length:** This section contains the maximum length of data that the field can hold.
- **Constraint:** This section lists out any constraints on the field. The constrains are

- **Primary Key (PK):** This indicates that the field is a unique identifier or a part of the combination of field that act as the unique identifier.
- **Unique (U):** This indicates that the value of this field should be unique for each separate record in the table.
- **Not Null (NN):** This indicates that this field cannot contain NULL values for any of the records in the table.
- **Foreign Key (FK):** This indicates that this field references another field in another table.

Few tables are given below and remaining tables are given in Appendix IV.

Table 3.1  
Manushi's Information

Table Name: <b>Manushi's Information</b>				
Description: This table stores the registration no. of the organization, name, location, telephone, fax no, date of establishment etc information.				
S. No.	Field Name	Data type	Length	Constraint
1	Registration_No	Int	10	PK
2	Name	Varchar2	30	NN
3	Location	Varchar2	30	NN
4	Telephone	Varchar2	50	NN
5	Fax_No	Varchar2	50	
6	Organizational_URL	Varchar2	50	

Table 3.2  
Member's Information

Table Name: <b>Member Information</b>				
Table description: This table stores the member identification no, full name, spouse's name, age, contact no, group id and other information				
S. No.	Field Name	Data Type	Length	Constraint
1	Member_ID	Int	10	PK
2	Full_Name	Varchar2	50	NN
3	Spouse_Name	Varchar2	50	
4	Full_Address	Varchar2	50	NN
5	Contact_No	Varchar2	50	
6	Age	Int	10	NN
7	Joined_Date	Date/Time		NN
8	Group_ID	Int	10	FK



9	Beneficial	Varchar2	50	NN
10	Community_No	Int	10	FK
11	Occupation	Varchar2	50	
12	Father_In_Law_Name	Varchar2	50	
13	Grand_Father_Name	Varchar2	50	
14	Citizenship_No	Int	10	
15	Family_Member_No	Int	10	NN
16	Education	Varchar2	50	NN

Table 3.3  
Family Background of the members

<b>Table Name: Member's Family Information</b>				
Table description: This table stores the member identification code, their full name, age, occupation, education relation to the member etc.				
S. No.	Field Name	Data Type	Length	Constraint
1	Member_ID	Int	10	FK
2	Full_Name	Varchar2	50	NN
3	Age	Int	2	NN
4	Occupation	Varchar2	50	
5	Relation_to_Member	Varchar2	50	NN
6	Education	Varchar2	50	NN
7	Remarks	Varchar2	50	

#### 4.10.3 Interface Design

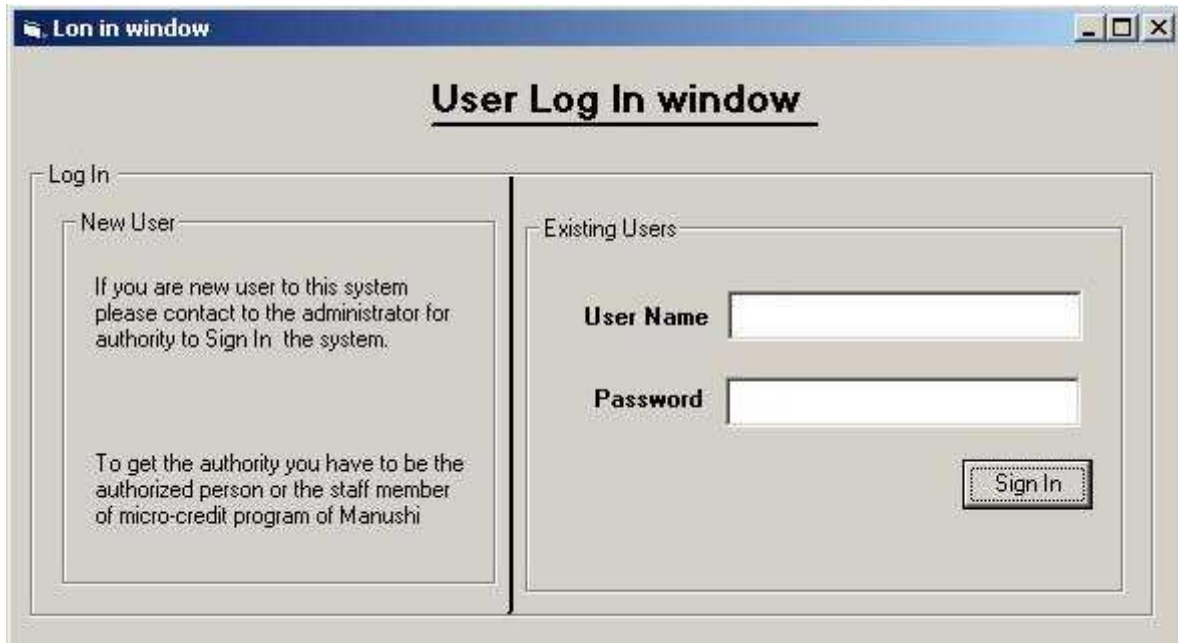
Input and output of the system are the major concern of the proposed system. The input interface should be simple, easy and user friendly. The most practical way of designing the input screen should simulate the manual process, as well as following the proven practices because the users interact and work with the input and output interface of the system. This way of interface design simplifies the end user experience and gets easy user acceptance. Hence the system design for the study follows the proven practices of many successful existing online data stores. Input and out interface is Graphical User Interface (GUI). The input design has been defined in such a way that is simple to use, simple to generate reports and provides more flexibility.

