

**USE OF MANAGEMENT INFORMATION SYSTEM ON  
TELECOMMUNICATION COMPANIES IN NEPAL**

**(Comparative Study of Nepal Telecom & Ncell)**

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*In partial fulfillment of the requirement for the degree of  
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# RECOMMENDATION

This is to certify that the thesis

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**USE OF MANAGEMENT INFORMATION SYSTEM ON  
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## **DECLARATION**

I hereby declare that the work reported in this thesis entitled "**Use of Management Information System on Telecommunication Companies in Nepal-(Comparative Study of Nepal Telecom & Ncell)**" submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Master of Business Studies (MBS) under the supervision of **Shree Bhadra Neupane & Shankar Nath Adhikari** of Shanker Dev Campus.

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## ABBREVIATIONS

3G	Third Generations
Administn	Administration
ADSL	Asynchronous Digital Subscriber Line
AFS	Advanced Free phone Service
AM	Amplitude Modulation
AN	Access Network
ANP	Access Network Planning
Approx.	Approximately
B.S	Bikram Sambat
BSNL	Bharatiya Sanchar Nigam Ltd.
BTRC	Bangladesh Telecom Regulatory Commission
Cap	Capacity
CB	Central Battery
CBIS	Computer Based Information System
CDMA	Code Division Multiple Access
CIT	Citizen Investment Trust.
Co.	Company
Congestn	Congestion
D.O.T	Department of Telecommunication
D.P	Drop Point
DEL	Distributed Exchange Line
Dept	Department
DFD	Data Flow Diagram
DMD	Deputy Management Director
EVDO	Enhanced Voice-Data Optimized
FNF	File Not Found
Govt.	Government
GPRS	General Packet Radio Service
GSM	Global System for Mobile Communication
HCD	Home Country Direct dialing
HF	High Frequency
HRD	Human Resource Department
ICT	Information Communication Technology
IN	Intelligent Network

Info	Information
INGO	Information NGO
IS	Information System
ISDN	International Subscriber Digital Network
ISP	Internet Service Provider
ITU	International Telecommunication Union
IVR	Interactive Voice Response
JICA	Japan International Corporation Agency
MARTS	Multiple Access Radio Telephone System
MCC	Maintenance Control Centre
MD	Managing Director
MDF	Main Distribution Frame
Mgmt	Management
MI	Management Information
MIS	Management Information System
MOF	Ministry of Finance
MoIC	Ministry of Information and communication
Msg	Message
N/W	Network
Nat	National
NDCL	Nepal Doorsanchar Company Limited
NGN	Next Generation Network
NGO	Non Government Office
NPR	Nepalese Rupees
NT	Nepal Telecom
NTA	Nepal Telecom Authority
OS	Operating System
OYT	Own Your Telephone
P.P	Primary pair
PCC	Prepaid Calling Card.
PCL	PSTN Credit Card
PDSN	Public Digital Switching Network
PSTN	Public Switching Telephone Network.
S.P	Secondary Pair
SD	Service Division
STD	Subscriber Trunk Dialing
TRAI	Telecommunication Regulation Authority of India

TTC	Telecom Training Centre
UHF	Ultra High Frequency
USSD	Unstructured Supplementary supply Data
VAS	Value Added Service
VAT	Value Added Tax
VDC	Village Development Committee
VHF	Very High Frequency
VSAT	Very Small Aperture Terminal
WLL	Wireless Local loop.

# CHAPTER I

## INTRODUCTION

### 1.1 Background of the Study

#### 1.1.1 Telecommunications Services

Telecommunication services are the exchange of information over significant distances by electronics means. It is also defined as the transmission, between or among points specified by the users, of information of user choosing, without change in the form or content of the information as sent and received.

For purposes of regulation by the federal Communications Commission under the U.S. Communication Act of 1934 and Telecommunication Act of 1996, the definition of **Telecommunication service** is “the offering of telecommunication for a fee directly to the public, or to such classes of users as to be effectively available directly to the public, regards of the facilities used.

Telecommunication services have proved to be very important for the mankind it has helped to make the earth closer and safer. It has vital role in raising the economy of the society and the country as a whole by saving time and money in getting information and instruction thereby helping in increasing production and finding out market for the industries. It has vital role in the sector of health and education of the society: especially telemedicine and e-learning, recent developments have highlighted the importance of Telecommunication services in the health & education Sectors. It also helps at all the phases of disasters. It can help to find jobs or to consult experts required. Telecommunication infrastructures in fact to support people to achieve each and every field of their work & lives. It has been found that there is a direct relation between development and telecommunication services.

History of telecommunication started with the discovery of telephone by Graham Bell in 1876. The old analogous communication system have been converted to digital system with enhanced the quality of service and increased capacity. Mainly, we have voice, data and video types of telecommunication services. Again they may serve through wire line or wireless technology. Fixed telephone can be served by PSTN

exchange through wire line or VHF/UHF/MARTS, VSAT systems. Mobile communication is accomplished using cellular technology using GSM, CDMA and other systems. Data and video are the most recent and high demand telecommunication services.

### **1.1.2 Telecom Services in Nepal**

In Nepal, operating any form of telecommunication service dates back to 94 years in B.S. 1970. But formally telecom service was provided mainly after the establishment of MOHAN AKASHWANI in B.S. 2005. Later as per the plan formulated in First National Five year plan (2012-2017), Telecommunication Department was established in B.S.2016. To modernize the telecommunications services and to expand the services, during third five-year plan (2023-2028), Telecommunication Department was converted into Telecommunications Development Board in B.S.2026. After the enactment of Communications Corporation Act 2028, it was formally established as fully owned Government Corporation called Nepal Telecommunications Corporation in B.S. 2032 for the purpose of providing telecommunications services to Nepalese People. After serving the nation for 29 years with great pride and a sense of accomplishment, Nepal Telecommunication Corporation was transformed into Nepal Doorsanchar Company Limited from Baisakh 1, 2061. Nepal Doorsanchar Company Limited is a company registered under the companies Act 2053. However the company is known to the general public by the brand name Nepal Telecom as registered trademark.

The first telephone exchange was established in Kathmandu in 1960. Since 1960 to 2004, the state-owned Nepal Telecommunications Corporation (NTC), also now known as Nepal Telecom, or Nepal Doorsanchar Company Limited (NDCL) had been the monopoly telecom carrier. Now, other competing telecom service providers are United Telecom Limited (UTL) and Ncell.

### **Telecom Services providers**

At present, the incumbent operator, Nepal Doorsanchar Company Limited (NDCL) is operating local, domestic, long distance, international telephone, cellular mobile and internet service including ADSL in Nepal. Besides NDCL, NTA has issued one more full mobility cellular mobile license to Ncell and more licenses for basic Telecom to

STM and Smart Telecom Ltd. Till Ashwin 2069, NTA has issued 263 licenses under different types of telecom services mentioned in the table 1.1

**Table: 1.1**  
**License issued by NTA**

S.N.	Name of the Services	Number of the License
1	Basic Telecommunication	3
2	GSM Cellular Mobiles	2
3	Network Service Provider	7
4	VSAT User	71
5	Internet(With E- Mail)	42
6	GMPCS	2
7	Rural Telecom	2
8	Limited Mobility	108
9	International Trunk telephone	4
10	Rural VSAT users	16
11	Rural Internet Service Provider	6
	<b>Total</b>	<b>263</b>

(Source: NTA: MIS 2012, December)

### **1.1.3 Case Studies of Nepal Telecom & Ncell**

#### **1.1.3.1 Profile of Nepal Telecom**

Nepal Doorsanchar Company Limited (Nepal Telecom) was registered on 2060-10-22 under company Act 2053 and the notice to this effect published in Nepal Gazette dated 26<sup>th</sup> Chitra 2060, after dissolving then Nepal Telecommunication Corporation (NTC). However, the company name was officially effective from 1<sup>st</sup> Baisakh 2061 (13<sup>th</sup> April 2004) and the general public knows it by the name of Nepal Telecom as its registered trademark. Its share structure is composed of 8% public share and 92% government share.

Nepal Telecom has always put its endeavors in providing its valued customers a quality service since its inception. To achieve this goal, technologies best meeting the interest of its customers has always been selected. The nationwide reach of the

organization, from urban areas to the economically non- viable most remote locations, is the result of all these efforts that makes this organization different from others.

Definitely Nepal Telecom's widespread reach will assist in the socio-economic development of the urban as well as rural areas, as telecommunications is one of the most important infrastructures required for development. Accordingly in the era of globalization, it is felt that milestones and achievements of the past are not adequate enough to catch up with the global trend in the development of telecommunication sector and the growth of telecommunication services in the country will be guided by Technology, Declining equipment prices, market growth due to increase in standard of life and finally by healthy competition.

Converting NT from government owned Monopoly Company to private owned, business oriented, customer focused company in a competitive environment, Nepal Telecom invites its all-probable shareholders in the sacred work of nation building.

### **Services Provided by NT**

**PSTN (Public Switched Telephone Network):** Local Calls, Domestic Telex, Local leased lines, National Trunk Lines, International Trunk calls, Operator-Assisted International Telephones, Internet Services, Packet Data Switching Communication Activating/ Deactivating phone Locks, Call Forwarding, Call Waiting, Do Not Disturbs, Conference Calls, Line Hunting, Abbreviated Numbering ISDN(Integrated Services Digital Network) etc.

**GSM Mobile Service:** Post Paid, Prepaid, GPRS (General Purpose Register System), 3G, WiMax, USSD, International Roaming, Outbound SMS, FNF Call, CRBT, Mobile VMS etc.

**CDMA Mobile service's:** Phone (Post-paid, Pre-Paid), Sky Phone(Post-paid, Pre-Paid), Sky Data, EVDO, CDMA VMS, Packer Data Services, Call forwarding, Call Waiting, Do Not Disturb, Conference Calls, Mobile Access Hunting, Password Call Acceptance, Selective Call Acceptance, Subscriber PIN Accept, Call Transfer etc.

**Intelligent Network Services:** PCC Easy Call Services, PCL (PSTN Credit Limit), HCD (Home Country Direct), AFS (Advanced Free Phone Services), IVR (Interactive Voice Response), Notice Board Services etc.

### **1.1.3.2 Profile of Ncell**

Ncell Pvt. Ltd (known as Spice Nepal Private Limited earlier) was established in 2004 as the first private operator of mobile communication services in the GSM standard in Nepal. The services were commercially launched under the Mero Mobile brand on September 17, 2005. As of 2010, it has been operating under the Ncell brand. “N” stands for Nepal. We are committed to being the best local mobile network for the people living in the country. We provide services of international quality with a local touch. Most of our employees are Nepali and our services are designed to meet the needs of the local society.

Ncell has been part of TeliaSonera, a leading European telecommunication company since October 2008. TeliaSonera operates in over 20 markets with more than 460 million inhabitants, including the Nordic and Baltic countries, the emerging markets of Eurasia and Spain. TeliaSonera provides network access and telecommunication services that help people and companies communicate in an easy, efficient and environmentally friendly way. TeliaSonera creates value by focusing on delivering a world-class customer experience, securing quality in our networks and achieving a best-in-class cost structure. TeliaSonera is an international group with a global strategy, but wherever it operates it acts as a local company. Supported by TeliaSonera, Ncell has continued expanding coverage, enhancing quality and bringing new, efficient and easy-to-use services to the people of Nepal. They are constantly working towards our goals of connecting everyone in Nepal through our Ncell network, providing high quality, modern and cost effective services and creating value for our customers and partners.

The Ncell brand brings us under the common brand image of the TeliaSonera companies. Together, we challenge the limits of innovation, raise the standards of the telecommunication services and make the mobile market more competitive for the benefit of our customers. They contribute to the development of the country's

economy and infrastructure, building best-in-class networks and bringing people in the remotest areas of Nepal within the reach of communication.

### **Services Provided by Ncell**

A company that started its service with basic services like Voice Calls & SMS service at launching phase under the cellular mobile license, has one by one, introduced services like BlackBerry , 3G, Ncell Connect-browsing internet through a data card, EDGE/GPRS, Call Waiting, Call Forwarding, Conference Call, Voice Call, Voice Mail, Missed Call Notification, SMS to e-mail ,e-mail to SMS , USSD, Mobile Internet (GPRS/EGDE), Multimedia Messaging Services (MMS), Personalized Ring Back Tones (PRBT) and different types of value added services.

Ncell has tied up with an array of operators in more than 75 countries, including 225 operators around the world at present and gradually extending roaming partners day by day for the convenience of its subscribers.

### **1.2 Focus of the Study**

The Nepal Government, in the policy and program for Fiscal year 2069-70, has announced the slogan of “Broadband in every Village and Phone on demand in every city” World Bank study indicates that there is 1.38% increase in GDP for every 10% increase in broadband penetration. The focus of the study is mainly based on the information communication Technology (ICT) in terms of service, quality, and latest technology used & tariff provided by the Telecommunication Companies like Nepal Telecom & Ncell. And study also focus on the existing ICT system.

### **1.3 Statement of the Problems**

ICT is an umbrella term that includes any communication devices or application, encompassing: radio, television, cellular phones, computers and network hardware & software, satellite system & so on, as well as various services & application associated with them, such as video conferencing & distance learning. Ministry of Environment, Science and Technology and Ministry of Information and Communication are the ministry responsible for ICT Development. National Information Technology Center of Ministry of Environment, Science and Technology

is ICT Implementation body in Nepal where as Nepal Telecommunication Authority under Ministry of Information and Communication is Telecom regulatory body. ICT Data are basically collected from the information given by different service provider. In Nepal, Limited organization provides ICT services like NTC& Ncell. Further, researcher raised questions, statements of the problems as:

1. How the information flow systematically within the existing information system due to the lack of efficient flow mechanisms?
2. Whether traditional paper based information system and centralized of authority creates the problems in decision making to carry out the training activity?
3. In order to deliver the good quality services & best tariff rates, should we implement the latest technology and technically skilled manpower?
4. How effective & efficient is the current MIS in monitoring, evaluating, planning, organizing, and decision making process?
5. Does the system require any modification or fine tunings?

#### **1.4 Objectives of the Study**

The main objectives of the study are as follows:

1. To analyze the existing information system of Nepal Telecom & Ncell.
2. To compare the customer related services (in terms of quality, latest technology used & Tariff rates) of the Nepal Telecom & Ncell.
3. To find out the deficiencies in the existing Information system.
4. To identify the needs of Management Information System in the telecommunication sectors and finally to provide the valuable Suggestion and recommendation on the basis of study.

#### **1.5 Scope of the Study**

1. The combination of human & computer based resources that result in the collection, storage, retrieval, communication & use of data for the purpose of efficient management & for business planning
2. It also helps the smooth running of the business by proving information on the firm data employee from different levels will then evaluates the information's

so that decision can be made to ensure that business remains competitive & successful.

## **1.6 Significance of the Study**

1. It explains the role of information, as essential tools for managers in planning & decision making in telecommunication organization.
2. It describes MIS as well as co-ordinated information system, a data base that is to provide management with needed information to plan & make decision.
3. Modern Technology has further made the resort to MIS in management imperative because of the changing circumstances & environment.

## **1.7 Limitations of the Study**

Every researcher wants to have every facts and proof for the study. However, this is not possible in the lack of authority. Some of the major limitations of the study are listed below.

1. It was not possible to get required statistical data from Ncell as they do not allow meeting officers in their corporate office. Only Customer relations/Sales representative could be accessed who were not allowed any statistical data.
2. This report is based on primary data collection and their authenticity depends on the answer provided by the staff of the company.
3. There were no sufficient secondary data available to detect more information about the company.
4. This study is based on general views and limited number of interview.
5. This research is based on head office of Nepal Telecom & Ncell. It doesn't cover all the branch offices assuming similarity in the office of same nature at other locations too.
6. MIS takes only quantitative factors into account.
7. MIS cannot replace managerial judgments in decision making. It is merely an effective tool for the manager in decision making & problem solving.
8. Data provided by NTC, NTA, Ncell and related websites will be assumed correct and true.

## **1.8 Organization of the Study**

The main aim of this thesis is to analyze the information communication Technology (ICT) in terms of service, quality; latest technology used & tariff rates. And also to evaluate the Telecommunication services available in Nepal. For this, the services of two major telecom companies of the country, namely Nepal Telecom and Ncell have been studied. The study has been divided into five chapters.

### **Chapter I: Introduction**

The first chapter introduces about the thesis with simple background, focus of the study, statement of the problems, Objective of the study, Scope of the study, Significance of the study, limitation of the study and the organizational of the study arranged sequentially.

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

The Second chapter contains the reviews of related literature from the books and journals. Besides thesis and available study reports written by research fellows and experts have also been reviewed. Similarly, technical terminologies that came across the study have also been listed.

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

This chapter presents the methodology followed in the study. This deals with the research design. Sources of data and analytical tools and technologies used in the study.

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

The fourth Chapter “Presentation and Analysis of Data” presents the relevant data and analyzes them to fulfill the objective of the thesis. Here, Information Communication Technology (ICT) in term of Service, Quality, technology used and Tariff of Telecommunication Companies in Nepal has been compared with that of the neighboring countries as well as European and American Countries. The procedure details of PSTN line Distribution information system and fault isolation system of

Nepal Telecom and GSM system of Ncell have also been outlined and depicted with the help of flowchart, DFDs and ERD.

### **Chapter V: Summary, Conclusion and Recommendation**

This chapter describes the thesis in nutshell and draws outline conclusion and recommends to the related stakeholders-governments, services regulatory agency and the operating companies in order to improve the Telecommunications services in Nepal.

## **CHAPTER II**

### **REVIEW OF LITERATURE**

#### **2.1 Conceptual Review**

This is the method of collecting data where, there has already been some previous research or study so as to provide information to its readers or researchers who are working to gather information about the similar subject. If there has been any kind of research done in the previous year's then the data and information gathered from such a source is termed review of previous study. Unfortunately, not much research work has been done on this topic, however, few available and some conceptual perspectives have been reviewed. For this different thesis submitted by students of Master level and PhD. level, research study published by various institutions, presentations made by authorized government representatives to different international organization have been reviewed

##### **2.1.1 Concept of Information System vs. Information Technology**

Information system is a system that creates process and retrieves information. The input to such a system is data; processed data becomes information. Information technologies are tool & techniques that support the decision & development of information systems; these include hardware, software, databases, and telecommunications & clients servers. Both of them go hand. Unfortunately, same organization equates the latest technology with using technology effectively. However, technologies by themselves are just that; technologies. In and of themselves, they do nothing for the organization. It is only when technology is integrated with business goals and objectives that its full potential can be achieve.

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. The basic system components are input, output, feedback, environment, interface and boundary. The boundary defines the system scope of an organization. Interface is the media for interaction between system and environment.

Management Information System(MIS), Decision Support System(DSS), Executive Information System(EIS), Expert System(ES), Artificial Intelligent System(AIS) are all examples of development of information system.

### **2.1.2 Introduction to MIS**

As the organization grows up in size the volume of information becomes bigger and bigger. At the same time it gets difficult and more difficult to supervise the works of the branches. The planning of the goods and services, implementation of the projects and maintenance of the machines and services all become quite a tedious task. In order to manage these things more effectively it is necessary to have good management of information. This is where the “MIS” comes into picture.

Management Information Systems are of vital importance for all kinds of organizations. All managerial functions are performed through decision making; for taking rational decisions management information is essential and is procured through the Management Information Systems (MIS) set up by the organization. The term Management Information System is composed of three elements viz., Management, Information and System.

Management is the process of getting things done through and with people. It includes Planning, Organizing, Staffing, Directing and Controlling. Information is data that is processed in a form which helps the management to take decisions. A System is a set of elements joined together to achieve a common objectives. A business organization is the systems where the divisions, departments, functional units are the subsystems.

Management information system is a system having a combination of persons, machines, procedures and data-base, as its elements, which gather data from the intra and extra sources of an organization: and after processing these data, supply management information to the managers in an organization, to support the decision-making process of the management.

Robert B. Anthony described three levels of business activities carried out in operating an organization: Operational control (Operating Management), Management Control (Middle Management), and Strategic Planning (Top Management).

The first level, strategic planning processes determines what markets or businesses the company should be in at present or plan to be in the near future.

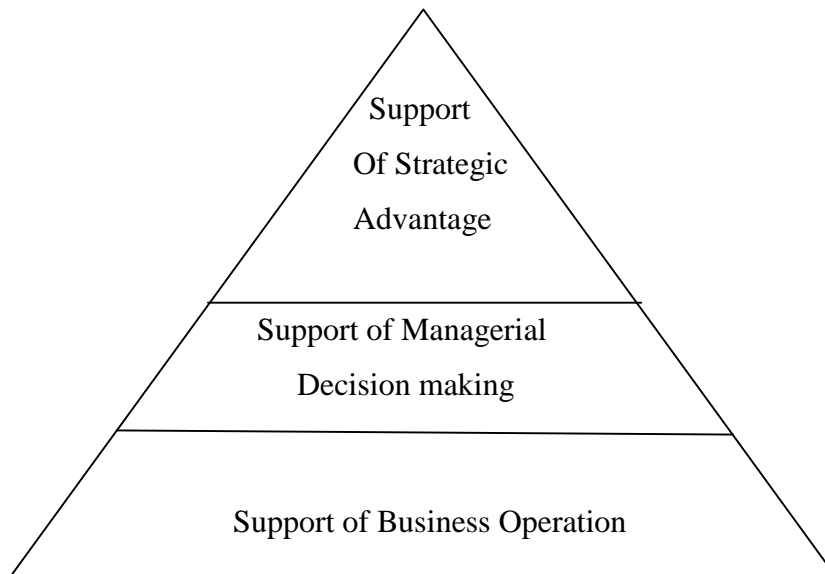
The next level, management control, includes processes or functions that facilitate the management of those processes delegated to the operational control level. An example of a management control process is production scheduling, where a system is established to schedule products through the various fabrication and assembly points within a factory. The feedback from the production scheduling process enables management to control the operation.

The bottom level, operational control indicates processes performed to control the basic product or services produced by the company. It is concerned with individual tasks or transactions such as procurement or raw material as per prescribed quantity and quality, selling of products to specific customers. In a bank operational control activities includes physical sorting, recording, and posting of cheque.

Executive decision-making today in any field is very complex. Both strategic and tactical decisions rely on information that is timely and accurate and therefore, the use of information procuring systems has become essential in every significant management activity. The rapid development of MIS and of its technology itself, its convergence and integration, birth of new concepts like information resource management, or the extension of the role of information professional within the organization are the new trend setters. Decision Support System, for example, presents an impressive picture of senior decision makers having up to date information at their fingertips in high quality graphic form and are able to borrow into detail to any level they require.

Thus, information is a vital ingredient for the operations and management of any organization. The scope of a formal information system in an organization is limited by the data that can be obtained; the cost of obtaining, processing and storing the data; the cost of retrieval and distribution; the value of the information to the user and the capability of the humans to accept and act on the information. CBIS is designed to both reduce the costs and increase the capabilities of organizational information processing and increase organizational effectiveness.

**Figure: 2.1**  
**Major Roles of Information System**



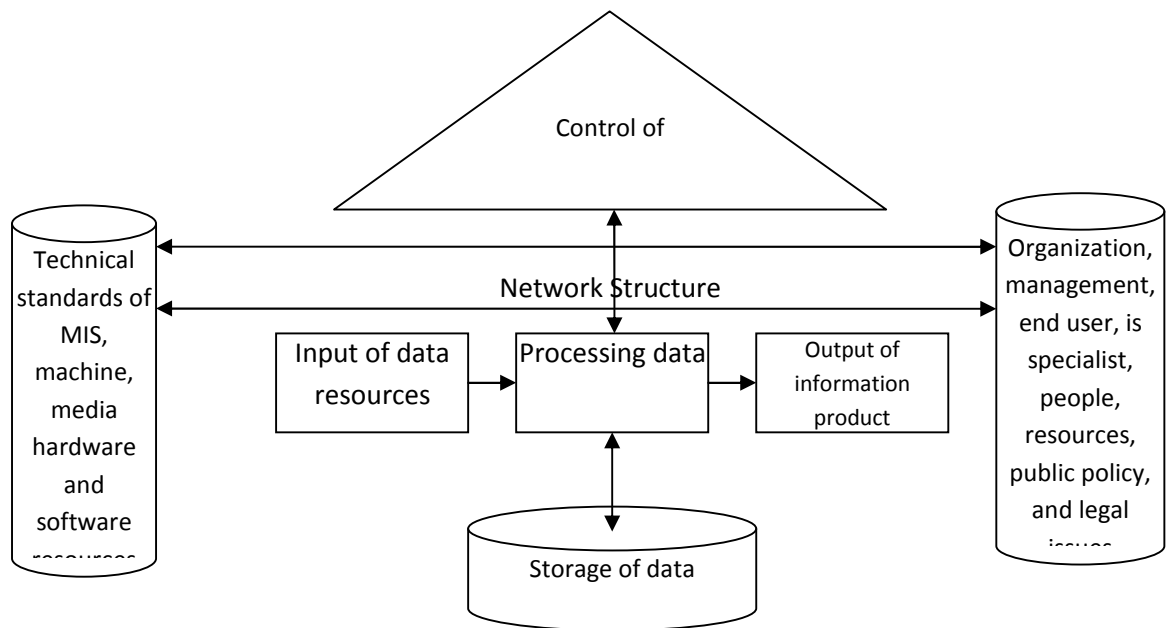
(Source: Self Sketch)

### **2.1.3 Architectural Framework of MIS**

The figure 2.2 illustrates a self explanatory organizational system model that express a fundamental architectural framework for the major components and activities of information system. In an organization data resources are transferred by information processing activities into a variety of information products for end users. Information processing consists of input, processing, output, storage and control activities.

People, hardware, software, data and networks are the five basic resources for MIS. People resource includes end users/ clients and IS specialists/ system analyst, programmer, computer operators. Hardware resources include all the physical devices and materials used in information processing. Software resources include programs to direct and control computer hardware and procedures to use the software packages. Data resources include database which hold organizational data and knowledge base that hold various forms of knowledge like facts, rules and case examples, and other such external data.

**Figure: 2.2**  
**Architectural framework of Management Information System**



(Source: Adhikary; 2007:26)

The system gathers data from the internal and external sources of an organization process it and supplies MIS to assist managers in the process of decision making. Here, the word “system” implies that MIS follows a system approach, which means a holistic approach and is based on the concept of synergy, where the output is greater than the sum of its parts. Thus, it clearly indicates that MIS is not a single system rather than it is an integrated system where parts fit into and overall design.

MIS can be defined as the systematic or organized way of providing informational support to the managerial functions of an organization. The system utilizes computer hardware, software, manual procedures, and models for analysis, planning control and decision-making and a database. In other words, “MIS is an automated system which presents information both internal and external to the business that aids in making a specific set of routine decisions”. The few aspects of the above definition that warrant closer scrutiny are:

1. MIS is an organized or planned effort and not the result of some sporadic attempts.
2. Integrated and meaningful information is the output of the system.
3. The primary function of MIS is to provide information.
4. 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.
5. MIS is formed from a number of components, including hardware, software, manual procedures, models and a database.
6. MIS is a system of users and machines, the users are as important to the system as the machines.

Different classes of users of MIS will use it differently. Clerical users primarily provide input and data control. First line supervisors use it for operational control and detailed exception reporting. Management uses it for special reports and analysis, often employing a staff specialist to manipulate decision models and perform analysis. Because of the complexity of the process of MIS development and need for judgment, there is a need for comprehensive academic training for MIS professionals.

MIS is a system to support the decision making function in the organization. The difference lies in defining the elements of the MIS. However, in today's world, the MIS is a computerized business processing system-generating information for the people in the organization to meet the information needs for decision making to achieve the corporate objectives of the organization. MIS helps in optimizing the use of scarce resources, through their improved utilization, and by supporting intelligent decision making a co-ordination without wasteful delays. Information management involves the communication of intelligent or knowledge. Therefore, it is essential that those in the professional lines should be aware of MIS and be included to its effective utilization.

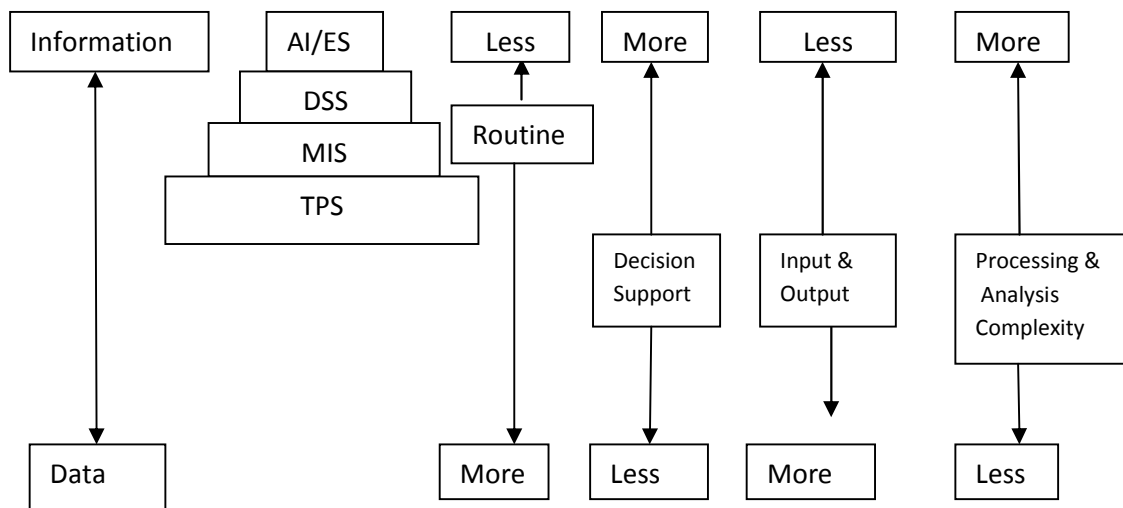
In the conclusion, we can say that MIS is a system using formalized procedures to provide management at all levels in all functions with appropriate information, based on data from both internal and external sources, to enable them to make timely and effective decisions for planning, directing, and controlling the activities for which they are responsible. The actual process will involve the collection, organization,

distribution and storage of organization wide information for managerial analysis and control.

### 2.1.4 Hierarchy of Information System

Management Information System (MIS), Decision Support System (DSS), Executive Information System (EIS), Expert System (ES) & Artificial Intelligent (AI) are all the examples of development of information system. The nature of these information systems is pasteurized in the Figure: 2.1.4

**Figure: 2.3**  
**Hierarchy of Information System**



(Source:www.mhhe.com/whitten)

Transactional Processing System (TPS) is a type of information system that collects, stores, modifies and retrieves the data transaction of an enterprise. Operational level staff during their routine job performs so many transactions generating a lot of data for processing. It is of little use to make decisions and is more of input/output nature.

MIS is used in tactical level. It is a system which handles the database, provides computing facilities to end users and gives a variety of decision making tools to the users. The supervisors as well as planners use this often for relevant information to make decision.

Decision support System (DSS) is an extendible system capable of supporting ad hoc data analysis and decision modeling, oriented towards future planning and used at irregular, unplanned intervals. The processing and analysis is complexity, an expert is more and is more informative.

In artificial intelligence, an expert system is a computer system that emulates the decision-making ability of a human expert. These are designed to solve complex problems by reasoning about knowledge. The processing and analysis complexity is much more and is used rarely by the top management.

## **2.2 Review of Telecommunication Policies & Technical Terminology Used**

### **2.2.1 Information Communication technology (ICT) in Nepal**

ICT Association of Nepal (Information Communication & Technology Association of Nepal) is an umbrella organization of ICT Product Importers, Distributors, Dealers and Professionals, bonded together for raising their voice and getting protection in compliance with the government acts. It is non-profit oriented non-governmental organization established in 2008 with the involvement of group of renowned ICT related business people of Nepal. It focuses on promoting Information Communication Technology in Nepal in urban as well as rural areas besides protecting the rights of ICT businessmen and professional, enabling them to make way for the development of new Nepal. The association not only believes in public private partnership and in assisting government of Nepal in ICT related objectives like National ICT. Policy but also believes in advocacy of end user rights such as cases of warranty, guarantee, counterfeit, fraud issues of grey channel and any other denial of end user rights.

#### **Vision**

1. To be non-profit oriented, working for the benefit of ICT Community & Society.
2. To be a prominent association for representing ICT Industry and Trade in Nepal.
3. To facilitate in developing strategies and to meet the necessary requirements for the increment in ICT development and in promoting ICT Market in Nepal.

4. To provide and protect the necessary rights, privilege and benefits for all the ICT Product Importers, Distributors, Dealers, Professionals and its Members.
5. To assist the government bodies in the development of ICT and formation of necessary

### **Policies**

1. To assist in the domestic production related to ICT.
2. To create employment opportunities by means of ICT.
3. To help in delivering of the achievements of Science and Technology in the local level as well as in modernization of traditional skills.
4. To help in the reduction of digital divide between the urban and rural areas of the country Mission.
5. To assist in the field of technology transfer, export, import and formulation of national policies.
6. To exchange knowledge, skill and technology in the field of ICT with similar types of organizations within and outside the country.
7. To organize various IT awareness campaigns, such as INFO-TRADE along with ICT Conferences, Seminars and Workshops with national as well as international resource persons, throughout the country.
8. To conduct necessary training programs for the accessibility of IT in the rural areas.
9. To organize or be part of charitable events on part of its Corporate Social Responsibility.

### **2.2.2 Government Policy for Telecommunication Sector**

Strategies and policies followed by the government affects the services directly. The operator has two options whether followed the government policies or not. If there are more operators, there is more competition. Right of all the people (Rural as well as urban) to communication services should be kept in mind while formulating the policies. The strategy and working policies for Telecommunication services formulated by the government of Nepal in B.S 2060 (A D 2004) and mission and strategies of FCC of USA are put below to know the government provision for telecommunication Sector.

### **2.2.3 Telecommunication Policy of Nepal, 2060(2004)**

#### **1. Necessity of Telecommunication Policy**

The government has accepted the telecommunication service as the basic prerequisite of the development. In order to promote private sectors participation in the telecommunication sector, the telecommunication policy, 2056(1999 A D) has created favorable environment to some extent. The government has made commitment to maintain full competition by keeping the telecommunication sector open since 2004 A D through this policy.

The telecommunication sector is more significant comparison with the other infrastructures in the context of difficult geographical structure of Nepal. The technological development rapidly taking place on the telecommunication sector and dynamic change also take place in its structure has opened up new opportunities in this sector. It would be possible that the Nepalese people

May benefited from the gradual depreciation universally taken place in the tariff of the telecom service. In this context, the necessity of timely and dynamic policy is realized to utilized the additional possibilities and opportunities to be appeared in the telecommunication sector in future for the prosperity and welfare of Nepalese people by utilizing the achievements gained in telecommunication sector to the maximum extent and the telecommunication policy, 2060 (2004 A D) has, therefore hereby been formulated for substitution of the telecommunication policy, 2056 (1999 A D).

#### **2. Objectives**

The main objective of the telecommunication policy is to create favorable environment in order to make the telecommunication service reliable and accessible to all people at the reasonable cost throughout the kingdom in collaboration with the private sector et al. in order to support the social and economic development of the country. The following objectives have been determined in order to give support for accomplishment of this paramount objective.

2.1 In order to bring the access of general public of rural and urban areas of the kingdom to the telecommunication service, arrangement shall be made in a

manner that the telecommunication service shall be available within the shouting distance in the inhabited areas.

- 2.2 The telecommunication service shall be made available to meet the demand in the urban areas of the kingdom. Arrangement shall be made in a manner that the corporate telecommunication services shall be available to the business areas.
- 2.3 Opportunities shall be provided to the consumers of urban areas to choose service from various providers. Arrangement of opportunity to choose service accordingly shall be gradually extended in the rural areas also.
- 2.4 Arrangement shall be made for getting opportunity to use appropriate information and communication technology for poverty alleviation and development of the rural areas.

### **3. Strategy**

- 3.1 Universal Access shall be extended in a manner that there shall be universal access to the service. The telecommunication service shall be made to the consumers through the shared telephone. Emphasis shall be given to extend affixed, mobile, etc. The satellite system may also be applied for extension of service. Other services pertaining to information and communication shall be available through the Community Centre.
- 3.2 **Universal Service Obligation:** The telecommunication service provider shall be required to provide service to any consumer of the urban areas immediately after ordering therefore.
- 3.3 **Development of Corporate service:** Arrangement shall be made in a manner that the leased line, data and other similar corporate service shall be available to the government bodies and private business sector in the urban area through more than one service provider.
- 3.4 **Liberalization of the Telecommunication Sector:** The telecommunication sector is kept open for the service providers. However, the number of service providers may be limited by virtue of radio spectrum. While providing directory

service, the service provider shall be required to provide such service covering all customers consuming the service.

**3.5 Open Licensing Regime to be applied:** The open licensing Regime system shall be applied for providing opportunity to all service providers to enter into the telecommunication sector. Transparent methods shall be applied upon granting such license. Moreover; an environment for healthy competition shall be created.

3.6 Private Sector's Participation shall be encouraged for the telecommunication sector. Foreign Investment shall be attracted. Arrangement shall make to regularly inform private sector about the particular of reform taken place in the telecommunication sector and about the opportunity available in this sector also.

**3.7 To inter into information Society:** Arrangement of the necessary prerequisites such as extension of telecommunication service and Cyber Law shall be made Nepal shall be got to effectively enter into the information society.

**3.8. Appropriate Information and communication technology for the Users of the Rural Area:** Appropriate information and communication technology shall be made available as per the capacity and need of the users of the rural areas. In this connection, the information and communication technology based on radio, television and telephone that do not require special training and literary shall be made available in collaboration with the private sector et.al. The service of information and communication technology shall be made available to the rural users through the small service providers.

**3.9 Commercialization of the Nepal Telecommunication Corporation:** In connection with commercialization of the Nepal Telecommunication Corporation, the Corporation shall be converted into a company and the ownership of the Government Nepal shall be gradually decreased. In order to meet the increasing competition, various reform programmers shall be conducted to make the company competent.

**3.10 Economic efficiency of the Telecommunication Sector:** Emphasis shall be given to increase economic efficiency of the telecommunication sector by creating an environment that promotes healthy competition among the telecommunication service providers.

Based on the above strategies working policies have been worked out.

(Source: MOIC: 2003)

#### **2.2.4 Mission and strategy of FCC of USA**

The aim of USA regarding provision of Telecommunication services to the people of the country can be seen from its mission and strategies which is put below.

As specified in section one of the communication Act and as amended by the Telecommunication Act of 1996 (amendment to 47 U.S.C.151) .It is the FCC's mission to "make available so far as possible, to all the people of the united States, Without discrimination on the basis of race, color, religion, national origin, or sex, rapid, efficient, nation-wide and world-wide wire and radio communication services with adequate facilities at reasonable charges". The act furthermore provides that the FCC was created "for the purpose of the national defenses" and "for the purpose of promoting safety of life and property through the use of wire and radio communications".

Consistent with the objectives of the Act as well as the 1993 Government Performance and Results Act (GPRA), the FCC has identified six goals in its 2006-2011 strategic plans. These are:

- a. **Broadband:** "All Americans should have affordable access to robust and reliable broadband products and services. Regulatory Policies must promote technological neutrality, competition, investment and innovation to ensure that broadband service providers have sufficient incentives to develop and offer such products and services".
- b. **Competition:** "Competition in the provision of communication services, both domestically and overseas, supports the Nation's economy. The competitive

framework for communications services should faster innovation reliable, meaningful choice in affordable services".

- c. **Spectrum:**"Efficient and effective use of non-federal spectrum domestically and internationally promotes the growth and rapid developments of innovative and efficient communication technologies and services".
- d. **Media:** "The nation's media regulation must promote competition and diversity and facilitate the transition to digital and services".
- e. **Public Safety and Homeland Security:** "Communications during emergencies and crisis must be available for public safety, health, defense and emergency personnel, as well as consumers in need. The Nation's critical communication infrastructure must be reliable, interoperable, redundant, and rapidly restorable".
- f. **Modernize the FCC:** "The commission shall strive to be highly productive, adaptive and innovative organization that maximizes the benefits to stakeholders, staff and management from effective systems, process, resources and organizational culture."

The FCC is organized into seven Bureaus and eleven staffs offices, describe in the following sections.

### **Bureaus**

The Bureaus' include processing applications for licenses and other filings, analyzing complaints, conducting investigations, developing and implementing regulations, and participating in hearings.

- \* **The Consumer & Government Affairs (CGB)** develops and implements the FCC's consumer policies, including disability access. CGB serves as the public face of the FCC through outreach and education, as well as through their Consumer Center, which is responsible for responding to consumer inquiries and complaints. CGB also maintains collaborative partnerships with state, local, and tribal governments in such areas as emergency preparedness and implementation of new technologies.

- \* **The Enforcement Bureau (EB)** is responsible for the enforcement of provision of the communications Act 1934, FCC rules, FCC orders and terms and conditions of station authorization, Major areas of enforcement that are handled by the Enforcement Bureau are consumer protection, local competition ,public safety and homeland security.
- \* The **Internal Bureau (IB)** develops international policies in telecommunication such as coordination of frequency allocation and orbital assignment so as to minimize case of international electromagnetic interference involving U.S license. The International Bureau also oversees FCC compliance with the international Radio Regulations and other international agreements.
- \* **The Media Bureau (MB)** develops, recommends and administers the policy and licensing programs relating to electronic media, including cable television, broadcast television and radio in the United States and its territories. The media Bureau also handles post-licensing matters regarding direct broadcast satellite services.
- \* **The Wireless Telecommunication services (WCS)** such as Advanced Wireless Service (AWS) and fixed, mobile and broadcast services on the 700 MHz Band.
- \* **The Wire Line Competition Bureau (WCB)** develops policy concerning wire line telecommunication. The wire line Competition Bureau's main objective is to promote growth and economical investments in wire line technology infrastructure, developments, markets and services.
- \* **The public Safety and Homeland Security Bureau** was launched in 2006 A D.

## **Offices**

The FCC offices provide support services to the Bureaus. Through the Bureaus and Offices have their individual functions they regularly work together on FCC issues.

- ) The **Office of Administrative Law Judges (OALJ)** is responsible for conducting hearing ordered by the commission.

- J The **Office of Communication Business Opportunities** (OCBO) promotes telecommunication business opportunities for small, minority-owned and women-owned business.
- J The **Office of Engineering and Technology** (OET) advises the commission concerning engineering matters like frequency allocation and spectrum usage.
- J The **Office of Inspector and General** (OIG) recommends policies to prevent fraud in agency operations.
- J The **Office of Managing Director** (OMD) is responsible for the administrative and management of the FCC, including the agency's budget, personal, security, contracts and publication.
- J The **Office legislative Affairs** (OLA) are the FCC's liaison to the United States Congress, providing lawmakers with information about FCC regulation.
- J The **Office of Media Relations** (OMR) is responsible for the dissemination of commission announcements, orders, proceedings and other information per media request. OMR manages the FCC daily digest, websites and Audio Video centers.
- J The **Office of the Secretary** (OSEC) oversees the receipt and distribution of documents filed by the public through electronic and paper filing systems and the FCC Library Collection.
- J The **Office of Strategic Planning & Policy Analysis** (OSP) identifies policy objectives for the agency.
- J The **office of workshop diversity** (OWD) develops the policy to provide a full and fair opportunity for all employees.

### 2.2.5 Review of Technical Terminologies

**Teledensity:** Number of Telephone for every 100 inhabitant.

**Percent of Fixed Telephone lines in urban areas:** This percentage is obtained by dividing the number of fixed telephone lines in urban areas by the total number of fixed telephone lines in the country.

**Percent of Fixed telephones lines in rural areas:** This percentage is obtained by dividing the number of fixed telephone lines in rural areas by total number of fixed telephone lines in the country.

**Mobile Cellular telephone subscriptions (Post-paid+ pre-paid):** Refers to the subscription to a public mobile telephone system and provides access to public switched Telephone Network (PSTN) using cellular technology ,including number of pre-paid SIM cards activate during past three months. This include both analogue and digital cellular system (IMT200-third generation 3G & 4G), but exclude mobile broadband subscription via data cards or USB modems. Subscription to people mobile data service, private trunked mobile radio, telephonic or radio paging and telemetry service should also be excluded. This should include all mobile cellular subscription that offers voice communication.

**VOIP Subscription:** Number of voice over internet protocol (VOIP) fixed line subscriptions. Refer to fixed telephone line VOIP subscriptions that have generated in or outbound traffic within the past three months. This include VOIP subscriptions through fixed wireless, DSL, Cable and other fixed internet platform that provide fixed telephony using internet protocol, but excludes software-based VOIP applications (example: VOIP using Skype, hotmail, or yahoo).

**Waiting List for Fixed Lines:** Un-met application for condition to the public switched network (PSTN) due to the lack of technical facilities. The waitlist should reflect to the total number reported by all PSTN service providers in the country.

**Faults per 100 fixed lines:** The total number of reported faults to fixed telephone lines for the year. Faults, which are not the direct responsibility of the public telecommunication operator, should be excluded. This is calculated by dividing the total number of reported telephone faults for the year by total number of fixed lines in proportion and multiplied by 100. The number of faults per 100 fixed lines per year should reflect the total reported by all PSTN Services providers in the country.

**Percent of fixed telephone faults cleared by next working day:** Percentage of PSTN faults reported that have been corrected by the end of the next working day (i.e. not including non-working days for e.g. weekends, holidays). The percentage of fixed telephone faults cleared by next working day should reflect the total number across all PSTN service providers in the country.

**Availability:** Probability that a device will perform a required function without failure under defined condition for a defined period of time. BTS downtime is an indicator of the network availability.

**Network Accessibility** Percentage of calls made by subscriber and successful within operator's network. Call set up success rate is an indicator of this parameter.

**Service Retain-ability:** The ability of a service to be kept once it was accessed under the given condition for a required period of time. Call drop rate and good quality of voice service is the indicator.

**Call Drop Rate (CDR):** This indicator measures the network ability to retain call conversion when it has established or set up. A value of 7 % of CDR means that, out of every 100 calls established or set up, 7 will drop before any of the calling parties voluntarily terminate the set up call. It is calculated using the expression.

$$\text{CDR} = \frac{\text{Number of dropped call}}{\text{Total no. of call attempts}} = (1 - \text{call complete probability}) * 100 \%$$

**Call Completion ratio (Call completion Success Rate, CCSR):** It can be derived either from network statistics or from drive test statistics. It is good parameter for evaluating the network accessibility and retain-ability as perceived by the customers. It is derived using the following expression.

$$\text{CCSR} = \frac{\text{Total no. of completed calls}}{\text{Total no. of call attempts}}$$

**Paging Response (Call Set up Success Rate, CSSR):** This indicator measures the case in which calls are established or set up. The higher the value of CSSR, the easier it is to set up a call. For instance: a CSSR of 71% means that out of survey 100 call attempts, only 71 are successful while the remaining 29 are unsuccessful. The indicator is calculated using the expression:

CSSR= No. of Unblocked Call attempts/ Total no. of call attempts = (1- Blocking Probability) \*100%

## 2.3 Review of Journals, Articles and Reports

### Articles from Journals about Telecommunication services

Economic Commission for Europe (1987) published a report on "The Telecommunication Industry-Growth and structural change" discussing about the different aspects of telecommunication services as below:

**Socio-economic impact of telecommunication:** The macro-economic effects of investment in telecommunication are, as pointed out in the ITU/OECD study "Telecommunication for Development", very difficult to estimate. It is, however" sensed intuitively that telecommunication are much more important than generally suspected, and have major multiplier effects on development".