#### Staff Login

The Login module authenticates the registered person he/she has authority to access the system. This authenticates the users by taking the input string and the password. This

credential is compared to the staff data stored in the database of the system. The user can be logged in to the system if he/she is authorized and registered staff member of the organization.

Figure: 4.11  
User Login Interface



The screenshot shows a window titled "Lon in window" with a subtitle "User Log In window". The interface is divided into two main sections: "Log In" and "Existing Users".

- Log In:**
  - New User:** A text box containing the message: "If you are new user to this system please contact to the administrator for authority to Sign In the system." Below this, another text box says: "To get the authority you have to be the authorized person or the staff member of micro-credit program of Manushi".
- Existing Users:** A section with two input fields: "User Name" and "Password". A "Sign In" button is located at the bottom right of this section.

### Member Information Form

When a group of valid members come to join the system, first of all, their all the personal information have to be kept. To keep all their personal information each members has to fill up their member information form as in paper-based system. The member information is filled up in the computer instead of in paper. The sample of the form has been designed as shown in the fig.4.12 below. When the data is input in this form and once saved it, the data will u ultimately goes to the database. The following interface is just a prototype of the real interface design.

Figure: 4.12  
Member Information Input Form

**Member Information Form**

**Member Information of Micro-credit Program of Manushi**

Personal Information

Full Name  Contact No

Age  Occupation

Name of Spouse/Father

Name of Grand Father/Father in Law

Citizenship No  Date of Issued

No. of Family Members  No. of Male  No. of Female  Others

Member's Family Information

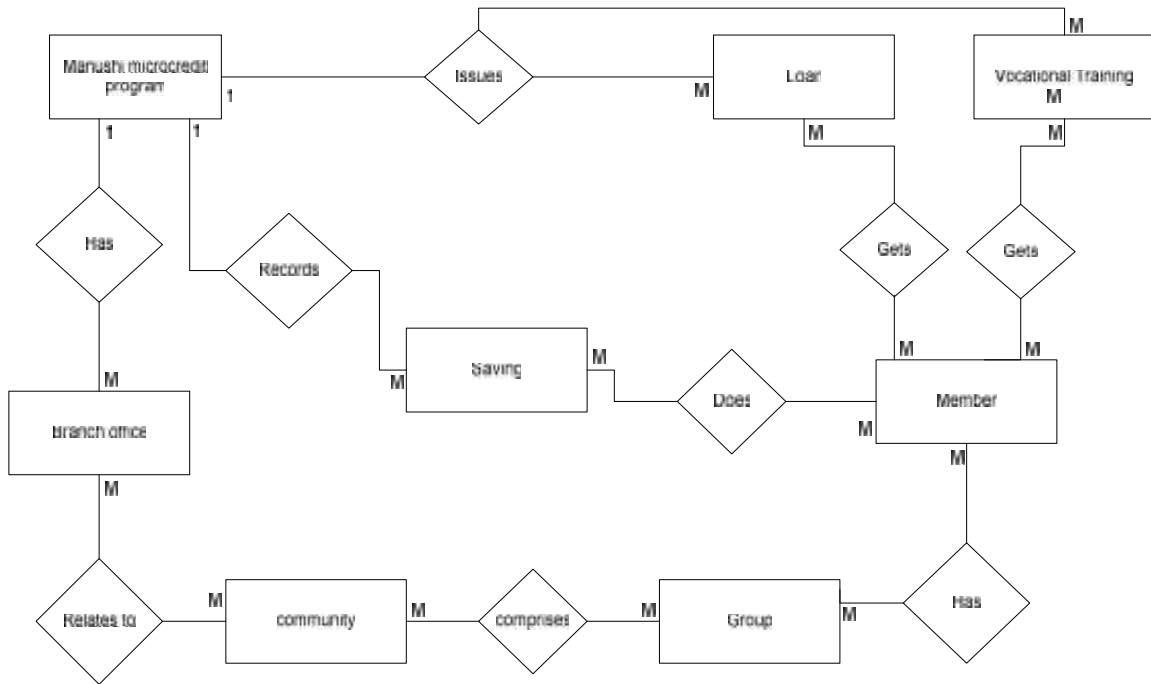
S. no.	Name of Family Member	Age	Relation to the Member	Occupation	Education	Remarks