**Relationship between economic development and the level of supply of telecommunication services:** In several studies, calculations are presented of the strong correlation between the overall level of development in countries, expressed for instance in the GDP per capital and the level of supply of telecommunication services, expressed for instance in the telephone density. Although this does not imply a direct or perfect causal relationship between usage of telecommunication and economic development, there is still a strong partial interdependence. Before demand for telecommunication shows a substantial increase, a certain economic level must have been attained. On the other hand, some basic telecommunication facilities are imperative for further economic development.

The relationship between main stations per 100 inhabitants (variable q) and GDP per capital (variable x), as of 1978, plotted for 69 countries were obtained as:

$$\begin{aligned} {}^{10}\log q &= a+b {}^{10}\log x \\ {}^{10}\log q &= -3.726+1.357 {}^{10}\log x, \end{aligned}$$

This indicates that the telephone density increases faster than GDP per capital.

**Multiplier effects of Telecommunications and their contribution to gross domestic product:** It has been estimated that, in the European Economic Community in 1981, telecommunications contributed some 2 % to the GDP (during that same year, investment in telecommunication corresponded to about 0.7% of the GDP). By the year 2000, this contribution was expected to attain 7%. The multiplier effect of telecommunication is estimated to be in order of 1.5 in the community, that is an investment of 1 million ECUs in telecommunication brings about a total increase in economic activity of 1.5 million ECUs.

ITU Telecom World 2011 held in Geneva (24-27 Oct, 2011) emphasized on the role of broadcast as critical modern infrastructure driving economic growth, trade and productivity.

Dr. Hessa Al-Jaber, secretary general, ICT Qatar, put his remarks in " The connect Arab Summit" held in Doha on 5-7 March 2012, as he had one aim; to bring together collective ideas, resources and resolve to effectively connect individuals, neighborhoods, cities and nations in the Arabic region.

The summit set the target as "no one should be denied access to any form of digital communication, and everyone should be a part of the connected web regionally and globally by 2015 A.D.

His Highness the Emir of Qatar, addressing the summit, said that connectivity had become essential for people to participate in the knowledge economy-and he believed that it was becoming a fundamental human rights.

In the summit cyber security was taken seriously. Recognizing the importance of protecting users, especially children and young people, against the risks posed by illegal use of ICT and the dangers of the internet, the summit agreed to improve pan-Arab-co-operation in addressing the growing threat posed by cyber attacks and cyber crime. The summit set a target deadline of 5 years for all level, and to develop national cyber security strategies aligned with international cooperation principles, including critical information infrastructure protection.

(Source: ITU NEWS No.2, Special edition, 2012 March)

Navas-Sabater, Dymond and Juntunen (2002) in their research paper entitled "Telecommunications and Information services for the poor: towards the strategy for Universal Access" has remarked that access to information and communication technologies has become crucial to a sustainable agenda of economic development and poverty reduction and yet access remains concentrated in a few regions and population groups, with the counter of this new "digital divide" closely following and supplementary existing income and economic divides. However, technological innovations, economic pressure and regulatory reforms are making access to information and communication technologies are more affordable and providing opportunities to close the digital divide.

World Bank had provided technical assistance to Nepal rural development fund and initial investment into the fund. Strategy was to introduce competition by licensing four new providers in separate regions with a rural focus. The project would finance the subsidy portion associated with one region initially.

#### **2.4 Reviews of Thesis**

Pradhan (1986) had conducted a research study entitled "*A study on Micro computers and Computerization in Nepal.*" He states that the computer has become very common in USA and Europe, computer have been part of their life because the large number of services they received are computer supported. Computer supports activities involved in business, universities and schools, governments and all the communication media. Scientists, teacher, businessman, engineers, doctors and other professional 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 computer process vast amount of data. The computers were developed to perform such task of a swift calculation. The development and progress in these fields would have been impossible the absence of these extra ordinary machines, which can handle complex and complicated calculations in short period of time, which people cannot do or typically do not want do.

In his study Pradhan found that:

1. NCC has computerized mostly the government offices and corporation from its ICL mainframe computer but has been able to provide computer services to the business organization and industries.
2. There is an increasing trends and good scope of microcomputers in Nepal. it is estimated that the total microcomputers at the end of 1986 will be approximately 610. The apple Mac computer have 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.
3. Microcomputers users are mostly business organization, government, foreign projects and foreign organization, government offices and corporation in Nepal.
4. After the introduction of Microcomputer in organization the average productive has gone up to 51.5% in a particular field. A quite good numbers of users have said there is no effect because they have not been able to use it because of lack of trainings of technical or administrative problems.
5. The computer users were motivated towards computerization using, microcomputers was due to the growing need of the organization and the low cost of microcomputers. Thus they are not buying it as a fashion
6. The Microcomputers user and operators are trained for average of 2.32 months only. About 81.2% users operator think they need further training to carry out the jobs independently.
7. The major fields of computer application by NCC to its customers are mainly
  - ) Accounts and Banking
  - ) Education
  - ) Engineering
  - ) Households family and social environment
  - ) Health
  - ) Agriculture and Land
  - ) Population and others.

Acharya (2000) carried out a study on "*Implementation of MIS in RNAC-A case study in Marketing Department*" and concludes that:

- ) To present and analyze IS of marketing department of RNAC.

- ) To examine the flow of information to co-ordinate and communicate different division and units of Marketing Information.
- ) To provide recommendations on the basis of major findings that has been drawn out the research study.

The study was carried out by using the following methodology:

Data collection: data was collected from both primary and secondary sources, Observation, questionnaire, interview were the tools used to collect data from the primary source while data of different departments of RNAC, journalrls, news letter were the secondary sources of information Tables and figures, system Approach, data flow Diagram, Flow Chart were used to present the data in the study and percentage (%) used to analyze the data.

- ) The implementation of MIS is necessary for the effective of the departments.
- ) The complex organizational structure and multinational structure of the marketing department is ambiguous, it is necessary to made clear.
- ) The department needs Network base computerized information system to climate the drawback generated by paper based information system t and traditional way of centralizing the information and authority.
- ) Need for proper infrastructure for the implementation of MIS in the department.

Joshi (2000) had conducted a research study on "*Management Information System in Nepalese Banks- A case study of Rashtriya Banijya Bank*". It is focused on the fact that MIS in present days, has proved to be a dominant factor for the development of any organization. This has attempted to provide an effective information collection system and recommended some area to where the bank should address with the help of available information.

The objective of her study is to highlights the MIS in Nepalese banks. The specific objectives are:

- ) To highlights the financial system in Nepal.
- ) To highlights the banking system in Nepal.
- ) To highlights the MIS in Nepalese Banks.

- ) To highlights the importance of data and information.
- ) To provide a useful system of collecting data and information.

Research methodology followed by her is mainly based on the secondary sources of information and data. The information needed has obtained from same bank under case study. The study is descriptive and an exploratory research design. Interviews and discussion have been conducted to strengthen the research.

The researcher has following recommendations:

- ) The Overall situation of the bank can be uplifted through the effective information system and effective monitoring unit. The chief executive must have management or strategic information and coordination monitoring system.

Neupane (2002) carried out a study on "*MIS-A significant tools for effective management of an organization. A case study in RNAC* "and concluded that there is no doubt that use of computerized information system in organization can help to boost essential tool for effective management of an organization. Neupane carried out the study with the following objectives:

- ) To study the practical and theoretical aspect of management information system.
- ) To study existing the practice of maintaining information system in RNAC.
- ) To study existing information system/flow of internal in different departments. Especially in personal and general service departments of RNAC.
- ) To study existing decision making process management system, management process of RNAC.
- ) To find out the drawbacks of existing Information system and provide recommendations for the betterment, IF it is needed.

Research Methodology followed by her is mainly based upon the primary and secondary sauces of information and data. The needful information has been obtained from the concerned bank especially from the RNAC. The study is a descriptive and a simply exploratory research design. The Interview and discussion has been conducted to strengthen the research

His other Findings are as follows:

- ) MIS satisfies the information needs of the people in the particular organization pyramid.
- ) Network based computerized information system is the first requirement for this organization to maintain modern information system.
- ) There is lack of well trained and skilled IT exports and manpower to maintain computerized information system within the organization and departments
- ) MIS not implemented due to high cost and technical manpower.

Neupane give the following recommendations

- ) RNAC should implement MIS.
- ) It is essential to provide training of software packages and advice course of computers to all the staff and executives of this organization to make the competent and able to handle various problems regarding modern IT and MIS.
- ) The mangers, CEO and all decision making level personal must use modern MIS and various software regarding DM and Problems solving for this, they need good knowledge of modern management, modern network base and information system and advanced computer knowledge to make their decision effective organizational efficiency and higher productivity.
- ) In each modern organization are needs to provide enough trainings and development opportunities regarding modern IT related fields, ie hardware, software, networking and modern management skills to all level of employees. It leads an organizational always towards success and effectiveness.
- ) It should make plan of networking the variety of platforms with infrastructure detail name servers, routes, gateways, TCP/IP and networking strategy like LAN/MAN/WAN etc.

Raghuvanshi (2006), had conducted a research study entitled "MIS in Cable Television Organization". Subscriber Information System (SIS) as a part of Management Information System plays vital role to provide subscriber information to the users as on organization need. Subscriber information, which is properly managed, helps to achieve organizational effectiveness through effective managerial actions and process by right managerial decisions. Subscriber information is most important to the

organization which has large number of subscribers of its products and services.

Raghuvanshi state objectives of his study are as follows:

- ) To study existing performance of subscriber Information System.
- ) To examine the software and hardware environment of subscriber information system of station
- ) To evaluate effectiveness of subscriber Information System.
- ) To develop a useful Decision Support System (DSS) module for effective decision.
- ) To provide useful suggestions and Recommendation to station on its subscriber information system and management on the basis of the findings.

Raghuvanshi has conducted that the study had found some limitation of information management within the organization. Firstly, the organization establishes the information system once and don't take care of it till it get late. Time to time modification and adoption of information system according to situation as necessary is rare. Secondly, organizations do not train the employee to handle running information system. Thirdly there is lack of proper integration of information system: focus is concentrated to only some part of whole system. Therefore, the benefit from the information system is limited due to underutilization of the system.

Sharma (2006) had conducted a research study entitled "*MIS in Nepal Telecom*" which states that NTC is one the growing service industries using information a communication technologies rapidly in its all service in proper way. The information system of NTC is computerized but there is lack of effective use for the purpose of world-processing, accounting and statistical analysis. Due to management complexities, direct competition with national and international market and modern industrial and technological revolutions.

The study has following objectives:

- ) To analyze about system analysis, system design, data flow, networking as well as information collection and flow through MIS.
- ) To examine the existing information and communication technologies system of NTC.

- ) To analyze the users of MIS for overall NTC performance.
- ) To examine the flow of information to coordinate and communicate the different divisions and units.
- ) To find out drawbacks of existing information system and to design the best suited information system on the basis of findings.

Further, the researcher wishes to discuss the demand and distribution status of basic telecom service and use of application of MIS in NTC. The researcher mentions to use relevant statistical, accounting, mathematical and financial tools. E.g., Mean, correlation, regression Line, Percentage, ratio analysis etc in analysis and interpretation.

The researcher has used descriptive research method to obtain a complete and accurate description of the situation. The study is based mainly on secondary data that comes from MIS report of NTC. The researcher has tried to focus on study of the personal department of NTC. Besides this, the researcher has studied about the registration process, coordinating services and administration process.

The researcher has following recommendations:

- ) NTC should concentrate on data collection from the various sources on analyze and conclude the future strategy.
- ) It is necessary to build IS application to support the telecom manager in making decision to keep a different index, norms and ratios within the acceptable limits.
- ) The IS should identify the training needs of the organization and offer help in designing training courses for the employees to improve their knowledge about Telecom world.
- ) The customer of Telecom expects the service to be delivered in a smooth, problem-free, efficient and timely manner. SO, it is necessary to set internal standard in terms of accuracy, responsiveness and timeliness. The system and resources provided to achieve these standards need monitoring and MIS will provide a feedback on this standard so they can be regulated and controlled.

Chitrakar (2008), in her thesis on *"An Evaluation of Privatization in Nepal- with special reference to manufacturing Enterprises"* had following objectives:

- ) To assess the policies, procedures and mode of privatization pursued in Nepal.
- ) To examine the impact of privatization on selected enterprises.
- ) To compare the performance of the organization before and after privatization
- ) To identify strategies, weakness and problems in privatization in Nepal.
- ) To recommend policies, procedures and approaches of privatization to make it more effective.

The researcher methodology used was exploratory and detailed survey.

Her conclusion is that the privatization process must be continued keeping in mind and trying the previous experiences and strategizing to overcome hindrances faced by stakeholders.

Her recommendations are:

- ) Privatization needs proper regulation. Often the regulated firm captures regulatory agencies and thereby they control the regulation they face.
- ) There must be sequential framing of time for launching the privatization program. Unnecessarily time consumption and lengthy process may affect the enterprises.
- ) Out of different modalities-'assets and business sale', 'share sale' 'lease' 'management contract' the most preferred one is the sale of shares.
- ) There is need for amendment in privatization Act and Labor Act.
- ) Public enterprises could do better if they are run and managed by professionally qualified personnel without any political interference.
- ) Privatization should not be carried out on an adhoc basis without detailed feasibility studies its worthiness. Successful implementation and continuity of the process is essential.

Adhikari (2011) in his thesis on *"Management Information System"-A case study of Dhulikhel Hospital "* had following objectives:

- ) To examine the present system and information flow within organization.

- ) To show the present capacity and possible capacity by Dhulikhel Hospital.
- ) To develop and design the effective Hospital management information system.
- ) To provide the valuable suggestion and recommendation on the basis of the study.

The prime focus of the researcher was to analyze the existing information management system in Hospital further added by developing the new computerized Hospital Management System.

His recommendations are:

- ) Applying new model Dhulikhel Hospital Management System (DHMS) is very essential for every organization. Therefore, the organization's awareness for the Information Management is required for effective and efficient handling of different data, reports and their appropriate analysis.
- ) Use of software really reduces the time by avoiding regular clerical works. The organization should get the advantages of reduction time and mobilized their personal with skill manpower.
- ) The management of organization needs to develop new model of DHMS by consulting with their technical staffs.
- ) The management of DH should implement the new model of DHMS to ensure the value of time and health for better service.

### **Research Gap**

Joshi research study on "Management Information System in Nepalese bank" "A-case study of Rastriya Banijya bank" in the year 2000 has attempted to provide an effective information collection system and recommended some area where the bank should address with the help of available data and information. Her research work has not compared MIS of RBB with the status of MIS with that present in other banks. This research work has considered other companies of the same nature and thus gives a comparative figure that provides more impure improvement of the system.

Paudyal Sharma (2006) in his thesis on "MIS in Nepal Telecom" has missed to analyze about the demand and distribution of telecom services as he stated, although he has mentioned about the direct competition in this service sector nationally and in

international market. This research endeavors to pictures the demand and the distribution of the telecom services by major three Telecom service providers, namely, NTC, Ncell and UTL. Besides, it has attempted to evaluate the quality of services provided by the 3 operators.

Prakash Chandra Adhikari (2011) in his thesis on "Management Information System"- A case study of Dhulikhel Hospital. The project Dhulikhel Hospital management System was design only for computerizing day to day activities especially for data storing, presenting, report generating and analysis for the better service. With the help of software developed for the effective Hospital Information Management, It was considered that data would help the retrieval of information. The researcher could not find any previous research work attempted on this particular topic in Nepal, in fact, there was no base available and research work had from Initial label.

## CHAPTER III

### RESEARCH METHODOLOGY

This study is based on operational research methodology. The application of methodology is, in fact, the eye and the ear of the study. It helps to analyze the data in finding the cause and effects of relationships to see how the organization is performing its activities.

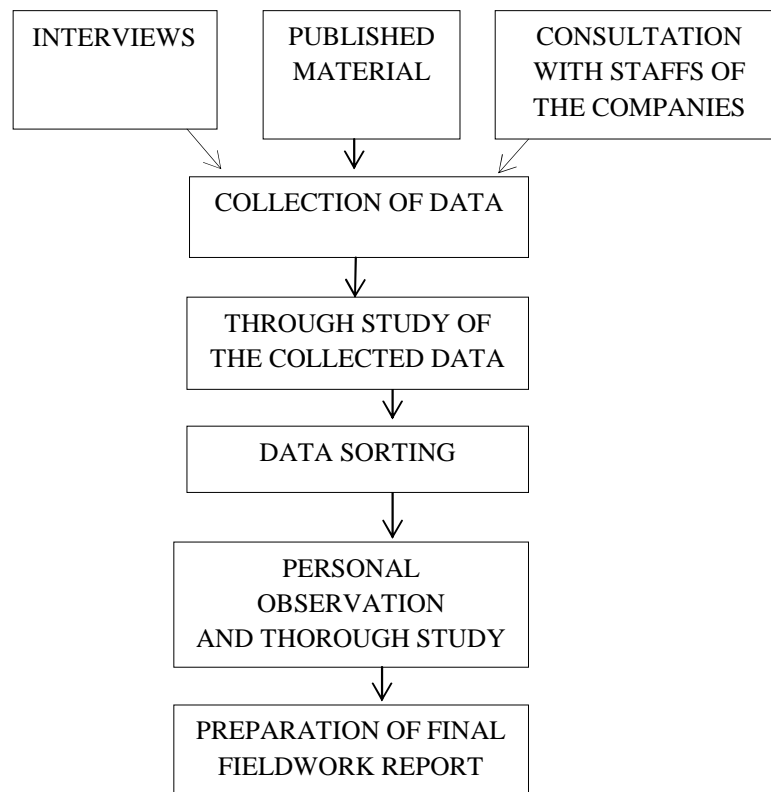
#### 3.1 Research Design

##### 3.1.1 Research Design Methodology

The field study research design has been followed in the project. The first step is to design the framework of the research. It begins with the collection of necessary data and information concerning the study.

**Figure: 3.1**

**Research Design Applied for Methodology**



(Source: Self Design)

The data and information collected must be studied carefully and presented systematically and should be analyzed to meet the objectives of the fieldwork. The research designs phased for this fieldwork is shown in the Figure 3.1. First of all the necessary data related with Nepal Telecom and Ncell were gathered. For the collection of data, central offices of the two companies located in Kathmandu. Collection of data consists of compiling of data in necessary quantity. Analysis of the data helps and assists the study of the project. The data collected was thoroughly studied. After that, necessary data were sorted and analyzed in a systematic manner. Personal interviews and observations were also conducted as per the requirements in various places. Thus, after the collection of primary and secondary data, the final fieldwork report was prepared.

### **3.1.2 Fieldwork Procedure**

For the preparation of this field work report, the researcher has followed certain steps. The overall fieldwork procedures have been divided into five Phases:

#### **(a) Conception Phase**

The researcher selected Nepal Telecom and Ncell companies for the project as required for the case study. Firstly, the researcher decided to study about the existing line distribution of PSTN information system & error correction and detection, the information communication Technology (ICT) in terms of services, quality, and technology used and tariff in Ntc and Ncell. And also analyzed the existing MIS system within that respected Companies.

#### **(b) Definition Phase**

In the definition phase, the researcher made the description of the problems of the field works topics. After that, the aim of the fieldwork topic was listed out.

#### **(c) Planning phase**

Planning is the very important phase. In this phase, the methodology together information was developed, reference books were collected and the overall work schedule was prepared.

#### **(d) Implemented Phase**

The researcher visited the two organizations for conducting the study. The appointment was taken to meet the chief executives of Nepal telecom but it was not possible to meet the executives of the other company Ncell. It was learnt that they did not allow the students for research study. The researcher met the MIS officer of Nepal Telecom & Nepal Telecom Authority (NTA) and collected published materials like Annual reports, MIS reports etc. Similarly the researcher met the sales representatives/ officers of Ncell to collect services brochures and application from sample-they were eager to explain about the available services for sale. The researchers made a detailed study of the existing services and information system of the above companies. Researcher also conducted several interviews with the concerned personnel/service user for the collection of data regarding their services. The collected data were analyzed and necessary data were sorted. Finally, the fieldwork report was prepared in electronic form.

#### **(e) Termination Phase**

The final report was edited, printed and banded with a copy of collected information. Then, the report was submitted to the college.

### **3.2 Sources of Data**

Data is very reliable and effective source of all fieldwork reports. Data is a foundation of all fieldwork projects. Data may be obtained from several sources. It also depends on the objectives and necessity of the field report. The research design for this fieldwork was based mostly on the exploratory design method. Thus, the sources of data collection were both based on primary and secondary sources. For the already existing data, the information was derived from the secondary source and for the data that was looked for the first time; information was derived from the primary source. Keeping in the view of explorative nature of the study, primary source is the main source of information and data. The sources of data collection can be better explained as:

## **Primary data**

Primary data are the original data gathered for the research project in hand. This data is collected for meeting the specific objective of the study. As the research design was based mostly on the exploratory design, primary data source was one of the vital sources for data collection. During the fieldwork, the primary data was obtained by conducting structured interviews with the concerned person, personal observation and also by conducting personal interviews

## **Secondary Data**

Apart from the primary data, other data were also collected from the secondary source. Secondary sources of data refer to the readymade data that is already published by the concerned organization or data that has been compiled by others. Secondary data is thus defined as the data collected earlier for a purpose other than the one currently being pursued. Secondary data are the brochures, annual reports, published reports and statements, published official documents, etc of the concerned companies-NT & Ncell

### **3.2.1 Data Collection Method**

As already mentioned, both primary and secondary sources of data were collected for the fieldwork. The method of data collection process can be further explained as:

#### **3.2.1.1 Primary Source**

The data collection methods used for primary sources mainly was structures interviews and personal observation.

#### **Structured Interviews**

Structured interviews with the concerned authority were conducted. At first, a structured list of question to be asked during the interviews was formulated. Then they were prioritized according to the importance of the question. The views expressed by the service users & selected Staffs are put in Chapter IV. (See Annex-4 &5 for Questions Scheduled for Interview).

## **Personal Observation**

During the exploratory phase, the researcher also had spent quite a considerable time with Nepal Telecom. For the observation, the researcher made conversation to know the response of concerned employee of Nepal Telecom and Ncell during work. The service quality of each company was also observed personally making calls at different locations of different areas.

### **3.2.1.2 Secondary source**

The Secondary sources of data were the brochures, annual reports, published official documents and published reports/statements and company websites ([www.ntc.net.com](http://www.ntc.net.com)). Annual report is neither publicly distributed by Ncell nor made available for research/thesis purpose. Ncell website ([www.ncell.com.np](http://www.ncell.com.np)) was also also the important source for the data collection. NTA website ([www.nta.org.np](http://www.nta.org.np)) was also the important source of data for the above company. Data collected from the secondary sources were completely internal.

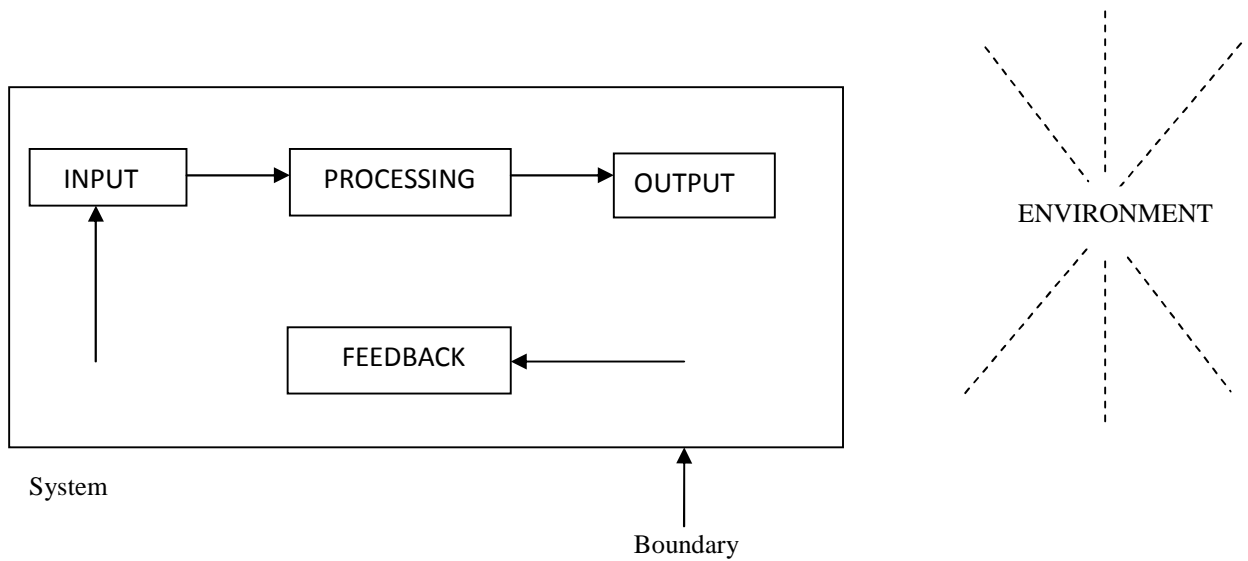
Libraries of Shankar Dev Campus and Trivhuwan University were the sources for books, journals, dissertations and old thesis. Various other websites were visited which are enlisted in the references.

## **3.3 Analytical Tools and Technology**

### **3.3.1 General System Models**

This study is carried out with the general model. The business organization is a man made system that has a dynamic interplay with its environment, competitors, government and so on. Furthermore, the business organization is a system of interrelated part working in conjunction with each other in order to accomplish the specified objectives. The researcher has identified the PSTN line Distribution system as system. The figure 3.2 shows the general system model.

**Figure: 3.2**  
**General System Model of Line distribution Centre**



(Source: Self Design)

The researcher has followed three steps for preparing data:

**Preparation Effort**

The researcher has taken PSTN line distribution centre as a system under the study. It is accomplished with coordination of sales section, outside plant section, switching section, MDF section, and Revenue cash counter in NT. Otherwise, Ncell has only Mobile Lines. The Customer has to go the sales and cash counter to buy the mobile service. The quality, service, technology used provided by the two companies were personally observed and questionnaires were prepared for the public inquiry about their perception regarding the quality of services by the companies.

**Definition Effort**

System analysis is done observing the existing system. The researcher also found out the deficiencies and need of the existing line distribution system of the different companies. At the same time quality of service provided by the two companies (NT, Ncell) were also observed and compared.

## Solution Effort


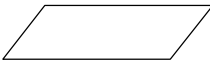

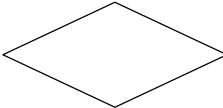
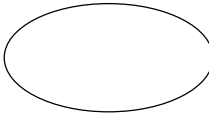

The researcher outlined recommendation to make the existing system more effective. A detailed observation was done to give the recommendation about making easy subscription and to maintain high grade of service to the subscriber.

### 3.3.2 Flowchart

Flowchart depicts the logical flow of the process. It is a pictorial representation of the program or an algorithm. It indicates the various steps involved in designing a system. A flowchart consists of a set of 'flowchart symbols' connected by arrows. Each symbol contains information about what must be done at that point & the arrow shows the 'flow of execution' of the algorithm i.e. they show the order in which the instructions must be executed. The purpose of using flowcharts is to graphically present the logical flow of data in the system and defining major phases of processing along with the various media to be used. Some of the notations/ symbols used for flowchart are following.

**Figure: 3.3**

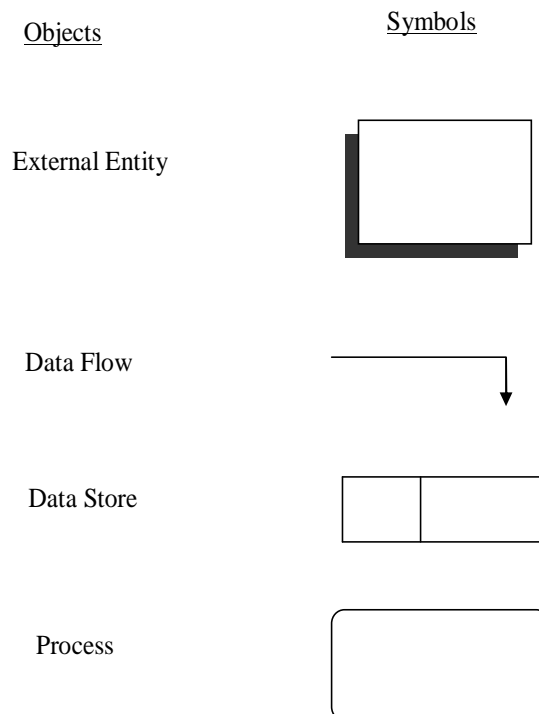
#### Flowchart Object Symbol

<u>Objects</u>	<u>Symbols</u>
Start / Stop	
Input / Output	
Process	
Decision	
Connector	
Flow of data	

### 3.3.3 Data Flow Diagram

During the course of analysis, the researcher had to gather enough information. The researcher used DFD to record to record all the information gathered. Graphical representation of a system's data and how the processes transform the data is known as Data Flow Diagram (or DFD). Unlike, flowcharts, DFD's do not give detailed descriptions of modules but graphically describe a system's data and how the data interact with the system. DFD's are constructed using four major components: external entries, data stores, process and data flows. DFD is a graphical tool used to describe and analyze the movement of data through a system- manual or automated- including the process, stores of data through a system. The DFD shows the inputs and outputs clearly. The DFD has the basic elements namely source, data store and destination. DFD of a system is presented by using context level and system level. The researcher has used Gane/Sarson approach to represent the logical flow of the data, which are mentioned as follows:

**Figure: 3.4 Dataflow Object Symbol**



A brief description of the Figure 3.4 components is given as hereunder:

**(i) External Entities**

External entities represent the source of data as input to the system. They are also the destination of system data. External entities can be called data stores outside the system. These are represented by squares.

**(ii) Data Stores**

Data stores represent stores of data within the system. Examples: computer files or databases. An open-ended box represents a data/store – data at rest or a temporary repository of data.

**(iii) Process**

Process represents activities in which data is manipulated by being stored or retrieved or transferred in some way. In other words we can say that process transforms the input data into output data. A rounded rectangle stands for a process that converts data into information.

**(iv) Data Flows**

Data flows represent the movement of data from one component to the other. An arrow identifies data flow – data in motion. It is a pipeline through which information flows. Data flows are generally shown as one-way only. Data Flows between external entities are shown as dotted lines.

### **3.3.4 Entity Relationship Diagram (ERD)**

An ERD is a data modeling technique that creates a graphical representation of the entities, and the relationships between entities, within an information system. There are 3 main components of an ERD:

- a) The entity – a person, object, place or event for which data is collected. Entity is represented by a rectangle and labeled with a singular noun. For a business information system entity could be customer, customer's address etc.

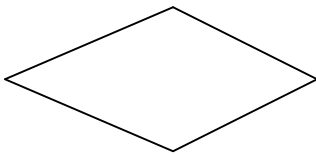
- b) The relationship is the interaction between the entities. It is represented by a diamond shape, or more, simply, by the line connecting the entities. Verbs are used to label the relationships.
- c) The cardinality defines the relationship between the entities in terms of members. The three main cardinal relationships are: one to one expressed as 1:1. One – to – many expressed as 1: M and many – to – many, expressed as M: N.

**Figure: 3.5**  
**ERD Object Symbol**

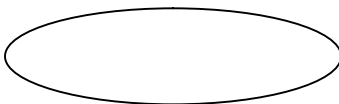
**RD Symbols**



It is used for entity representation contains objects used in relational database



Diamond represents relationships



The oval or ellipse is used to represent attributes of entities



It is used to link attributes to entity sets & entity set to relationship

**3.3.5 Table, Figure, Graph and Chart**

Table is the presentation technique of data in away to visualize and process it easily. Figures are diagrams, pictorial view of a subject. Graph is the pictorial presentation of data which is easy to understand and is helpful to draw conclusion instantly. Table, figure, graphs and charts are convenient ways to clearly show the data.

## CHAPTER IV

### PRESENTATION AND ANALYSIS OF DATA

#### 4.1 Conceptual Review

Telecommunication network is one of the most important infrastructures for the development. For a mountainous (83%) country Nepal where road construction is very costly telecommunication can be used to support health and education sector by telemedicine and distant education. Telecommunication can help to people living in any part of country by providing all kinds of information. To know how far Nepal has achieved in the telecom sector internal data of the operating companies have been gathered and compared with each other. While analyzing the status of Telecom services teledensity, quality of Service and tariff rates have been considered.

#### 4.2 Present Telecom Network Status of the Country

Nepal has made significant progress in the growth and development of the national public switched telecommunication network (PSTN) in the last decade, particularly during fifth phase of the telecom project (1992-97).

(Source: Nepal Telecom: MIS 2012, November)

- ) With the introduction of private telecom operators Ncell and UTL and others besides the public company Nepal telecom, the number of distributed lines increased sharply from approx.65,000 lines in 1992 to over 831,703 ( PSTN+WLL). Number of Post-paid + pre-paid Mobile Subscribers reached 16,608,622 till November 2012.
- ) There are fixed and mobile telecom services in all 75 districts of Nepal
- ) There are a total of 6404 international telephone circuits including Microwave circuits in operation by Nt. Ncell also has international gateways operating international trunk circuits.
- ) There are 639,170 fixed telephone lines available by the people (Till Mangsir 2069 BS) based on wire line and wireless technologies in Nepal.

- ) Similarly, there are 16,608,622 mobile telephone lines in operation based on GSM and CDMA technologies
- ) Similarly, there are 1,272,654 telephones lines in operational based on LMS (Land Mobile service/Technology with least Mean Square Algorithm to cancel echo in Channels) and GMPCS technologies
- ) Thus, there are altogether 18,712,979 number of telephone lines are distributed for voice telephones services. Thus, by Mangsir 2069 BS, overall tele-desity has reached 70.61 per 100 inhabitants in Nepal.
- ) Currently there are 3 operators in land line (PSTN) telephone sector, namely NDCL,STM and smart, out of which NDCL is the dominant having 99.06% of PSTN market share.
- ) There are three operators providing fixed location type basic telephone using WLL technology, namely , NDCL, UTL and NSTPL, out of which NDCL is seen to be the dominant having 68.02% of the total WLL line current users.

### 4.3 Analysis of the Existing System of Nepal Telecom

#### 4.3.1 Organization Structure of Nepal Telecom

**Table: 4.1**

**Boards of Directors of Nepal Telecom**

<b>Board of Directors</b>
Chairman, Secretary, MOIC
Member, Managing Director
Member, Joint secretary, MOIF
Member, Jt. Sec, MOL& Constitution
Member, Joint Secretary, MOIC
Member, Shareholder Group
Member, Union Representative
Company Secretary, DMD,NT

(Source: www.ntc.net.np)

As has been displayed in the table 4.1, there are all together eight members in the Board of Director in Nepal Telecom. A team of board of directors heads the organization. The Board is comprised of a chairman, six members and one company secretary. The board decides about the major politics of the company. The managing Director, included in the board of directors as a member, looks after the entire management and day-to-day operation of the company assisted by seven deputy managing directors (Level 11), 10 regional directors (Level 10 & 11). There are seven corporate offices which supervises, support and controls all the other offices. There are six field's level offices and 6 regional directorates, each type of service has separate field office for its panning, implementation and operation and maintenance. So, there is PSTN Directorate for PSTN (Fixed) lines, Mobile Service Directorate for GSM mobile lines, Wireless telephone Directorate for CDMA lines, and IT Directorate for internet and data services, Satellite Service. Directorate for telephone services using satellite to rural places and for the international trunk call services. Telecom training Centre for conducting trainings related to telecom services. Regional and efficient way, to maintain the quality of service by correcting the faults in the services as first line maintenance structure of Nepal telecom is shown in Annex-1

### **4.3.2 Facts of Nepal Telecom**

#### **4.3.2.1 Objectives**

##### **Past Objectives**

1. To provide basic telephone voice service to the Nepali citizen throughout the country.
2. To support the government administration in maintaining peace, security and law & order all over the country.
3. To connect the country with outer world.
4. To assist in live broadcasting of functions of public importance on request of particular institution or the government.

## **Present Objectives**

In addition to above objectives following objectives are included.

1. To provide local, national as well as international telecommunication services under regulation of NTA, the regulating body of the government of Nepal.
2. To provide high quality data services, e-mail and internet services to the customers.
3. To continually maintain and upgrade reliable and quality telecommunication services for maximum customer satisfaction.
4. To provide interconnection facilities at NTs local network as well as national trunk network and access to the international gateway to the other operators to make their services more effective ultimately serving people.
5. To maintain its market leader position in the domestic as well as international telecommunication services.
6. To enhance the development of tourism industry.

## **Future Objectives**

1. To enhance the economy of the country by cutting expenses as well as reducing time needed to perform various functions in all sectors of life – agriculture, health, education and others. Helping to conduct information centre, telemedicine and distance education etc.
2. To provide broadband data services- video, data and voice service with one telephone line. i.e., TV, Computer and telephone services via the same line.
3. To provide one integrated bill for all services provide d by NT.
4. To set up Data Centre for cloud computing to store data of the subscribe r safely.
5. To provide additional value added services like number portability so that number may not be changed when changing the office/ operator of the subscriber.
6. To develop alternate routes for connection of NT with all the countries of the world to make its services more reliable.
- 7 To see a telephone line in the hand of every citizen.

#### 4.3.2.2 Services Offered by Nepal Telecom

**Table 4.2**  
**List of Services offered by NT**

S.N.	Name of Services	Quantity
1	PSTN Telephone Line	631654
2	GSM Mobile Telephone Subscriber	6642455
	a) Post-paid Mobile Telephone Subscriber	222074
	b) Pre-paid Mobile Telephone Subscriber	6420381
3	CDMA Lines	945293
	a) C-Phone Post-Paid	20618
	b) C-Phone Pre-paid	100717
	c) Sky Phone Post- Paid	25754
	d) Sky Phone Pre-paid	798204
4	PCC & HCD(Capacity 500,000)	197974
5	AFS Subscriber (Capacity 4000)	261
6	PCL Subscriber (Capacity 50000)	11931
7	VMS Mail Box (PSTN)	4934
8	Total Internet Subscriber	2512439
	a) CDMA PDSN Data Internet	136573
	b) GPRS Internet (GSM Post-paid)	2263080
	c) Dial- Up Internet Subscriber (PSTN+IDSN)	4445
	d) ADSL Subscriber	103204
9	Rural Telephones	
	a) VHF telephone	24
	b) VSAT telephone (C-Band, Ku- Band)	360

(Source: Nepal Telecom: MIS 2012, November)

#### 4.3.2.3 Projects

In the process to achieve its objectives it has launched following projects.

1. Alternate Transmission Route: Establishment of alternate transmission routes for backbone network using OPGW with coordination of NEA to increase reliability of the Telecommunication services.
2. NGN: 105 K PSTN lines with NGN technology.
3. IPTV Service: 50 K lines for KTM valley and 125 K lines for Outside KTM Valley.
4. WiMax Service: 200 K lines to serve all VDCs.
5. CRTB: Convergent Real Time Billing to provide one bill for different services provided by the company.
6. ERP: Enterprise Resource Management for management of all the resources of the company- Finance, Revenue, Store, Manpower.
7. NOC: Network Operation Centre to manage the maintenance of all the networks efficiently with centralized supervision and control of all the network systems of the company.

#### **4.3.3 Hierarchy of management**

Level of management means the arranged managerial position in an organization as well as it is the system of dividing the authority and responsibility among the various managerial positions. It is concerned with the classification of superior subordinate relationship in an organization. The level of management depends upon the size and nature of the organization. In Nepal Telecom, the hierarchy of management is divided into four levels:

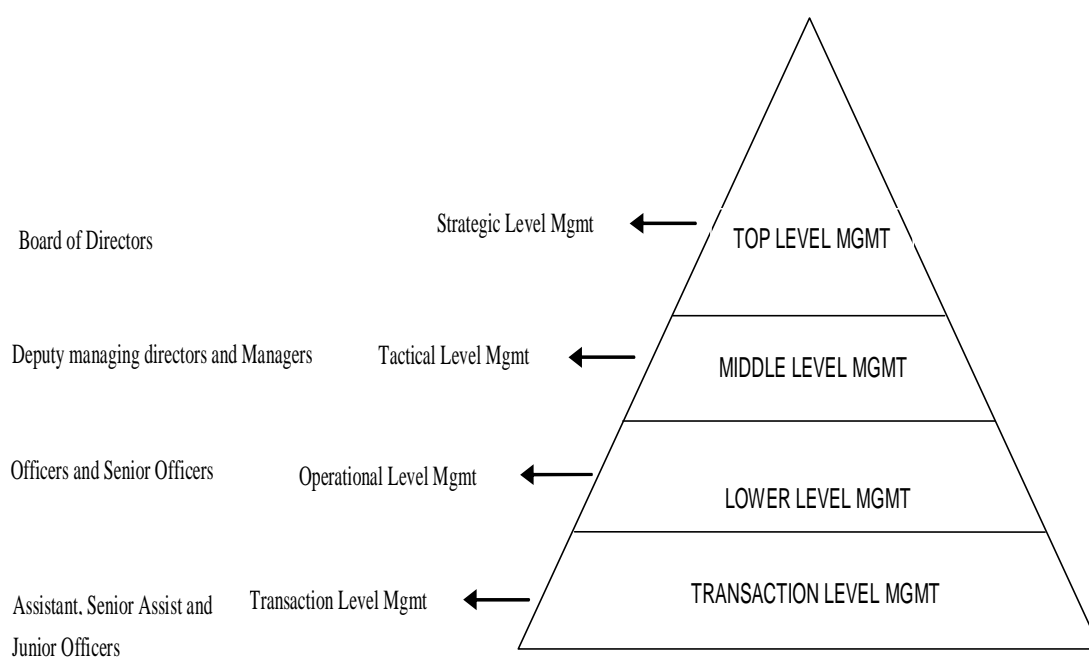
- ) Top level management
- ) Middle level management
- ) Lower level management
- ) Transaction level management

All levels of management are inter-related with each other and are equally important for the smooth operation of management. Even a small mistake of one level can affect the whole management process. The figure 4.1 shows the hierarchy of management of Nepal Telecom.

## Top level management

Top-level management of Nepal Telecom consists of seven members of board of directors including chairman and one secretary additional. These people are the governing bodies of the organization and they exercise all authorities bestowed on by the telecommunication act for conducting the business smoothly, effectively and efficiently. The top level management of Nepal Telecom has the highest authority and is responsible for the success and failure of Nepal Telecom programs.

**Figure: 4.1**  
**Hierarchy of Management in Nepal Telecom**



## Middle level management

Middle level management in Nepal Telecom consists of all the directors and managers of various corporate level offices, field level service directorates and regional directorates. They are level 10 and level 11 employee of the company. This level of management is concerned with the task of implementing the plans and policies prepared by the top-level management. Middle level management is fully responsible for all the activities of lower level management and transaction

level management. They act as coordinators between policy makers and the floor level staff. They are responsible for implementation, monitoring the progress and quality of the activities being performed in their offices/ sections. They solve the problems faced by the lower level management while performing their duties. Most of the time they follow the rules made to run different wings of the organization and at times give own judgments also (consulting the authorities in strategic level if necessary). They provide important information to the top level management in decision making process. Thus, this level bridges the gap between top-level management and lower level management.

### **Lower level management**

Lower level management is also known as supervisory level management or operational level management. This level carries out the regular works of the organization. Lower level management of Nepal Telecom includes the senior officers of level 8 and 9 . This level of management is responsible for the implementation and control of the operational plans developed by strategic and tactical level management. This level also controls and handles the activities of transaction level management.

### **Transaction level management**

Transaction level management is the bottom level of the hierarchy of management in Nepal Telecom. Transaction level management of Nepal Telecom includes assistants, senior assistants and junior officers who are of level 1 up to 7. They are responsible to perform day-to-day activities. They are responsible for execution of the different activities performed by the organization – installation of equipments in different systems (PSTN, GSM, CDMA, Internet, Rural VSAT and others), distribution of different services (fixed and mobile telephone lines, leased data lines, IN services etc.), bill processing, revenue collection, maintenance of equipments, telephone lines and various services, giving feedback about the performances of different systems and services, survey and collection of demands of the services offered by the organization.

#### 4.3.4 Growth Trend of Nepal Telecom

**Table 4.3**  
**Growth trends of Nepal Telecom**

<b>Human Resource</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>2010/11</b>
Approved post	6029	6984	7030	7088	7094	7185
working Manpower	5717	5699	5592	5876	5826	5562
<b>Technical</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/10</b>	<b>2010/11</b>
Installed Telepath exchange	225	231	236	243	256	363
Districts telepath lines	72	72	72	73	75	75
Installed teleph. Lines	602252	656070	684942	726980	749205	793203
Distrib.teleph lines	485997	509873	532391	562162	583542	631654
Internet trunk circuits	3140	3423	4568	4841	5206	
GSM Mobile Subscriber	622737	909483	1717230	3009962	3960293	6642455
CDMA Subscriber	23579	161155	480016	721318	920257	945293
Overall Teleph. Distribn	1152478	1580511	2729637	4293442	5464092	8220520
Teleph Penetration(Overall)	4.4	5.99	10.12	15.58	19.40	30.88
<b>Financial</b>	<b>2005/06</b>	<b>2006/07</b>	<b>2007/08</b>	<b>2008/09</b>	<b>2009/27221.110</b>	<b>2010/11</b>
Total Inc.(Million Rs)	11058.9	14751.6	17889.3	22257.7	27221.1	29849.16
PBT(Million Rs)	6843.7	7983.3	10871.4	13634.0	14441.1	16389.6
PAT (million Rs)	4936.6	5652.7	7942.9	10178.0	10775.2	12120.2
NPR(%)	44.64	38.32	44.4	45.72	39.58	40.61
Total Capital employed	23686.0	27985.9	35343.9	46280.6	525046.6	61079.9
Ret. On Capital Employed, %	22.17	21.88	25.12	29.94	21.82	21.34
EBITA Margin (%)	73.07	63.78	69.53	67.85	71.83	66.12

(Source: Nepal Telecom: Annual Report 2011)

Going through the data of table 4.4.5, it can easily be seen that number of exchange offices has increased from 225 to 363 in just five years. The number of PSTN lines has increased from 602252 to 793203. The number of mobile subscribers has increased from 622737 to 6642455 during the same period. Similarly CDMA subscription has also increased from 23579 to 945293. Operating revenue has been on increase. Net profit ratio has been fluctuating between 38% and 46% which indicate towards its successful operation and healthy condition of the only public company with 90% government share.