#### 4.10.4 Entity Relationship Diagram (ERD)

Entity Relationship Model (ERM) is an abstract and conceptual representation of data. It is a database modeling method, used to produce a type of conceptual schema or semantic data model of the system, often a relational database, and its requirements in a top-down fashion. Diagrams created by this process are called Entity Relationship Diagram (ERD). A simple ERD of the proposed system is depicted in the figure 4.13.

Figure: 4.13

A Simple ER diagram of micro-credit program of Manushi



#### 4.11 Comparison between Existing and Proposed System

The analysis and study of existing system of Manushi showed that the existing system for the information communication, transactions are in traditional paper-based system. The information was maintained in the paper so the searching and finding the required information is difficult in the existing system.

The existing system does not use computer based database, it simply stores the information in paper based textual format. The existing system uses very little information in the process of planning and decision making; they were made all in the base of management experience and ad-hoc basis. Since there is difficulty in accessing the required information on time, the decision making process is slow which is not satisfactory.

The new system has tried to overcome all the shortcoming of the existing system as well as providing lots of feature to help performing the organizational tasks and its users. A part from providing information support for decision making in the organization, the new system integrated all the existing processes in one system and store all the information in

one centralized database to supporting the day to day operations, the management and decision making function in the organization. Since it is a well designed and computerized system that uses the latest application of MIS, it has superiority in speed, accuracy and reliability over the existing system. It has not only eased the collection, storage and retrieval of information but also communication and use of data for efficient management operations such as planning, organizing, staffing, directing, coordinating and controlling in the organization so as to achieve the objective of the organization.

This comparison prevails over the usage of existing system on the cost, time and efficiency and easy and timely information access to the management.

#### **4.12 Justification of Proposed System**

The proposed system will fulfill all the features that are lagging in manual system. The new system can be implemented to the Manushi due to the suitability and feasibility point of view that has been already discussed. It will provide lots of features to support the day to day operations and provide the required information to the concerned body on timely manner for decision making. It will also integrate all the existing processes in one system and store them in one centralized database to support the decision making and daily activities of the organization. Since it is a well designed Management Information System and uses the latest application of MIS, it has superiority in speed, accuracy and reliability over the existing system. It has also ease the collection, storage and retrieval of information, communication and use of data for efficient management operations such as planning, organizing, staffing, directing, coordination and controlling in the organization so as to achieve the objectives of the organization.

#### **4.13 Cost Benefit and Feasibility Analysis of the Proposed System**

In any project, cost benefit and feasibility assessment play a great role in the success of the project. No project gets failure if the unlimited resources and infinite time are given. But the project always has limited resources and time limit within which the analyst and developer should take care of. The success or failure of the project relies on the cost benefit and feasibility assessment.

The development of computer-based information system in many cases is more likely to be plagued by the scarcity of the resources and delivery date. Feasibility study takes into account various constraints within which the system should be implemented and operated. Some of the key considerations involved in feasibility analysis are economic feasibility, technical feasibility, operational feasibility and legal feasibility.

As the existing system of Manushi is totally manual which is not suitable due to difficulty in information accessing & searching, report generation, huge calculations, lack of coordination and cooperation among the different divisions of the organization. The design of new system removes all the drawbacks of the existing system in terms of time, cost, labor, members satisfaction and improves the overall efficient and effectiveness of performing the tasks of the organization. Hence the proposed system is feasible in the environment and context of the Manushi.