#### **4.3.5 Distribution System**

Distribution system of any commodity/ service is very sensitive and important part for any organization. The distribution system should be short, efficient, less time consuming and transparent as much as possible. In order to meet the demand of telephone and related services throughout the country, NT has established 285 exchange offices. In order to discharge the distribution functions effectively and efficiently, the organization has divided whole of the national market in 6 regions and has established regional directorates at the main business centers of the regions. There are 5 regional directorates in 5 development zones of the country and one regional directorate is dedicated to meet the huge telephone demand of the Kathmandu valley. NT offers varieties of telecom services like land line telephone, GSM mobile telephone, CDMA wireless fixed and mobile telephones, VHF, VSAT telephones, data lease line, internet and IN Services like PCC, PCL, AFS, HCD, SIP etc. The distribution systems of GSM and CDMA wireless mobile phones are simple and so are the distribution systems of internet and various value added IN services because detail site survey and specific installation processes at the customer's location are not required for them but the distribution system of PSTN land line is rather complex due to the above detail survey and installation processes involved in it. Here I have attempted to analyze the distribution system of PSTN line and have tried to investigate the lags/ gaps to be covered up to make the system faster and more efficient so that the customers can get more satisfaction aiding to improvement of the telecom service.

#### **4.3.5.1 Objective s of PSTN Line Distribution system**

1. To maintain the line inventory and distribution.
2. To distribute the telephone line in shortest time and properly.
3. To gene rate various reports for the higher authorities to control and support such as number of telephones issued under different category – normal, priority or OYT.
4. To collect charges for telephone installation and pass the collection statement to the revenue department.
5. To ensure proper billing of the telephone lines by coding.

#### **4.3.5.2 PSTN line distribution System in Nepal Telecom**

The study covers the overall information system used in PSTN line distribution system. The study entails the detailed description of the different documents including application form, survey order, service agreement, Subscriber Identification & Signature Verification and installation order forms and the entire line distribution process. Forms are attached as annex-2. The study covers all the processes covering how it is handled, the flow of information and its management according to the integrated system approaches. The line distribution system in Nepal Telecom is quite sophisticated. Almost all of the major offices (capacity greater than 5000) in the valley are working with computers with SD system software. The offices outside of the valley use computers for MCC but they do not have SD system implemented yet. Provision of necessary guide lines and control is done by the regional directorates according to the policies received from the operation and maintenance department located in the corporate office.

#### **General status of PSTN Line Distribution**

There are approximately 350,000 customers waiting for telephone connections. Nepal Telecom has not been able to provide a telephone for them. The reasons are many:

NT has been transformed to company since 2060 B.S. Magh 22, 9 years back and still majority of the board members are from the concerned ministries who think in traditional way. To fulfill the demand huge proc element of the resources is

necessary which demands for big budgets; the board members from the ministries consider a lot of things parallel and full budget sanction is not possible. This situation was even worse in the government's corporation period and hence, the big backlog. The customers have been waiting even for more than 5 years in certain parts of the country. However, there are places where the telephone is on demand.

### **Information to be supplied in the application form for PSTN land line**

1. Name of the applicant.
2. Names of the applicant's Father and Grandfather.
3. Addresses (permanent, temporary and address where line installation is required).
4. Citizenship number.
5. Type of connection (permanent, temporary, casual -Charges differ for each type).
6. Type of line required: (Normal land line, VHF line, MARTS line, VSAT line).
7. Class of line (Normal, Priority, OYT line – charges different class wise).
8. Ac acceptance for publication in the telephone directory: Yes or No.
9. Number of existing telephone(s) if any and the number(s).
10. Road map of the location where telephone line connection is sought.
11. Nearby telephone number where telephone connection is sought.
12. Acceptance of the rules and regulations of the company.

### **Fees and Charges scheme**

Registration fee:	NRs. 50/-
Line installation charge:	NRs. 900/-
Deposit money:	NRs. 1000/-
Ownership charge:	NRs. 1500/-
Line transfer charge:	NRs. 500/-
Drop wire charge:	NRs.10/ meter

### **Criteria for Priority Line**

Followings get priority in issue of line like: Government offices, NGO, INGO, Recognized School or College, Recognized professional organization, Diplomatic offices, Senior Govt. Officers, Doctors, Engineers, Chartered accountants, Lawyers, Journalists on recommendation of the irrespective organizations, Head masters, Lecturers and Professors on recommendation of their respective organization, Contractors and others prioritized by the board of the company.

### **Procedural Steps for distribution of PSTN line**

1. The regional directorate or the concerned branch telecom office notifies to the customers in waiting list regarding distribution of telephone line with required documents wherever network and resources are available. The office, generally, require the following documents.
  - a. Nepali citizenship for Nepali customer and identification document and recommendation letter issued by the relevant embassy for foreigners.
  - b. Passport size photo.
  - c. Registration/ license of the business/ industry, VAT registration certificate and Tax clearance Certificate in case of priority telephone for the entrepreneurs.
  - d. Recommendation letter of the recognized professional organizations if the customer wants telephone on that basis in priority.
2. The applicant contacts the sales section of the office along with the required documents. The sales section checks out for the sufficiency and validity of the documents. It also verifies if the applicant is black listed or not. If there is back dues due to discontinuity of bill payment on any line already issued to the applicant or his family members then he has to clear out the dues.
3. If the customer is eligible to have a connection then the sales section prepares a Survey order in a prescribed format (Annex -2) and produce before the office – in – charge. The office-in- charge confirms out the documents,

eligibility and issue order for survey to the outside cable network section.

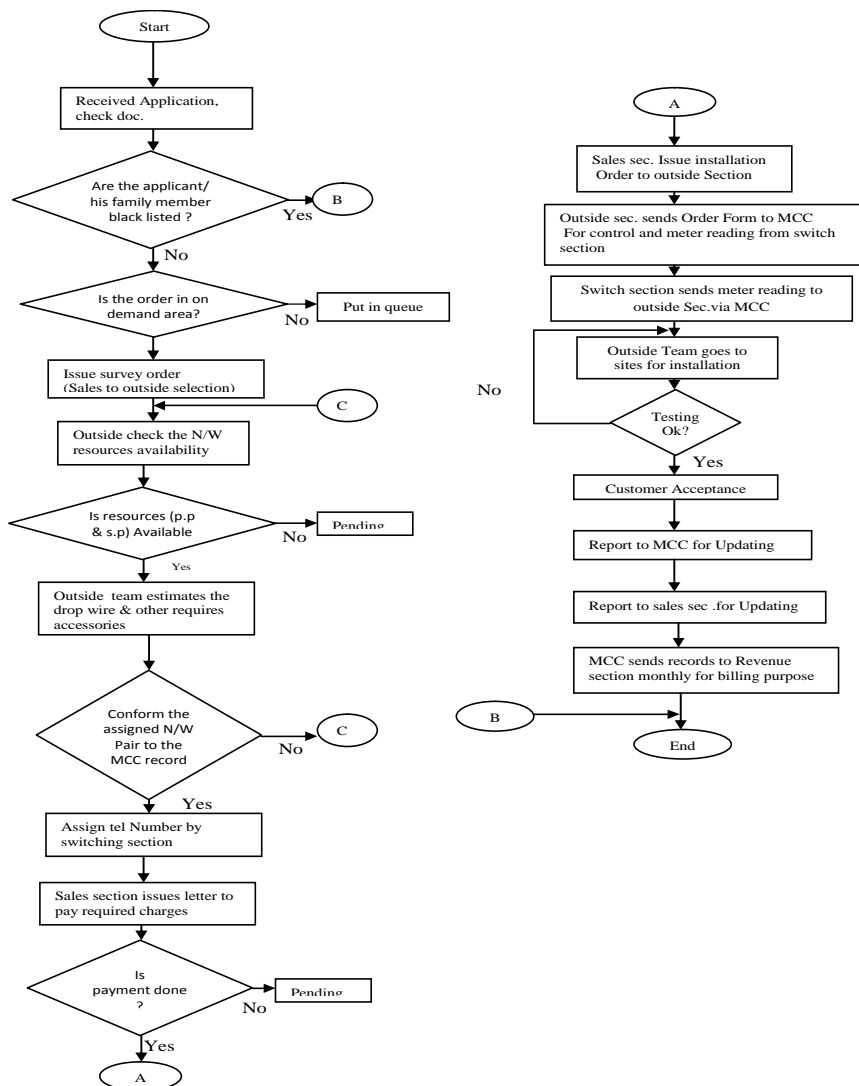
4. The outside section-in-charge deposes for Survey & Estimation work to a line installation technical team which gets a good network pair and required material estimate for line connection.
5. The M.C.C. section checks these data and enters them in the network database. In case it finds any mismatch (like the pair(s) mentioned has already been reserved for someone else, may be to a bad payer or to a new connection in process), it may return to check for other pair. The M.C.C. section forwards this form to the switching section for allotment of an O.K. telephone number.
6. The switching section allots good telephone switching equipment and sends its number to the sales section for further processing.
7. The sales section calculates for the installation, deposit and subscription charges and notifies to the client/ customer for payment within a certain time limit.
8. The client/ customer payment of the installation and other charges notified by the sales section on the Revenue counter and produces the receipt bill to the sales section.
9. The sales section prepares the legal agreement to be signed by the customer and the office-in-charge. The agreement contains the details of the rules and regulations to be observed and followed by the customer. At the same time it also gets completed a Subscriber's Identification and Signature Verification Card by the subscriber
10. The sales section prepares the Line Installation Order form and produces before the office-in-charge for check if the proper amount of charge has been paid or not an issue installation order to the outside section.
11. The outside section-in-charge deposes a technical team for installation of the line at the premises of the customer.

12. The technical team gets the initial meter reading of the telephone number (sometimes it may not start from zero for several reasons like test number or returned/seized number) from the switching section.
13. The technical team requests the MDF technician to jumper the outside pair to the switching side pair located on the MDF to connect the switching equipment with the telephone set to be installed at the customer's premises via the outside cable network.
14. The technical team installs the line according to the survey report, gets the installation quality acceptance of the customer and reports to MCC for record update.
15. The MCC files the survey and installation order forms, prepares installation summary report and sends to the sales and revenue section for record keeping and service coding required to generate monthly bill of the telephone number. The summary report contains following details about the line installed:
  - ) Name and address
  - ) Installation date
  - ) Cabinet, DP and DP pair number
  - ) Meter Reading of the Telephone Number.
  - ) Installation team identification

The above procedural steps in course of line distribution can be shown in the form of flow chart 4.1.

**Chart: 4.1**

**Flowchart of PSTN line Distribution in NT.**



(Source: Self Design)

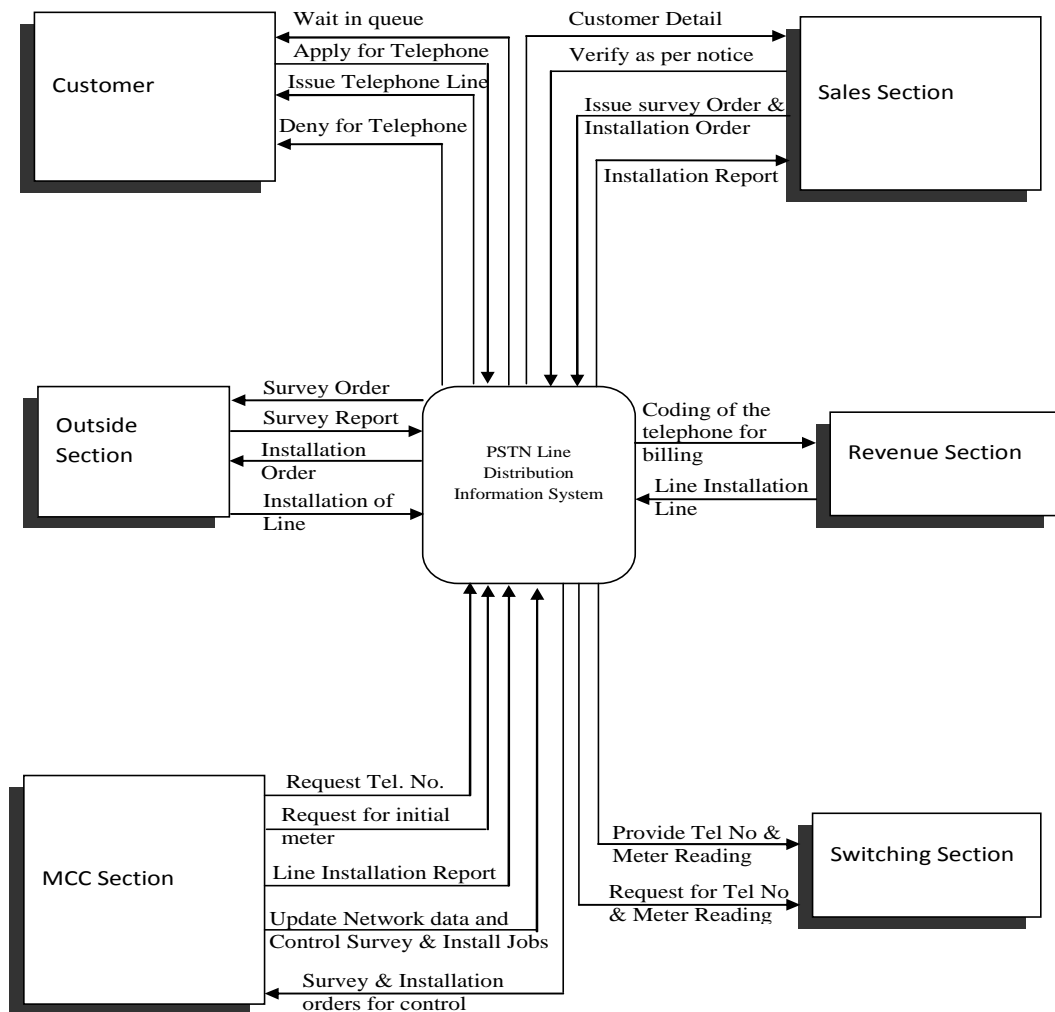
## DFD of PSTN Line Distribution Information System

### Context Level DFD of PSTN Line Distribution information system

Context level DFD gives the bird's eye view over the system. In the land line distribution system of Nepal Telecom, there are basically six external entities: Customer, Sales Section, Outside Plant Section, MCC Section, Switching Section and Revenue Section. (Chart 4.2) Each entity plays a major role in the process of line distribution.

**Chart: 4.2**

**Context Level DFD of PSTN Line Distribution Info System of NT**



(Source: Self Design)

**Customers** are the most important element for the company. The company earns bread and butter out of them. They are the ones who come to subscribe the telephone services and thus are the revenue generators of NT.

**Sales section** of NT offices notifies to the waiters for line installation in the area when it has network resources ready. They receive the customers and check out the documents produced before the office. The sales officer fills up survey and installation order forms in the name of the subscriber and forwards via the office-in-charge to outside plant section for survey and installation. Sales section calculates the charge to be paid against issue of the line. It makes legal agreement with

the customer in order to bind with responsibility for the line- regarding bill payment and misuse thereof.

**Outside Plant section** supervises the cable network. It looks after the resources of MDF, cabinets and D.Ps. It is responsible for installation and maintenance of PSTN lines. The section-in-charge supervises the works of survey, installation and maintenance teams. It can be compared with our limbs whose works are seen and by which the organization gets much of external environment information and demand details. Their working style may attract or distract the customers.

**MCC section** controls and monitors the various activities performed by the technical teams involved in surveying, installation, maintenance of lines. It calculates the time taken to perform the jobs for evaluation purpose. It manages the database of the networks. The database contains following network data:

1. Records of the cabinets – primary/ secondary pair capacities with OK/FLT status.
2. Records of D.Ps. - capacity (10/20 pair), used and vacant secondary pairs with status.
3. Names and addresses of the subscribers to whom the PP and SP have been allotted.
4. The team responsible for survey, installation and maintenance and time taken to do the jobs.
5. Fault repair details including time of clearing the faults with type of faults.

**Switching section** is responsible for the operation and maintenance of line equipments. It observes the charging /meter of the lines. It issues the line facilities like STD, ISD, Locking codes and other value added services. The section is very sensitive and complex in operation. It may be compared with our heart and brain as it is responsible for all the processes involved in setting up our telephone calls and completing it a s successful calls.

**Revenue section** codes the telephone lines according to different categories- residential, business, official, privileged service and non-service, privileged journalist etc. It collects the bill amounts through its counters, monitors the revenue and follows up the bad debtors, if any. It is so important for a company's good economic health.

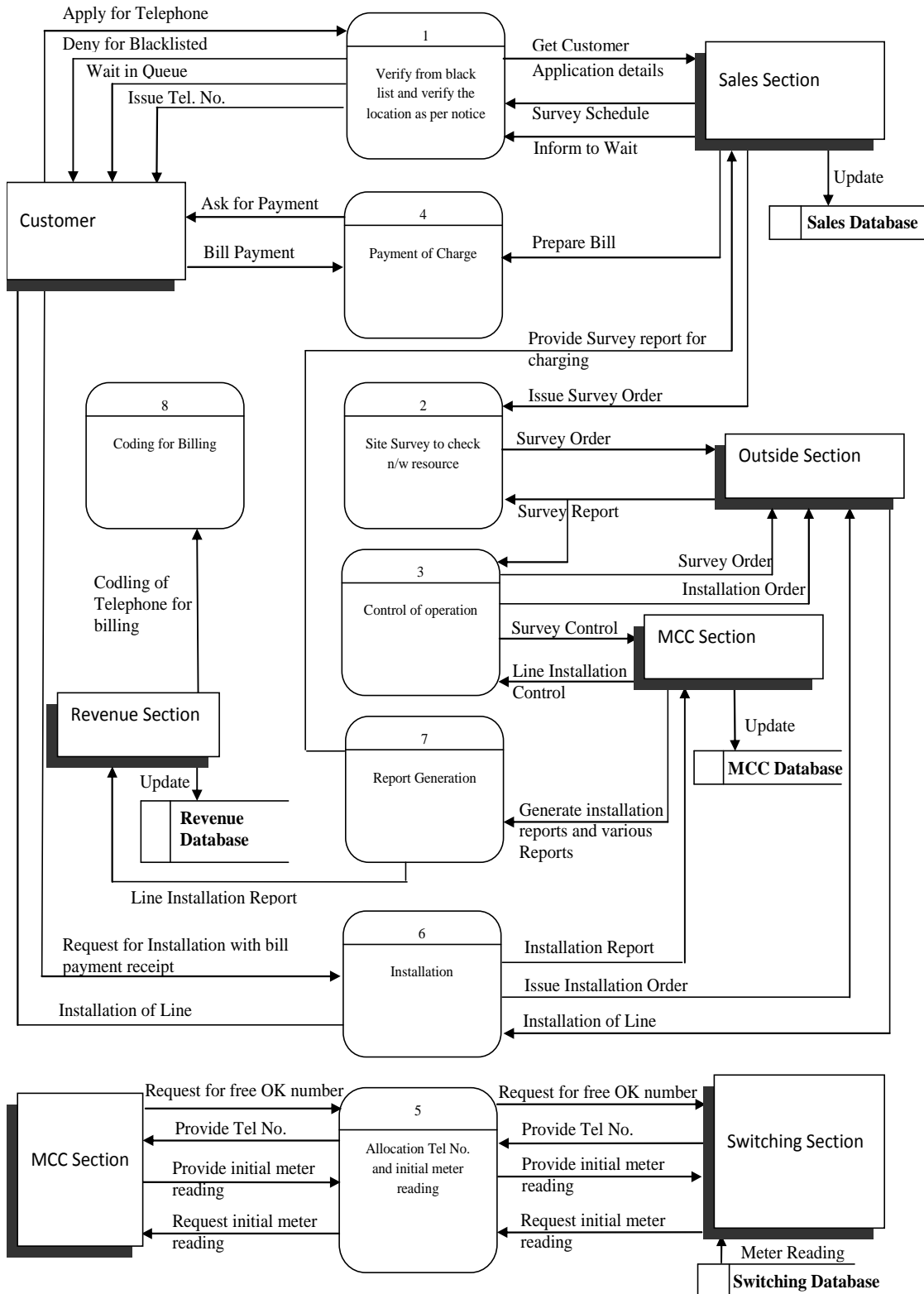
## **System level DFD of Line Distribution information system**

System level DFD clearly defines the processes of PSTN land line distribution and the relation of the external entities with the main processor.

Customers requests for telephone line and provides location detail and personal information to the sales section. If the applicant produces the necessary documents and there is nothing against him (her) and resources is available, it initiates for the line distribution otherwise puts him (her) in queue or deny giving reasons. It also prepare bill for payment of charge process. The office-in-charge coordinates with all other sections responsible for resource information. Customers may also cancel their intention of getting line at any moment. Site survey and installation of line in the customer's premises – these two processes are performed by the outside section which receives survey and installation order forms from sales section. It performs its functions in close coordination with MCC and MDF sections. Processes like controls of operations like survey and installation processes, generation of reports for management as well as preparation of summary line installation report for billing purpose for revenue section are done by MCC. It also coordinates with switching section for free telephone number and initial line meter reading. MCC maintains a huge database comprising of all the network resources, line operation locations, and the user's detail. Revenue section completes the coding for billing process based on the data supplied by MCC and other papers supplied by the customers, if any. It also maintains a database for the revenue collection records. Allocation of telephone number and Reading of Initial Meter Reading are performed by switching section. The system level diagram is shown as chart 4.3.

**Chart 4.3**

**System Level DFD of Line Distribution Info System of NT**



(Source: Self Design)

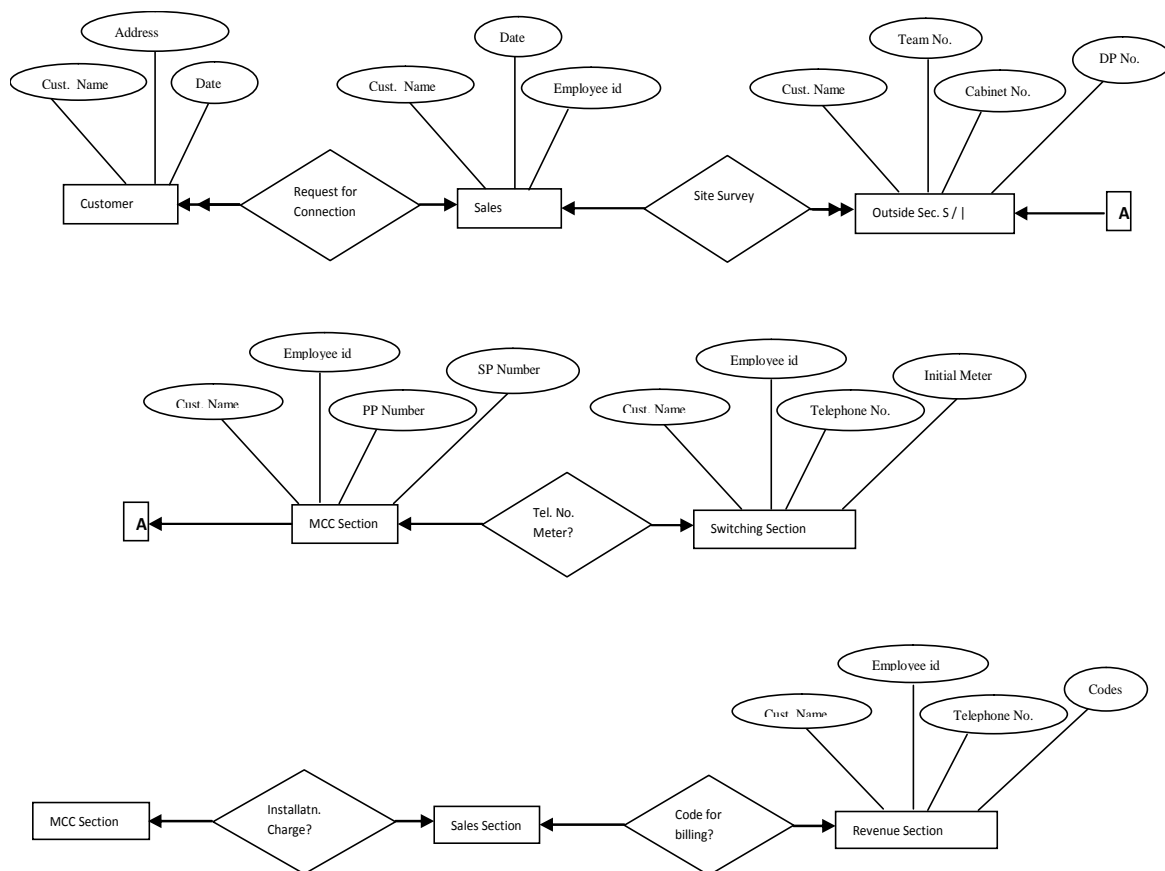
## Entity Relationship Diagram (ERD)

### Data Dictionary System

The relationship between different entities has been shown in the preceding ERD diagram chart 4.4 The diagram depicts the relationships between different entities involved in the PSTN telephone distribution system.