#### **4.13.1 Technical Feasibility**

Technical feasibility is a measure of the practicality of a technical solution and the availability and the availability of technical resources and expertise. It includes Risk Resources availability and technologies. The management provides latest hardware and software facilities for successful completion of the projects. With these latest hardware and software support the system will perform extremely well. The system is available through Internet. As releasing the system over Internet is not a big deal, as the hosting and domain costs are affordable and there are some sites which offer free website hosting. This can also be used to host the website. This technical feasibility analysis concludes that the implementation of MIS in this Manushi is viable and technically feasible.

#### **4.13.2 Operational Feasibility**

Operational Feasibility is a measure of how well the new system will work in the organization. In existing manual system, it is very difficult to keep the same record in several files. It is equally very difficult to maintain and update huge amount of information for report generation and decision making. The proposed system integrates all the processes of existing system and centralizes the information collection in the

central database. The database can be accessible for all the level of management from anywhere according to the access level and authority & authentication. This system will handle the request in a better way and make the process easier, thus it is sure that the system designed is operationally feasible.

#### **4.13.3 Economic Feasibility**

Economic feasibility is a measure of the cost-effectiveness of a new system. In this feasibility, the development cost of the system is evaluated weighing it against the ultimate benefit derived from the new system. It is found that the benefit from the new system would be more than the cost and time involved in its design and development and implementation. Implementing this proposed system will save huge amount of stationery goods. Investment for the proposed system is one time investment but the existing paper-based system is the investment forever. So I can be concluded that the proposed system is economic as compared to the paper-based system.

#### **4.13.4 Legal Feasibility**

In the legal feasibility it is necessary to check that the software that is going to develop is legally correct or not, which means that the ideas which we have taken for the proposed system will be legally implemented or not. So, it is also an important step in feasibility study. The researcher has used open source software and licensed software to design and develop the system.

# **CHAPTER V**

## **CONCLUSION AND RECOMMENDATION**

### **5.1 Summary**

Manushi is an organization that supports poor, disadvantaged and marginalized women and men through training, facilitation and placing them in diverse gainful activities including handicrafts and small business. This organization has now diversified its activities incorporating management and skill training. Entrepreneurship development, micro-credit for women, health and environment and gender concerns directly impacting on the women's empowerment and community development. At present Manushi is providing its services to more than 12,000 women within the valley and outside of the valley through its 9 branch office.

To design the system, the relevant data has been collected from various sources. The study entitled "Analysis of Critical Factors for Designing Management Information System: a case study of micro-credit program of Manushi" has been prepared on the foundation of the MIS and IT concepts and by reviewing the articles and thesis of the various authors during the literatures review. It was found that the research in the field of MIS and Internet has been done separately, as the research has not been done by integrating the Internet to the MIS. So, this research has studied about the benefits that Internet provides to the organizations and feasibility of integrating the Internet technology to MIS in the context of Manushi.

In the course of this study, data has been collected using primary and secondary data collection techniques. The design of the system uses the primary and secondary data and has been collected through the formal and informal discussion, questionnaire and interview to the organizational personnel and staffs about the existing system of Manushi.

On the foundation of the reviews and data collected from various sources, researcher has examined and analyzed the existing system of Manushi and found many shortcomings in the context of the operating cost, efficiency and effectiveness and performance of the



process and human effort, difficulty in managing the paper based information and accessing the information for the decision making purpose. Management Information System is the backbone on which logical business decisions are made in all types of business organizations. Integrating Internet technology with this system would be the great benefit to current competitive age. Applying this same logic in the financial institutions such as Manushi, we can safely say that Manushi must have good Management Information System and prosper in this exceedingly competitive world.

## **5.2 Conclusion**

Information is the most crucial thing in today's world. Only those who have information and are capable of manipulating information to knowledge will be the successful. The business is moving from regional to global because of the computerized system with Internet and networking. The main purpose of the study entitled "Analysis of Critical Factors for Designing MIS: a Case Study of Micro-credit program of Manushi" is to integrate Internetworking in the system process of the organization and design the MIS suitable for the scenario. This system design will act as a foundation for the organization for further development of real system and take advantages of the system to overcome all the shortcomings found in the existing system.