**Chart 4.4**

**ERD of Entities involved in PSTN Line Distribution of NT**



(Source: Self Design)

From the chart 4.4 it is clear that relation between customer and sales section is many: 1 relation (so many customers contact one sales section) and so is the relation between sales section and different teams of outside section. Relationship between outside section and MCC section, switching and MCC and sales and revenue sections are 1:1

**Table: 4.4**  
**Data Dictionary**

Entity: Customer

S.N.	ATTRIUTE	TYPE
1	Customer name	TEXT
2	Address	TEXT
3	Date	NUM

Entity: Sales Section

S.N	ATTRIBUTE	TYPE
1	Customer name	TEXT
2	Employee id	NUM
3	Date	NUM

Entity: Outside Section

S.N	ATTRIBUTE	TYPE
1	Customer Name	TEXT
2	Team name	NUM
3	Cabinet Number	NUM
4	D.P number	NUM

Entity: MCC Section

S.N	ATTRIBUTE	TYPE
1	Customer name	TEXT
2	Employee id	NUM
3	PP number	NUM
4	SP number	NUM

Entity: Switching Section

S.N	ATTRIBUTE	TYPE
1	Customer name	TEXT
2	Employee id	NUM
3	Telephone number	NUM
4	Initial Meter	NUM

Entity: Revenue Section

S.N	ATTRIBUTE	TYPE
1	Customer name	TEXT
2	Employee id	NUM
3	Telephone number	NUM
4	Code	Lookup Wizard

Different types of data are also shown in the table of data dictionary 4.4. The attribute 'Code' of the Revenue section entity is to differentiate various types of telephone

lines like normal, VHF, MARTS, VSAT; Privileged press etc to implement different types of billing. Primary Key is the Customer name. The attributes and their types of the entities are also given in table 4.4.

#### 4.3.5.3 Objective s of Mobile Line (GSM/ CDMA) Distribution

1. To distribute mobile line to every hands of the people for fast development of the country and increase safety while also on move.
2. To distribute the telephone line in shortest time and properly without giving much trouble to the customers.
3. To maintain the line inventory and generate various reports to produce before the higher authorities for control and support.
4. To collect charges for telephone and pass the collection statement to the Revenue department.

#### 4.3.5.4 Tariff Plan of NT

**Table 4.5**  
**Local calls Tariff of NT**

S.N		Rs./minute	Rs./minute	S.N		Rs./Minute
	NT to NT	06am-10pm	10pm-6am			24 hours
1	Post Paid GSM	1.00	0.55	5	NT to NT	2.6
2	PSTN	1.00		6	NT to Ncell	2.5
3	Prepaid GSM	1.50	0.55	7	NT to STM	3.6
4	Prepaid CDMA	1.80	0.75	8	NT to Smart Tel	3.6

**Table 4.6**  
**Domestic Long Distance Calls Tariff of NT**

S.N	Type of call	08.00-18.00	18.00-22.00 & 06.00-08.00	22.00-06.00
		Rs./Minute	Rs./ Minute	Rs./ Minute
1	Call made from one district to another within one Zone	1	1	1
2	National Zonal calls (Sun-Fri)	2	1.5	1
3	National Zonal Calls (Sat)	1	1	1

**Table 4.7**  
**International Call Tariff (Access code-"1424") of NT**

S.N	Countries	Rs/minute	Pulse Duration	Charging (Rs./Duration)
1	India, Pakistan, Bangladesh, Srilanka	12	6	1.2
2	Bhutan	15	6	1.5
3	Maldives	40	6	4
4	Afghanistan	24	6	
5	Somalia, Falkland Island, Cuba, N, Korea, Papua new Guinea, Solomon Island, East Timor	80	6	2.4
6	Rest of the world except countries above mentioned	30	6	3
7	Satellite Phone (820), Global Network, In mar Sat(870), Iridium(881)	240	6	24

(Source: [www.ntc.net.np](http://www.ntc.net.np))

## **4.4 Analysis of Existing System of Ncell**

### **4.4.1 Technology and Features of Ncell**

Ncell is using HSDPA technology for internet/data service through 3G capable of 3.6 Mbit per second online. It has planned to use HSPA add-on-technology to extend the speed further. Also it has plan to start LTE which can provide internet access up to 100 Mbit speed. The CEO has written in his blog on Aug 15, 2011 that average data download speed is 1.1 Mbit.

#### **New Features/ Innovations**

Ncell has introduced NGN technology claiming to have updated technology. It has introduced Black Berry facility. Black Berry is leading wireless enterprise solution offered by Research. In Motion Ltd (RIM) that keeps professionals connected to people and information while on the go. It provides wireless access to many application including e-mail, corporate data, phone, SMS, web, organizer features and multimedia features. It requires the use of special Black Berry handset.

#### **Quality Improvement Measures**

Ncell claims that 90% of its rural BTS sites have diesel generator as power back up to make service reliable. It has plan to implement power stabilizer, new type of batteries (Short recharge cycle) and replace DG by solar where place allows.

#### **Services available**

##### **Ncell Connect**

Ncell Connect is a flexible internet service from Ncell using data Card and Ncell data SIM to access internet. Data Card is inserted in the USB port.

There are three packages available for this service-500MB package at Rs 399 (80 paisa per MB) 1000 MB package at Rs 699 (70 paisa per MB) and 5000MB package at Rs 1999 (40 paisa per MB). Without subscribing it costs Rs 2 per MB.

### **Short Messaging Service (SMS)**

Short text message up to 160 characters can be exchanged with Ncell subscriber as well as subscriber of the other mobile operators within and outside Nepal. Charges for sending SMS from Ncell to Ncell is Rs 1.00 per message and from Ncell to other network is Rs. 1.27 per message exclusive of taxes.

### **Mobile Internet**

Depending upon the mobile device model capabilities internet connection can be had via different protocols (WAP, GPRS>EDGE). There is provision of surfing the net, checking emails, using the handset as modem to connect wireless internet to one's personal computer, MMS, chatting and downloading different applications. Charges for Data traffic is Rs 0.006 per kb (Upload and download) at charging interval of 10 kb (exclusive of taxes).

### **Multimedia Messaging service (MMS)**

Messages including images, audio and video clips can be sent in addition to text share captured moments and experiences instantly. Charge for sending MMS from Ncell is to Rs 3.00 per message exclusive of taxes.

### **Personal Ring Back Tone (PRBT)**

PRBT service enables the person who calls one to listen to popular tunes instead of the regular tones. It can also be sent as gift to anyone. Monthly charges for this service are Rs. 10 and tone downloading charge is Rs 10 per tone.

### **Voice Mail**

It is a service, which answers one's calls automatically and allow callers to leave messages when one is unable to answer the calls or when one's mobile phone is switched off. The mobile phone alerts the owner of the message received. The voice messages can be listened using PSTN phone with tone dialing. There is activation charge of Rs. 88.50 and for listening to the messages charges are Rs. 1.99 per minute for prepaid and Rs. 1.60 per minute for postpaid (exclusive of taxes).

### **SMS-to-Email**

SMS-to-Email service relays SMS as emails and the message is delivered to the recipient's email address. One can also receive emails sent to one's number as SMS. Charges for this SMS-to-Email service for Pre-paid includes a monthly fee of Rs. 30 and Rs.1.00 per message and that for Post-paid monthly fee are exempted and Rs. 5.00 per message is charged.

### **Call Waiting**

This service notifies one of another incoming call during a conversation and allows you to keep the first caller on hold and answer the second call. This service is free.

### **International Roaming (Prepaid)**

This service enables one to carry one's cell phone with Ncell number while travelling abroad. Ncell prepaid subscribers can activate/ deactivate roaming service via USSD. This service includes SMS interworking, balance information and balance refill. Calls to Ncell centre are charged by roaming partners as international calls to Nepal.

### **Call Forwarding or Call Divert**

This service enables one to divert all one's incoming calls to any other mobile number or to a landline number of one's office or residence when one is busy, out of reach, mobile switched off or when talking on other line. Charges are according to calling rate.

### **Missed Call Notification**

It is a service which enables one not to miss a single call even when one's phone is switched off or when one is out of network coverage. The mobile owner receives detailed SMS of all the missed calls when the mobile is switched on or when s/he enters the network coverage area. Charge for Missed Call Notification is Rs. 2.49 including VAT per week.

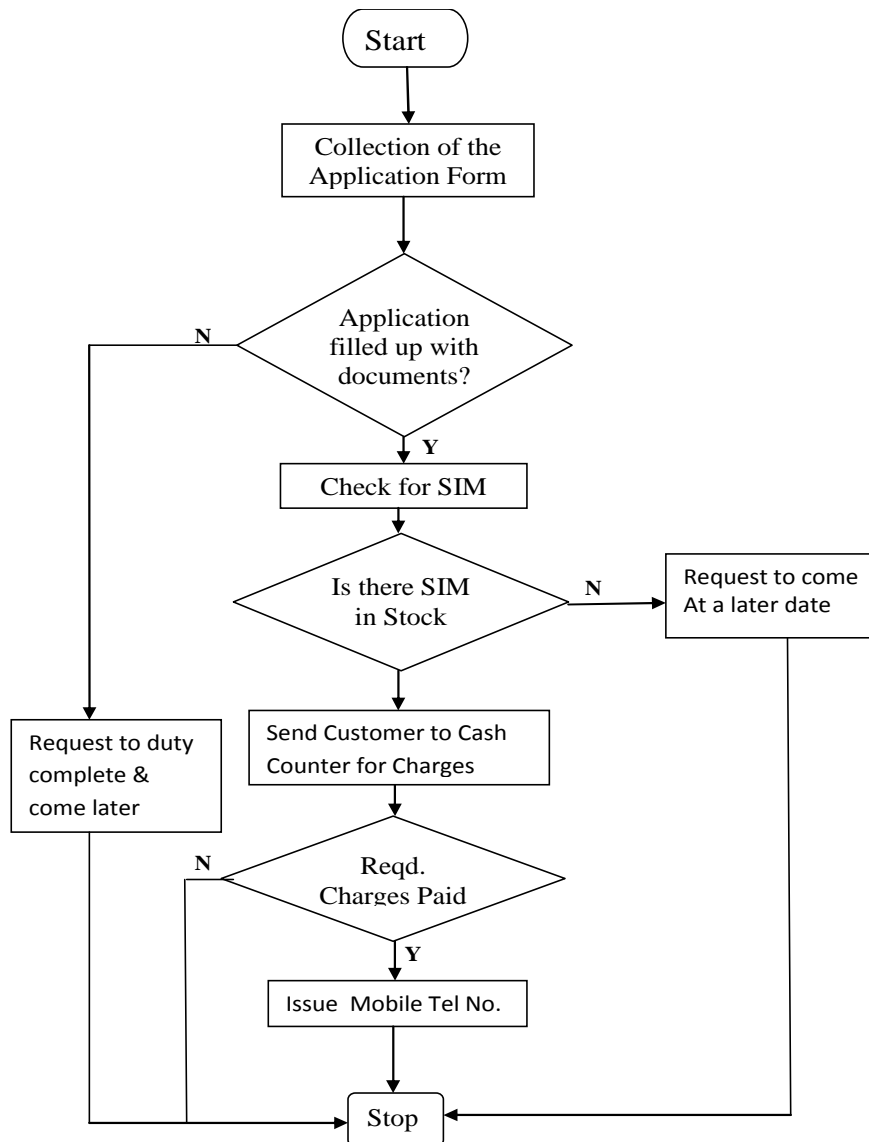
#### 4.4.2 Mobile Line Distribution System of Ncell

It is explained with the help of self explanatory charts 4.5, 4.6 & 4.7

##### 4.4.2.1 Flowchart for Mobile Line Distribution Information system in Ncell

Chart 4.5

Flowcharts for Distribution Procedure of Mobile Phone in Ncell



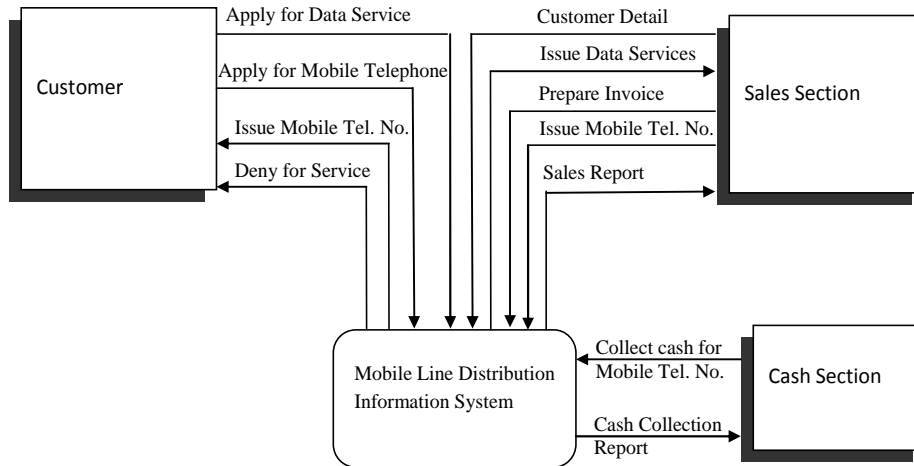
(Source: Self Design)

#### 4.4.2.2 DFD of Mobile Telephone Distribution Info System in Ncell

##### Context Level DFD

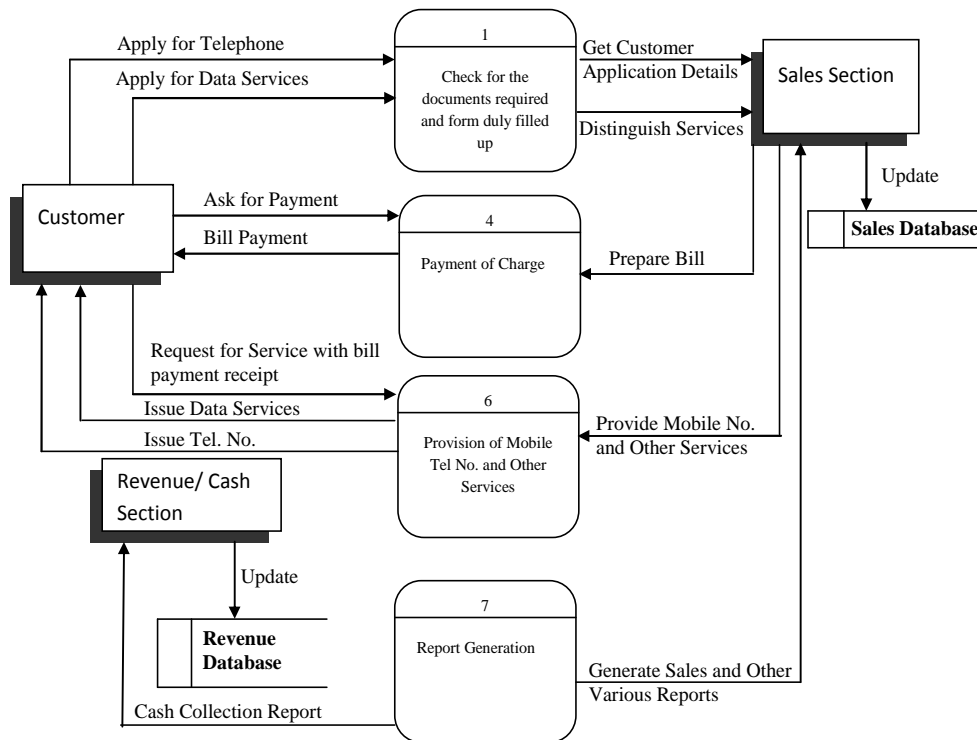
**Chart 4.6**

**Context Level DFD for Mobile Distribution Info System in Ncell**



##### System Level DFD

**Chart: 4.7 System Level DFD of Line Distribn Info System in Ncell**



(Source: Self Design)

Ncell provides mobile lines based on GSM technology. The customer is required to approach the sales counter of Ncell with any identification along with passport size photo and fee within business hour. Nowadays, a copy of citizenship certificate or passport has been made compulsory according to the instruction of NTA.

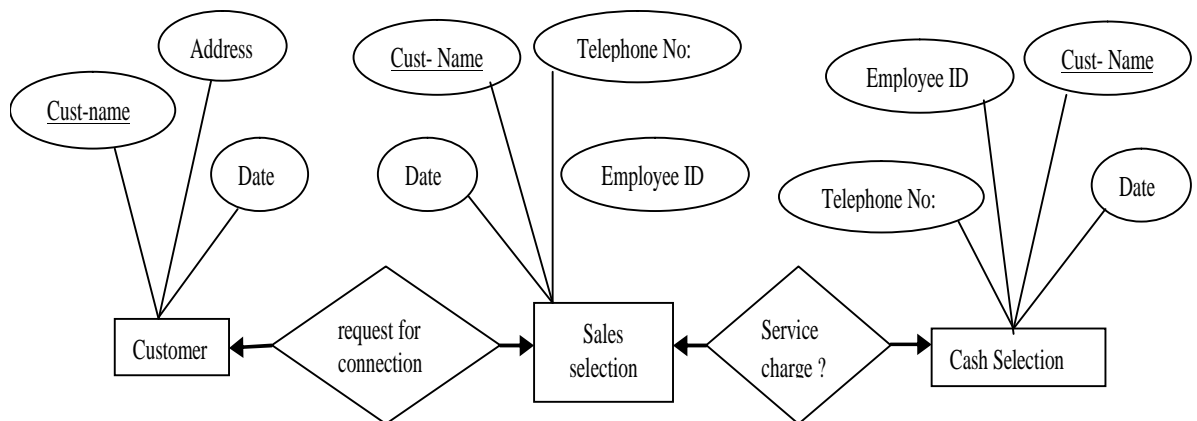
The sales counter produces an application form before the customer to be duly filled up which contains the information about the customer and /or user (name, address, occupation, etc). The form is verified by the sales officer and SIM is issued within minutes.

A sample of application form is attached as Annex-3

The detail distribution procedure depicting the different processes and the involved entities have been shown in the following flowchart, DFDs and ERD.

#### 4.4.2.3 Entity Relationship Diagram (ERD) for Ncell

**Chart 4.8**  
**ERD of Entities involved in GSM Line Distribution of Ncell**



(Source: Self Design)

#### Data Dictionary System

The relationship between different entities have been shown in the ERD diagram chart 4.8. The diagram depicts the relationships between different entities involved in the Mobile telephone distribution system in Ncell. From the diagram it

is clear that relation between customer and sales section is many: 1 relation (so many customers contact one sales section) and so is the relation between customer and revenue section(counter). The types of different data are also shown in the table of data dictionary below. Primary Key is the Customer name. The attributes and their types of the entities are given in table 4.8.

**Table 4.8**  
**Data Dictionary**

Entity: Customer

S.N.	ATTRIUTE	TYPE
1	Customer name	TEXT
2	Address	TEXT
3	Date	NUM

Entity: Sales Section

S.N	ATTRIBUTE	TYPE
1	Customer name	TEXT
2	Employee id	NUM
3	Date	NUM
4	Telephone No.	NUM

Entity: Cash Section

S.N	ATTRIBUTE	TYPE
1	Customer Name	TEXT
2	Employee id	NUM
3	Date	NUM
4	Telephone no.	NUM

#### **4.4.3 Tariff of Ncell**

##### **4.4.3.1 Tariff for voice call**

Tariff rates of local, STD and ISD calls charged by Ncell are shown in table's 4.9, 4.10 & 4.11

**Table 4.9**  
**Local & STD Tariff in Ncell**

S.N	Type of Call	Rate in Rs.
1	Ncell to 3 Ramro Number	0.99/Minute VAT
2	Ncell to Ncell	1.99/Minute VAT
3	Ncell to NTC GSM/CDMA mobile	2.53/Minute VAT
4	Ncell to other network fixed lines (NTC PSTN), NTC CDMA fixed, UTLCDMA fixed	2.13/Minute VAT
5	Ncell to other N/W within different districts of same zone	2.79/Minute VAT
6	Ncell to other network within different zones	2.81/Minute VAT
7	Ncell to LMS local Charge	2.33/Minute VAT
8	Ncell to LMS in Different charging area	2.83/Minute VAT

**Table 4.10**  
**International Roaming Operators**

S.N	Country	Operator	Local OG Call (Rs)	Callback to Nepal (Rs)	I/C call (Rs)	SMS(Rs)
1	India	Airtel (Delhi, AP, UP west)	134	271	240	55
2	Srilanka	Dialog Telecom LTD	46	256	81	33

**Table 4.11**  
**Prepaid International Tariffs in Ncell**

S.N	Name of countries	Rate in Rs.
1	USA, Canada	1.99/Minute VAT
2	India	2.99/Minute VAT
3	Bahrain, Bangladesh, China, Honking, Malaysia, Singapore, Thailand, S.Korea	6/Minute VAT
4	Australia, Bhutan, Japan, Kuwait, Lebanon, Pakistan, Qatar, Srilanka, UAE,UK	15/Minute VAT
5	Selected premium destinations for Australia and UK	48/Minute VAT

**Night Tariff:** 10 pm to 6am:

Rs 0.69/minute

#### 4.4.3.2 Packages and Prices of Internet & Data Service of Ncell.

**Table 4.12**

**Package and Prices of Internet and Data Services of Ncell**

	Small	Medium	Large		
Package	500MB	1000MB	5000MB	10000MB	20000MB
Price	Rs.399	Rs.699	Rs.1999	Rs.2999	Rs.3999
Price per MB	Rs.0.80	Rs.0.70	Rs.0.40	Rs.0.30	Rs.0.20

Note: Without Subscribing browsing charge is Rs. 2 per MB. All charges are exclusive of taxes. The data SIM costs Rs. 99 (Inc l. tax) including Rs. 50 balance to start with. There is free data card offer worth Rs. 2258 at the purchase of 10 GB Ncell connect data package with validity of 30 days.

MMS: Ncell to Ncell Rs.3.00

**Table 4.13**

**Prepaid Data Services Tariff:**

S.N		Rate per MSG
1	Ncell to Ncell	Rs 1+VAT
2	Ncell to other NW	Rs 1.27 +VAT
3	International	Rs 10+ VAT

**SMS to Email**

Monthly Charge Rs 30+VAT, SMS to Email Rs. 1.