The most pressing concern of management is the cost-effective utilization of human and economic resources, timely availability of quality information, and improved member services. The implementation of the system will cater most of the requirement of the management of Manushi.

As stated earlier, this project has some of its limitations. This research is limited only using DFD modeling and ER-diagram of the problem. This research does not include coding of programs based on this study. So, this basic study has recommended as a basis for further programming and other future activities.

The major challenge to accomplish this alignment is lack of common understanding between this institution's management and the Information systems. The design of the proposed MIS helps to bridge that gap. Hence, the alignment of this institution and the

information system requires that business need and management need are identified and understood and IT capabilities are matched appropriately to those needs.

Doing the traditional paper-based system in the financial institution of Manushi is not satisfactory. This system may be replaced with computerized management information system with effective performance and efficiency. If the computerized MIS is implemented in this institution, the overall performance will be considerably increased and decision making will be fast and accurate. As there are a number of architectural model that could be implied in the institution, one most viable option has been recommended which is secured, cost effective and affordable as well.

Finally, the system designed on the basis of the present study proves to be an effective achievement. The right direction to take will only evolve with time, but effort has to be taken seriously by everyone involved in the business.

### **5.3 Recommendation**

Although Manushi is convinced to implement Computerized Information System, there are number of thing that has to be considered seriously while implementing new system and number of thing that has to be done to implement this system successfully. There is also need to make some changes in systems that Manushi is currently using.

The new system may not totally eliminate the paper-based system as the client group which consists of individual members are not all educated as well as operate/access the computer and Internet. So at least the client/member part of this system is assumed to continue current paper-based operation.

Although there are a number of alternatives to implement MIS system in this sector of Manushi, the feasibility and requirement analysis shows one feasible and viable option that is very much cost effective as emphasized by management team. In the previous chapter there are at least three options that could be implied for implementation of MIS in this organization.

Even the File Server Architectural system is secure and proven architecture; it has higher installment cost plus the operation cost proportionally increased with the extension of

member groups. This technology is practical only for small database applications to be shared by relatively few users because if the application wants to examine only one record in the database, the entire field or table of records must be first downloaded to read the desired record. There are several disadvantages to this approach.

- ) Large amount of unnecessary data must be moved between the client and server. This data traffic can significantly reduce application performance.
- ) The client PC must be robust. It is doing virtually all of the actual work including data manipulation logic, presentation logic, and presentation. It must also have enough disk capacity to store the downloaded tables.
- ) Database integrity can be easily compromised. If any record has been downloaded to be updated, the entire file has been downloaded. Other users must be prevented or locked from making changes to any other record in that file. The greater the number of simultaneous users, the more this locking requirement slows response time.

Although the data manipulation, application logic and presentation will be done in individual branch of the system separately, the centralized server may not contain the latest data available in the branch which in turn might lead to error/delay in decision making. In this system all the branch shall have their application with database to operate the system. These databases finally goes to the central file server where all the databases from each section to be merged. Great care has to be taken when combining individual database to avoid data redundancy and to maintain integrity (For example: all branch shall have same number of member\_id in the Member ID field). The application program to perform merging operation shall be intelligent enough to handle such errors. The development of such type of application may add the extra cost to the system.

The distributed data and application-based solution provides every shortcoming of the file server solution of data redundancy, synchronization and integrity problem as the data and data manipulation logic and application and application logic are placed in the server side of the system and only presentation and presentation logic are placed in the on the branch side of the system. The response time of the system will be quite higher as compared to the file server system. But there must be dedicated network connection and

servers to run this system. Servers and network connections are expensive that may lead to the running cost higher which may not be acceptable to the management of microcredit program of Manushi. The network cost that I have managed to collect is depicted in Appendix-II – which shows the rate is quite expensive for the organization like Manushi.

In the Internet-based Architecture, the presentation and presentation logic are implemented in client-side web browsers using content downloaded from a Web server and presentation layer then connects to the Application Server which then connects to the Database Server. All these

Servers are placed in the Internet. As all the contents and server are in the Internet, it can be accessible from every part of the world. This technology is being used to build e-commerce solution are being used to reshape the internal information systems of most businesses. The greatest advantage of having Internet-based architecture is the replacement of dedicated network connection by Internet.