**Table 4.14**

**Normal Data Packages**

S.N	MB	Price (Rs.)+VAT	S.N	MB	Price (Rs.)+VAT
1	25	119	4	250	599
2	50	199	5	500	999
3	100	299	6	1000	1899
			7	5000	8999

**BlackBerry:**

- ) BlackBerry Internet Service (BIS Unlimited): Rs.999 per month
- ) BlackBerry Enterprise Server (BES Unlimited): Rs.1499 per month

**Ncell Special Scheme: Pro Plans**

- ) Premium: Includes 700 min Local calls/ 700 Nat. SMS/ 70 MB data: Rs.999/ month
- ) Plus: Includes 300 min Local calls/ 300 National SMS/ 30 MB data: Rs.499/ month
- ) Classic: Local calls Rs. 1.2 (to Ncell) Rs.1.5 (to others), Local SMS Rs.1 within Nepal: Rs.300/ month
- ) All the Pro Plan charges are inclusive of all taxes.

**Table 4.15****Unlimited Closed User Group**

Rs./Per Line/ month Tax	No. of Lines	Remarks
199	3-24	For frequency used numbers within an organization or fiend circle this service may prove to be cheaper
149	25-50	
119	51-100	

(Source: www.ncell.com.np)

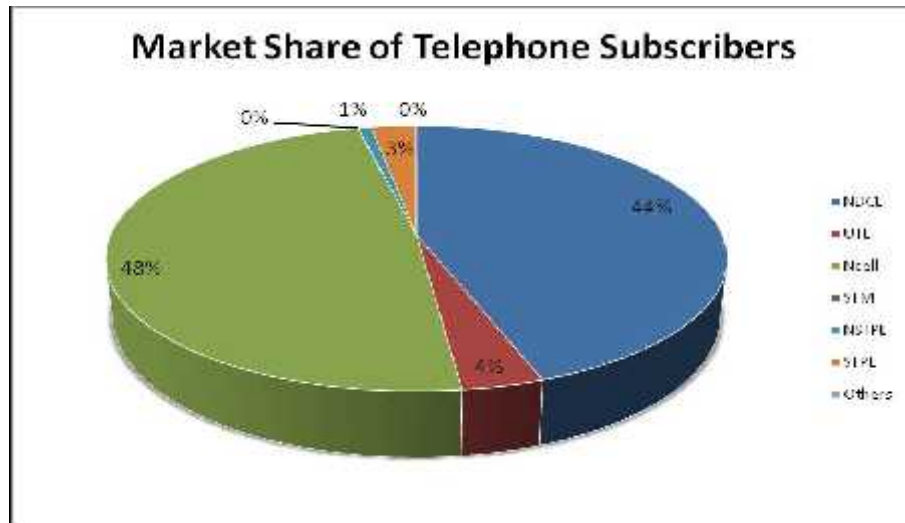
**4.5 Comparison of Subscriber Base of NT, Ncell and UTL**

Position of different telecom service providers based on the number of their telephone subscribers (market share) irrespective of the technology type can be seen from the chart 4.10.

Similarly market share of the data/internet business in the country of the major operators NDCL, UTL, Ncell (SNPL) and ISPs (all 26 combined) can be visualized by Chart 4.10 & 4.11.

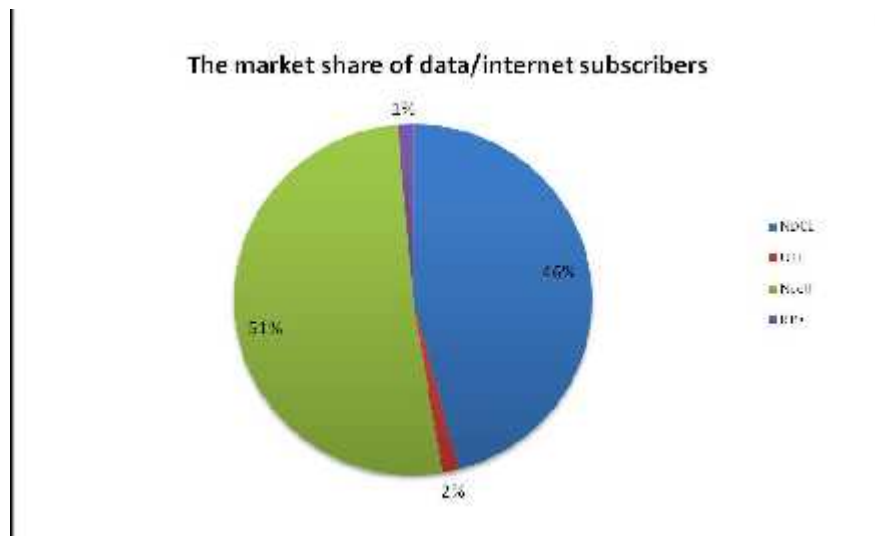
**Chart 4.10**

**Market Share of Telephone Subscriber of Various operators in Nepal.**



**Chart 4.11**

**Market Share of Data/ Internet Subscriber**



(Source: Nepal Telecom Authority: MIS, Dec 2012.)

From the chart 4.10 & chart 4.11. it is seen that Ncell is number 1 in voice communication service (48% market share) whereas No.2 in data service (44% market share). Similarly, Ncell is No.1 service provider in data communication service (51% market share) whereas No.2 in voice telephony (46% market share).

UTL is far behind the other two operators with only 4% share in voice and 2% in data service.

## **4.6 Study Results of Status of Telecom Service in the Country**

### **4.6.1 Study Results from Secondary Data Analysis**

#### **Fixed Telephone Service**

The number of Fixed telephones per 100 inhabitants (average of years 2005-11) in poor countries of Africa is very less (1.4) whereas that of comparatively richer and developing Arab countries, Asia & Pacific countries, developed American and European countries are more 9.6, 13.8, 26.3, 29.2 and 40.9 respectively. The number fixed of telephones per 100 inhabitants in Nepal was 3.13 in Dec, 2012. The demand of fixed telephone has decreased and the existing data is not unsatisfactory for Nepal.

#### **Mobile Telephone Service**

The number of Mobile telephones per 100 inhabitants (average of years 2005-11) in poor countries of Africa is very less (53.1) whereas that of comparatively richer Arab countries, Asia & Pacific countries, developed American and European countries are More 96.9, 76.7, 105.4 & 120.8 respectively. The number of Mobile telephones per 100 inhabitants in Nepal is 4059. The demand of mobile telephone is very high everywhere. The demand of mobile telephone in Nepal has also not is unmet. Call set up success rate and Traffic Channel congestion rates do not meet the standard. QOS has to be improved.

#### **Data/ Internet Service**

Usage of internet service is less in poor and developing countries and more in rich and developed countries. In developed and developing countries internet user was 70.9 and 51.1% respectively. In Asia and Pacific countries, there 24.5% internet users (ITU data 2011). In Nepal there are 10.89% internet users.

(Source: NTA MIS 2012, Dec)

The data figures depicting the above facts is attached as Annex 6: Key Global Indicator for World Telecommunication Service Sector.

### **Telecom Sector in General**

Further it is also revealed from the data in Annex- 6 that mobile telephone line is getting more and more popular and the fixed telephone line is facing decreasing trend. Tariff rate of telephone service is on continuous decrease all over the world.

Development of telecom infrastructure directly affects development of the country and is reflected in GDP. According to a study in Bangladesh an increase of 10 mobile phones per 100 people boosts GDP growth by 0.6 %. A 1 % increase in the number of internet users increases total exports by 4.3 %. Telecom sector contributes approximately 1.46 % of national GDP and its significant proportion is contributed by mobile sector.

The population of Bangladesh is 140.4 million and there are 562 licensee out of which 6 are for mobile telephone, 8 for PSTN telephone and 159 internet and data services. India, about 20 times bigger than Nepal in area, has 11 cellular mobile operators and 4 Fixed telephone operators. Sri Lanka has 64 system licensees. Nepal a smaller country with population of 28.6 million has 293 licensee out of which 3 are for basic telecom service and 2 for cellular mobile and 48 for internet & email service. This indicates that there is need to increase QOS and not the number of operators now.

#### **4.6.2 Study Results from Primary Data Analysis**

In this research study the researcher has designed different questionnaire to collect primary data and information. It has distributed 15 sets of NTC and 10 sets of Ncell questionnaires randomly to the higher levels and lower levels employees of both organizations. It has assumed that 25 sets of questionnaire will represent the good sample response for this study purpose to represent the whole population.

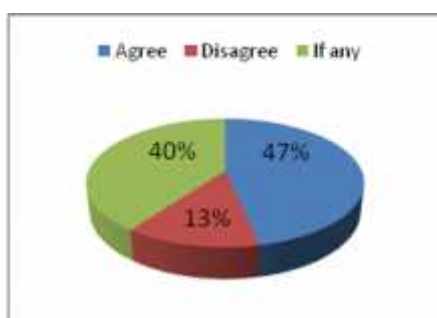
The following Table will show the exact figure of response obtained from the major questionnaire made for this research study.

## 1. Nowadays, MIS is the basic needs of any Organization

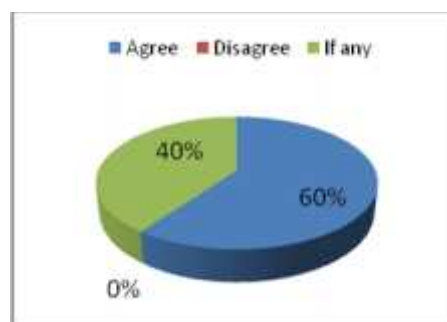
Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
Agree	7	47%	6	60%
Disagree	2	13%	0	0%
If Any...	6	40%	4	40%
Total	15	100%	10	100%

Above table indicates the total numbers of respondents view to the question. Where major respondents agree in the option "Agree". It shows that MIS is the basic need of the organization.

**Nepal Telecom (NTC)**



**Ncell**



## 2. MIS and computer system is necessary for organization

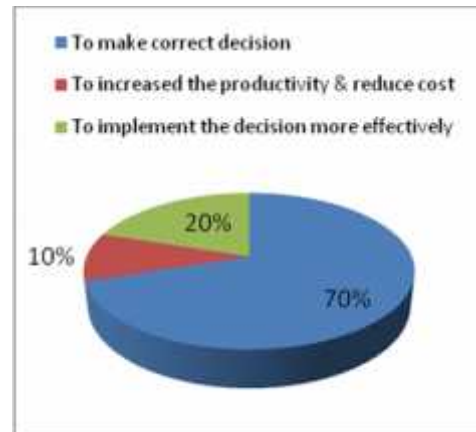
Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
To make correct decision	8	53%	7	64%
To increase the productivity & reduce cost	4	27%	1	9%
To implement the decision more effectively	3	20%	2	27%
Total	15	100%	10	100%

Above table shows the respondents response to the question. In total 25 respondents major pay their views as it needs MIS in each organization "To make correct decision".

**Nepal Telecom (NTC)**



**Ncell**



**3. MIS is very important for organization at the....**

Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
Top level management	6	40%	6	60%
Middle level management	4	27%	1	10%
Operational level management	3	20%	2	20%
Tactical Level management	2	13%	1	10%
Total	15	100%	10	100%

Above figure demonstrates that MIS is very important for any organization at the "Top level management"

**Nepal Telecom (NTC)**



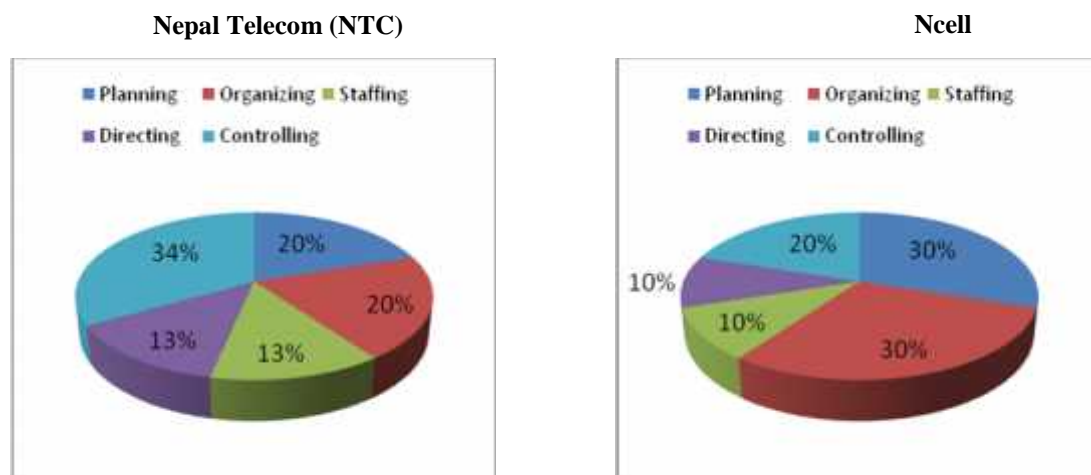
**Ncell**



**4. Please, mention in which management function, MIS plays vital role as information support & decision making?**

Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
Planning	3	20%	3	30%
Organizing	3	20%	3	30%
Staffing	2	13%	1	10%
Directing	2	13%	1	10%
Controlling	5	34%	2	20%
Total	15	100%	10	100%

Above table shows the respondents response to the question. In total 25 respondents major pay their views as MIS plays vital role in "Controlling" in NTC and "Planning and organizing" in Ncell.

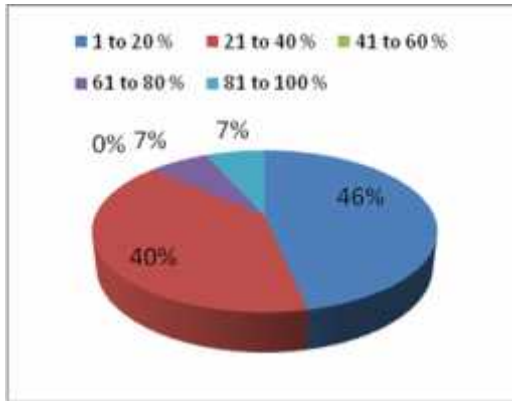


**5. After the application of MIS in organization, the productivity & efficiency is increased by:**

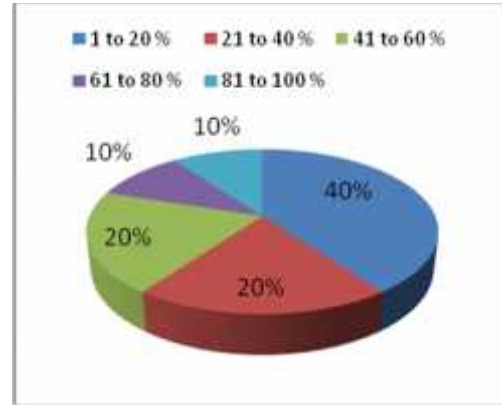
Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
1 to 20 %	7	46%	4	40%
21 to 40 %	6	40%	2	20%
41 to 60 %	0	0%	2	20%
61 to 80 %	1	7%	1	10%
81 to 100 %	1	7%	1	10%
Total	15	100%	10	100%

Above table shows the respondents response to the question. In total 25 respondents major pay their views as MIS increases the productivity and efficiency in both organizations.

**Nepal Telecom (NTC)**



**Ncell**



**6. Please mention what type of information's plays vital role in your organization?**

Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
Planning information	6	40%	8	46%
Controlling information	5	33%	1	9%
Knowledge information	1	7%	2	18%
Organizational information	3	20%	2	27%
Total	15	100%	10	100%

Above table shows the respondents response to the question. In total 25 respondents major pay their views as "Planning information" play the vital role in any organization.

Nepal Telecom (NTC)



Ncell

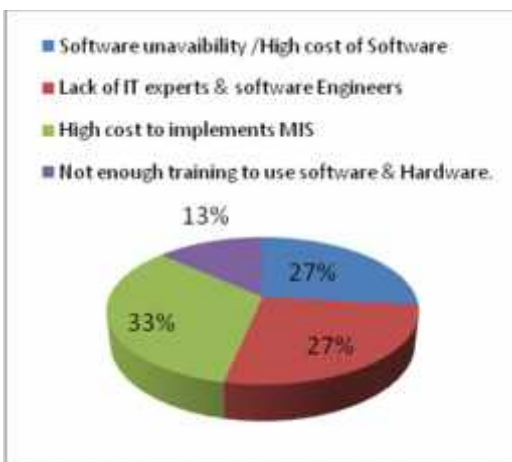


**7. MIS used in organization division/ Departments to make decision & update information flow within the organization?**

Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
Software unavailability / High cost of Software	4	27%	1	10%
Lack of IT experts & software Engineers	4	27%	4	0%
High cost to implements MIS	5	33%	5	40%
Not enough training to use software & Hardware.	2	13%	5	50%
Total	15	100%	10	100%

Above table shows the respondents response to the question. In total 25 respondents major pay their views MIS is costly to implement in any organization.

Nepal Telecom (NTC)



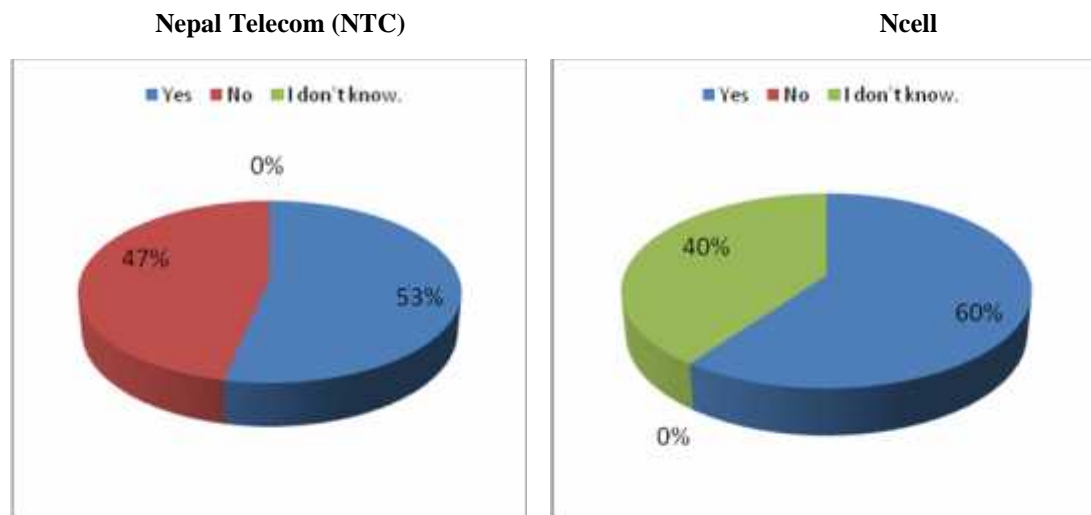
Ncell



**8. You are satisfied with the existing Management Information System in your Organization?**

Options	Response (NT)	Percentage (NT)	Response (Ncell)	Percentage (Ncell)
Yes	8	53%	6	60%
No	7	47%	0	0%
I don't know	0	0%	4	40%
Total	15	100%	140	100%

Above table shows the respondents response to the question. In total 25 respondents major pay their views that employee are happy with their MIS.



And stratified Random Sampling method was used. Here the population is systematically segmented under various strata prior to the selection of samples at random. It was done to get correct picture by collecting data from rural as well as urban population areas. Codified and Unmodified both types of Structured questionnaire were used in the field survey to collect data. Altogether 40 persons were requested to respond to the questionnaire regarding their views on the quality of services of the various companies in Nepal. The questionnaire used in the survey is attached as Annex-3.

Sample Size: 40

**Table 4.16****Telephone used Proportion by the Respondent Subscribers**

S.N	Service Type	NT	Ncell
1	PSTN	35	
2	GSM Mobile	45	70
3	CDMA Mobile	20	
	Total Services Used from	100	70

The above data for ‘Telephone used proportion’ shows that people have used more services (100 points) from NT than that of Ncell (70 points) . Secondly, the data also indicates that GSM mobile is more prevalent than PSTN and CDMA mobile services. In fact, availability of PSTN service is limited to densely populated area and hence less users. Almost all users of PSTN service are also users of GSM and/or CDMA services.

**Table 4.17****Quality of Service of diff. Companies as Judged by the Respondent Subscribers**

S.N	Service Type	OK	POK	NOK
1	NT PSTN	25	0	20
2	NT GSM	15	5	25
3	NT CDMA	5	7	8
4	Ncell GSM	43	17	10

The above data for ‘Quality of Service’ shows that 25 out of 35 NT PSTN users, that is, 71.42% users have graded the NT PSTN service as of good quality. Similarly, 33.34 % (15 out of 45) users of GSM mobile were in favors of NT where as 61.42 % (43 out of 70) were in favors of Ncell. Similarly, 25% (5 out of 20) of CDMA users had appraised the CDMA service of NT.

**Table 4.18****Network Status of the Companies as Judged by the Respondent Subscribers**

S.N	Service Type	OK	POK	NOK
1	NT PSTN	28	5	2
2	NT GSM	23	10	12
3	NT CDMA	14	4	2
4	Ncell GSM	58	8	4

The data for 'Network status' reveals that 82.87% (58 out of 70) users evaluate the network quality of GSM network of Ncell to be high. Similarly 80% users accept the network quality of PSTN network of NT to be OK whereas 51.11% (23 out of 45 points) users only accept the network quality of GSM of NT to be OK. The quality of CDMA network of NT is appraised as OK by 70 % of the users.

**Table 4.19**  
**Satisfactions from the Service of Companies as Judged by Respondent**  
**Subscribers**

S.N	Service Type	OK
1	NT PSTN	30
2	NT GSM	18
3	NT CDMA	12
4	Ncell GSM	57

The data for 'Satisfaction' reveals that 85.71% users are satisfied with PSTN service of NT. 51.42 % of users expressed satisfaction with NT GSM service whereas 81.42 % of users expressed satisfaction with Ncell GSM service. However, 60 % (60 out of 100 ) users express overall satisfaction and belief on NT .

### **Interconnection**

According to the World Trade Organization (WTO),interconnection refers to “linking with suppliers providing public telecommunications transport networks or services in order to allow the users of one supplier to communicate with users of another supplier, where specific commitments are undertaken.”

From the feedback of field survey it was learnt that the inter-operator connection is a big problem - almost all informants have mentioned that they face problem in making calls to people with line of another operator; that is the interconnection problem is not addressed seriously by the operators.