Plus in this solution, there is no need to build client side application in each branch of Manushi as in client/server solution to run this system. This may help to minimize installation and running cost of the system to some extent which is the major requirement of Manushi. From the primary data, I came to know that Manushi is already having its website to provide information to the users and the Internet-based system shall be hosted on the same server. The security level can also be maintained as per the need (by using HTTPS) while developing the web site of the organization. If there is space constraint in the existing web server, there are still lots of web-sites which offer free PHP/MySQL hosting. The names of few of these sites are given in Appendix-III also.

Analyzing all these architectures, the Internet-based system is most useful and viable option that I found in this study. And I recommend to design and develop the computerized MIS on the basis of this architecture which is well suited for the organization like Manushi because of the low installation/running cost, provisioning of industry standard security measure, which in conjunction with RDBMS also provide data integrity and remove data redundancy.

# BIBLIOGRAPHY

## Literature

Adeoti-Adekeye, W.B.,(1997) "*Importance of MIS*". Library Review Vol. 46. No. 5:318-327.

Adhikary Shanker, (2005) "*Introduction to Management Information System*", Kathmandu, Buddha Academic Publishers and Distributers.

Bhattarai, Manohar K,(March 2002) "*Formulation of Information & Communication Technology Policy and Strategy Nepal*".

Cafasso, Rosemary, (1994) "*Few IS projects come in on Time, on Budget*".

Dhungana, Priya Darshan, (2007) "*Management Information System: An Overview*", Poush.

Don Q. Matthews, (1971) "*The Design of the Management Information System*", Retocelli books

Igor Howryszkiewicz, (1998) "*Introduction to System Analysis and Design*". 4<sup>th</sup> Edition. Prentice Hall of India

Jones, G.R., (1995) "*Organizational Theory: text and cases*", Addison-Wesley Publishing Company, Inc, US.

Jawadekar, W.S. (2002), "*Management Information Systems*". 2<sup>nd</sup> Edition. New Delhi: Tata McGraw Hill.

Jeffrey L. Whitten, Lonnie D. Bentley, Kevin C. Dittman, (1995) "*System Analysis and Design Methodology*". 5<sup>th</sup> Edition. Tata McGraw-Hill Publishing Company Limited.

Jerresand, Martin, (2002) "*Managing Your Information Across the Enterprise*".

Laudon, Kenneth C. & Laudon, Jane, (2007) "*Management Information System:*

*Managing the Digital Firm*”, 8<sup>th</sup> Edition, Pearson Education Inc.

O’Brien, James A, (2004) “*Management Information System*” New Delhi, McGraw-Hill.

Pugh, D., (1990) “*Organizational Theory*”: 3rd Edition, Penguin

Robert J. Thierauf, (2000) “*System Analysis and Design of Real-Time Management Information System*”.

Tamrakar, Jyoti Ratna, (2002) “*Importance of MIS*”. The Rising Nepal.

Terence Lucey (2004). “*Management Information Systems*”

Turban, Efraim & Arosan, Jay E., (1998) “*Decision Support Systems and Intelligent Systems*”, Singapore, Pearson Education.

Wolf, Howard K. & Pant, Prem R. (2002). “*A Handbook for Social Science Research and Thesis Writing*”. 3rd Edition. Kathmandu: Buddha Academic Publishers and Distributors Pvt. Ltd.

### **Master Degree Thesis**

Acharya, Ishwor, (2002) “*Implementation of MIS in RNAC*”. Unpublished Master Degree Thesis, Shanker Dev Campus.

Adhikari, Bimal P., (2002) “*Information Technology in Security Management*”. Unpublished Master Degree Thesis, Shanker Dev campus.

Bhattarai, Ajit P. (2003), “*Performance of Management Information System in Kumari Bank*”. Unpublished Master Degree Thesis. Shanker Dev Campus.

Lohani, Ashok, (2005) “*Online College Management Information System (OCMIS)*”. Unpublished Master Degree Thesis, Shanker Dev campus.

Pradhan, Yadhav, (2002), “*A study on Micro-computer and computerization in Nepal*” Unpublished Master Degree Thesis, Shanker Dev Campus.

## **Websites**

<http://www.bestpricecomputers.co.uk/glossary/management-information-system.htm>

<http://en.wikipedia.org>

<http://www.e-sonsultancy.com/knowledge/whitepapers/84571/managing-your-information-across-the-enterprise.html>

<http://www.edunepal.com.np/projects/thesis.htm>