The above mentioned figures can be seen in the table 4.20 and chart 4.11

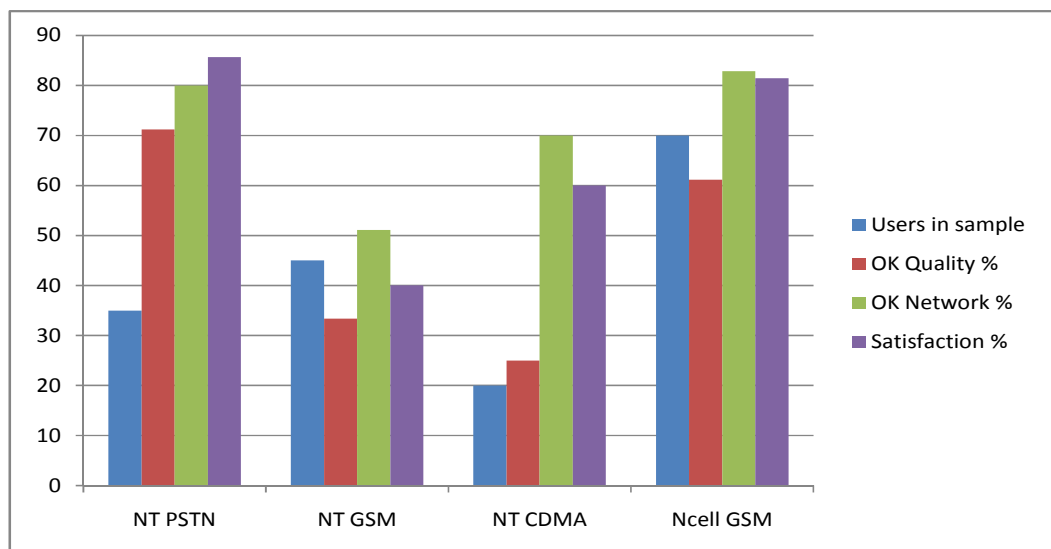
**Table 4.20**

**Service Qualities, Network Quality and Satisfaction in %**

S.N	Service Type	Users in Sample	OK Quality %	OK Network %	Satisfaction%
1	NT PSTN	35	71.42%	80%	85.71%
2	NT GSM	45	33.34 %	51.11%	40 %
3	NT CDMA	20	25%	70 %	60 %
4	Ncell GSM	70	61.42 %	82.87%	81.42 %

**Chart 4.11**

**Quality of Service, Network and Satisfaction in %**



## 4.7 Major Findings

1. Due to the complex and big organization pyramids, NTC has faced different problems these days. It is due to management complexities, direct competition with national & international Telecommunication service venders in the same market, modern industrial and technological revolutions. To handle all their problems and ensure effective management, MIS will play a significant role, if it is implemented in this organization.

2. Management of this organization has not put enough efforts towards implementation of network based information system and various modern software to update modern information system (MIS). It is due to requirement of high cost and technical manpower. There is lack of skilled IT experts and Engineers.
3. Computerization plays a vital role in the progress and growth of an organization since information is an important resources of modern management.
4. Centralization of authority over staffing, political influences, lack of effective management, corruption are major problems for the organizational effectiveness and growth.
5. The demand of good quality telecommunications services of the customer has not been met. Customers face problem in getting a land line or mobile phone connection, especially in rural area. The quality of mobile phone service is still questionable. Ncell has to do a lot for carpet coverage. NT, which has introduced mobile service 12 years back, has also not achieved carpet coverage yet. The quality of mobile service of NT faces many technical problems. However, it has maintained the standard fixed and is proved to be satisfactory looking on the subscriber base and satisfaction rating by the service users. Ncell has become leader in mobile service – both quantitatively and qualitatively but users are not satisfied with its billing system.
6. Ncell is seen comparatively costlier in local and domestic call rates. Rates of National/ STD and International ISD calls have gone down tremendously compared to the past times when there was no competition and voice over internet (VOIP) service. However, comparing among NT, Ncell and UTL, UTL is seen to be selling service at cheaper price. NT's ISD service rate is costlier than that of Ncell's although for some destinations Ncell's rate is higher. Whatever may be, overall telephone call rates are cheaper in Nepal. The data service of NT is seen cheaper as compared to that of Ncell.
7. The inter-operator connection is a big problem in the country and the interconnection problem need be addressed seriously by the operators.

8. The price/rates of telecommunications services has gone down and it can be accepted as affordable. In fact, prices of the telecom services have gone down globally due to price cut in electronic goods.
  
9. According to survey from related staff. 47% agree that MIS is the Basic Need of the organization. 53% agrees that MIS plays major role to make correct decision. 40% says that MIS is used in only Top Level management & it evolves in planning activities. Most of staff said that it will increase the productivity and efficiency up to (1 -20) % of the organization. All most half percent said that they are satisfied with their existing MIS system in their organization.

## CHAPTER V

### SUMMARY, CONCLUSION & RECOMMENDATION

#### 5.1 Summary

The Telecommunications services have proved to be very important for the mankind. The whole world has become like a village - information from one end of the world can be transmitted and/ or received to/ by people living at the other end of the world instantly .The telecommunications services have supported every sector – health, education, business, security and many others.

The telecommunications infrastructure has become the human right at present. From the data of ITU (Key Global Indicators for the World Telecommunications Service Sector) it is learnt that developed countries have high number of telephone lines than that of developing countries. By November 2012, Nepal had density of fixed and mobile telephone 2.93 and 40.59 respectively against the Asia & Pacific data of about 14 and 73.9 respectively (ITU:2010 ). Similarly, internet data penetration rate of Nepal is 10.89 against 21.9 (ITU:2010) of Asia and the Pacific. The world average for fixed line, mobile line and internet are 17.3, 76.2 and 30.1 (ITU:2010). Today is the world of mobile communication and broadband data services for the fast and competitive life of the people.

The Field Research Design method has been followed for this thesis work. The primary data has been collected from structured questionnaire according to stratified random sampling method.

Secondary data has been collected from annual reports, MIS reports, brochures made available by the service operators, NTA, internet and other sources. Personal observation was also done to make opinion about the quality of services and behavior of the service providers.

The Govt. of Nepal has treated telecom services as the basic pre-requisite for the development and telecommunication Policy 2056 (1999 AD) has created competitive environment to make the services cost effective, reliable and accessible to all people of the country. NTA (established in 1998 AD) has

issued 263 licenses under different types of telecom services. Out of that 15 operators are noticeably active. NDCL serves almost all types of telecom services – fixed and mobile telephone with voice, data and video facilities. It uses PSTN system for fixed telephone and data, GSM and CDMA systems for mobile telephonic voice, data and video services. To introduce new services and make the services user friendly it uses Intelligent Network system. NDCL has been working as a public company since 2003 AD. Ncell has been serving since 2005 AD. For 3 years it served under the trade name ‘Mero Mobile’ and since 2008 under the trade name ‘Ncell’. It serves mobile phone service using GSM technology. It serves voice, data and video services. It has won the most innovative mobile operator and best consumer pull award among the SAARC countries in 2006 organized by voice and data magazine in Sri Lanka.

The analysis of the data indicates that the demand of good quality telecommunications services of the customer has not been met. Customers face problem in getting a land line or mobile phone connection, especially in rural area. The quality of mobile phone service is still questionable. Ncell has to do a lot for carpet coverage. NT, which has introduced mobile service 12 years back, has also not achieved carpet coverage yet. The quality of mobile service of NT faces many technical problems. However, it has maintained the standard fixed and is proved to be satisfactory looking on the subscriber base and satisfaction rating by the service users. Ncell has become leader in mobile service – both quantitatively and qualitatively but users are not satisfied with its billing.

Ncell is seen comparatively costlier in local and domestic call rates. Rates of National/ STD and International ISD calls have gone down tremendously compared to the past times when there was no competition and voice over internet (VOIP) service. However, comparing among NT, Ncell and UTL, UTL is seen to be selling service at cheaper price although UTL is not able to compete in the market. NT’s ISD service rate is costlier than that of Ncell’s although for some destinations Ncell’s rate is higher. Whatever may be, overall telephone call rates are cheaper in Nepal. The data service of NT is seen cheaper as compared to that of Ncell.

The inter-operator connection is a big problem in the country and the interconnection problem need be addressed seriously by the operators. 71.42% users

have graded the NT PSTN service as of good quality. 33.34% users have evaluated the GSM mobile service of NT as of good quality where as 61.42% have evaluate d Ncell's GSM service as of good quality. Similarly 25% of CDMA users had appraised the CDMA service of NT. 80 % users evaluate the network quality of PSTN network of NT to be high. Similarly 82.87 % users accept the network quality of GSM network of Ncell to be OK whereas 51.11% users only accept the network quality of GSM of NT to be OK. The quality of CDMA network of NT is appraised as OK by 70% of the users. 85.71% users expressed satisfaction with PSTN service of NT. 40 % of users expressed satisfaction with NT GSM service whereas 81.42 % of users expressed satisfaction with Ncell GSM service. However, 40% users express overall satisfaction and belief on NT whereas 81.42 % users only express overall satisfaction and belief on Ncell.

It has distributed 15 sets of NTC and 10 sets of Ncell questionnaires randomly to the higher levels and lower levels employees of both organizations. It has assumed that 25 sets of questionnaire will represent the good sample response for this study purpose to represent the whole population. 47% agree that MIS is the Basic Need of the organization.53% agrees that MIS plays major role to make correct decision. 40% says that MIS is used in only Top Level management & it evolves in planning activities. Most of staff said that it will increase the productivity and efficiency up to (1 -20)% of the organization. All most half percent said that they are satisfied with there existing MIS system in their organization.

The price/rates of telecommunications services has gone down and it can be accepted as affordable. In fact, prices of the telecom services have gone down globally due to price cut in electronic goods.

Telecom service providers and internet service providers are required to pay 2% of their total annual revenue to the Rural Telecom Development Fund but NTA has not been able to use the fund to increase the access of telecom services to the rural parts of the country. ADSL, Lease Line with ADSL, SIP phone, 3G IP CDMA, VSAT, Voice & data service in rural area via VSAT Link - all are available in Nepal but the new services like 3G, EVDO, SIP and Broadband services are limited to urban area only. Extreme politicization and non-

stability of the government has also affected adversely to the development of telecom sector. Due to mismanagement of rare resource of frequency spectrum, NTA is in shortage of frequency spectrum for allotment to new entrants in this sector. NTA has directed all the three operators NT, Ncell and UTL to improve their network coverage and QOS along highways at the earliest.

## **5.2 Conclusion**

Nepal is lagging behind in telecommunications infrastructure as compared to other countries of the Asia and the Pacific region and the world as a whole. The telecommunications services should be available to the rural parts of the country as well for balanced progress of the country. Privatization Act and Labour Act require to be amended. Proper regulation by the regulating authority is necessary. Coordination between different companies for optimum utilization of resources is optional. Long procedures/ formalities should be made shortcut the customer should be made responsible to minimize the misuse of the telecom services. Services must be prompt and the process should be fully automated. Major portion of rural areas of the country are not covered, so operators should expand their network coverage. There should be post sales customer care service in each company to support the customer to resolve technical problems in using the services. There should be enough exercise in selection of the technology.

A research and development department should be established to care for technical as well as non technical problems in telecom sector. Also, there should be an information database.

## **5.3 Recommendation**

After study of the above facts, improvements on different stakeholders was felt necessary in order to enhance the status of telecommunications services in Nepal, and hence, recommendations have been worked out for different stakeholders as follows:

### **Recommendation on to the government**

1. Public enterprises could do better if they are run and managed by professionally qualified personnel without any political interference. NT is a public company with very good image but it is suffering from political interference. So make the company politically free.
2. Privatization is the need of the time so it is better to privatize NT fully immediately by selling the shares (most preferred model).
3. Unnecessary time consumption and lengthy process is affecting the company.
4. There is need for amendment in Privatization Act and Labour Act.
5. Strengthen the regulatory body by delegating more rights in distribution of frequencies and in controlling the service operators.
6. Provide more subsidies/ financial support to operators for providing services in the rural area.
7. Research and development works pays in long term although it requires huge investment. One operator may not like to invest in this. So the Govt. should establish one.
8. A central database is required for the use of all.

### **Recommendations to the Regulatory body, Nepal Telecommunication Authority**

1. The regulation should be fair. The regulatory body should analyze the demand and/or suggestions of the operators and compare with provision in other countries also and then should decide.
2. NTA should evaluate the performance of the operators from time to time (once in a year) independently and instruct the operators accordingly to improve the service and extend all the telecommunications services to the rural parts of the country as well.
3. NTA should exploit the RTDF capital to extend the services to the remote areas by giving subsidy to the operators to extend all the telecommunications services in the rural areas.
4. Frequency spectrum is a very important and scarce resource which should be allotted carefully taking care of new entrants.

5. There are sufficient number of operators for competition as compared to other countries and struggle for frequency allocation is being seen in public media . It is necessary to focus on improving QOS now and not on increasing number of operators.

### **Recommendations to the Operators**

1. Customer has to reach too many tables in the process of installation of a PSTN land line. Nepal Telecom should implement one window system for all its services through well managed, comfortable customer care centre.
2. Customer has to reach to the office at least 5 times – for application, contact at the time of notice, survey, payment and installation. This can be reduced to 2 to 3 times- for application, survey (optional, because the customer has to provide his address as well as the route map to reach the site he or she wants to have a connection) and Payment of the installation charges.
3. Nepal Telecom should expand its PSTN network more in rural areas also.
4. Nepal Telecom needs up gradation of CDMA network and increase the number of BTS as well.
5. Nepal Telecom should replace old Pentium 2 or 3 version computers by faster Pentium IV or V computers.
6. Ncell would increase the number of customer support centers throughout the country.
7. Ncell should increase the number of BTS to increase network coverage and traffic channel resources.
8. Ncell should audit its billing system to improve its image.
9. Every company should manage to receive the bill from any place in the country.
10. Every company should manage to receive the bill amount from all banks so that customer may not bear the trouble of coming long way to the office.
11. Operators should start e-payment system.
12. Each operator should provide full in-house support to train the customer on the use of E-mail and internet services.

13. Each operator should make information flow easy, clear, accurate and timely so that it can help in decision-making process by integrating each and every sections/ units of the office using office automation. Ncell does not publish MIS, it is a useful tool.
14. Each operator should pay proper attention to inter-operator connection.
15. Operators should share infrastructure for cost minimization and fair environment.

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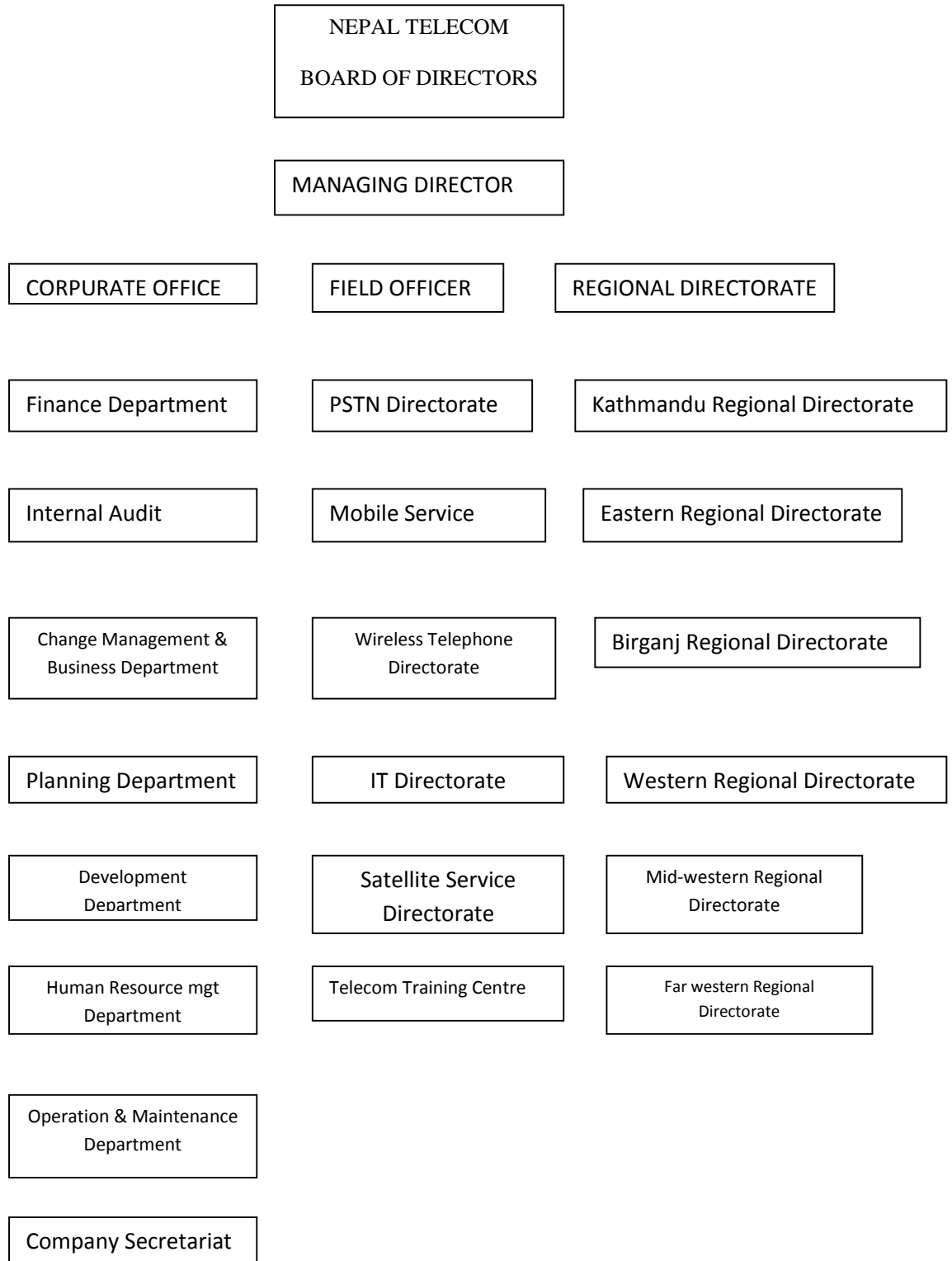
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# APPENDIES

## Annex-1: Organizational Chart of Nepal Telecom



## Annex-2: Service Application of Form of NT

<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td style="font-size: small;">आवेदनकर्ताको</td><td style="width: 50%;"></td></tr> <tr><td style="font-size: small;">दर्ता नं</td><td></td></tr> <tr><td style="font-size: small;">पिर्स</td><td></td></tr> </table>	आवेदनकर्ताको		दर्ता नं		पिर्स		<p style="font-size: small;">नेपाल दूरसंचार कम्पनी लिमिटेड</p> <h1 style="margin: 0;">नेपाल टेलिकम</h1> <h2 style="margin: 0;">Nepal Telecom</h2>	<div style="border: 1px solid black; padding: 2px; width: fit-content;">             फारम नं.         </div>
आवेदनकर्ताको								
दर्ता नं								
पिर्स								
<b>आधारभूत टेलिफोन (PSTN) को कस्टमर फारम</b>								
<p>नेपाल टेलिकमको विधि/नियम अनुसार हामी आधारभूत टेलिफोन (PSTN) सेवा उपलब्ध गराइदिनु हुन अनुरोध छ ।</p>								
<p>१. निवेदक (व्यक्ति संस्था) को नाम: <input style="width: 80%;" type="text"/></p>								
<p>२. APPLICANT'S NAME: <input style="width: 80%;" type="text"/> (IN CAPITAL LETTER)</p>								
<p>३. क) नागरिकता नं. _____ विवरण भएको जिल्ला: _____ जिल्ला _____</p>								
<p>ख) Passport No. (Foreigner's Only): _____ Nationality: _____</p>								
<p>४. क) निवेदकको व्यवसाय: _____ ख) लिंग (Gender): पछिमा, पुरुष, अन्य</p>								
<p>५. संघ संस्था समूह वा सोसाइटीको नाम: _____</p>								
<p>६. क) संघ संस्था दर्ता नं.: _____ ख) सन दर्ता प्रमाण पत्र (PAN/VAT) नं.: _____</p>								
<p>७. निवेदक (व्यक्ति संस्था) को ठेगाना:</p>								
<p>क) स्थायी ठेगाना (नागरिकता अनुसार):</p>								
<p>अञ्चल: _____ जिल्ला: _____ न.पा. / गा.वि.स. _____ वडा नं. _____ टोल _____</p>								
<p>ख) सेवा अर्हान गर्न ठेगाना:</p>								
<p>अञ्चल: _____ जिल्ला: _____ न.पा. / गा.वि.स. _____</p>								
<p>वडा नं. _____ टोल _____ मार्ग _____ अक्षा नं. _____</p>								
<p>८. निवेदक बाबुको नाम: <input style="width: 80%;" type="text"/></p>								
<p>९. निवेदकको बाजेको नाम: <input style="width: 80%;" type="text"/></p>								
<p>१०. निवेदकको श्रीमान्/श्रीमतीको नाम: <input style="width: 80%;" type="text"/></p>								
<p>११. निवेदक (व्यक्ति संस्था)को नाममा अन्य टेलिकोनङ्क भन्ने नम्बर: <input style="width: 80%;" type="text"/></p>								
<p>१२. निवेदकको सम्पर्क टेलिफोन नं.: <input style="width: 80%;" type="text"/></p>								
<p>१३. सेवाको विधिमा: स्थायी, अस्थायी</p>								
<p>१४. सेवा उपलब्ध गराउनु पर्ने घर वा नजिकको घरमा अर्हान गरको टेलिफोन नं.: <input style="width: 80%;" type="text"/></p>								
<p>नेपाल टेलिकमलाई मेरो वा म समेत सलान संस्था/उद्योग/कम्पनी/फर्मको टेलिफोन/टेलिफोन आदीको सहज भुक्तानी गर्न बाँकी रहेको छैन । साथै उल्लेखित विवरणहरू ठीक बाँकी हो भन्ने कानून बमोजिम गर्नुमा बुझाउता । एक वर्षभन्दा फारमको पछाडी भागमा रहेका सम्बन्धीत पत्रमा उल्लेखित सम्पूर्ण सेवा सम्बन्धी सर्तहरू पढी बुझि को बमोजिम पूर्ण जानकारी गर्न प्रतिबद्ध छु । साथै कम्पनीको विधि, नियम (पछि सम्ने) समेत स्वीकार गरेको छु ।</p>								
<p>निवेदकको हस्ताक्षर:</p>								
<p>नेपालीमा: _____</p>		<p>सही छाप/सघ संस्थाको छाप</p> <table border="1" style="margin: auto; border-collapse: collapse;"> <tr> <td style="width: 50px; height: 40px;">सही</td> <td style="width: 50px; height: 40px;">सही</td> </tr> </table>	सही	सही				
सही	सही							
<p>अंग्रेजीमा: _____</p>								
<div style="border: 1px solid black; padding: 5px; width: fit-content;">             प्रयोगकर्ताको हस्ताक्षर              विधि/नियमको पछिमा              बाबुको फोटो/सलान              फोटोमा विवरण दर्ता              होला ।         </div>								

## सम्झौता पत्र

१. यद्यो टेलिफोनको लागि सम्बन्धित कागजातसहित निवेदन दिन चाहिन्छ तब उपस्थित हुनुपर्ने छ ।
२. कुनै सम्बन्धित कागजात उपलब्ध नभएमा फोटोकपी प्रमाणित गराएको हुनुपर्ने छ ।
३. यो निवेदन फारममा उल्लेख हुनुपर्ने सबै महत्त्वपूर्ण स्पष्ट रूपमा भर्नु पर्नेछ । फारम भर्दा कुनै त्रुटिभएमा कम्पनीको सेवा शाखाको सहयोग लिन सकिने छ ।
४. फारम साथ कम्पनीले तोकिएको निवेदन दस्तुर बुझाउनु पर्नेछ ।
५. चाहिन्छको नाममा अन्य टेलिफोनहरू भए सो को हाल सम्मको सम्पूर्ण बिल भुक्तानी भएको हुनुपर्ने छ ।
६. वितरण समयमा लागू रहेको कम्पनीद्वारा निर्धारित जडान दस्तुर तथा धरौटी रकम राखिसा भएपछि मात्र सेवा जडान गरिनेछ ।
७. कम्पनीद्वारा तोकिएको स्थान र समयमा सेवा बापतको महशुल नियमित रूपमा बुझाउनु पर्नेछ ।
८. उपलब्ध सेवा सम्बन्ध सम्पूर्ण जिम्मेवारी सम्बन्धित चाहिन्छको हुनेछ । निर्धारित समयमा सेवा महशुल नबुझाउने चाहिन्छलाई अन्य कुनै दुरसञ्चार सेवा उपलब्ध गराइने छैन । महशुल बापत बाँकी रहेको रकम प्रचलित कानून बमोजिम कारबाहि गरि अनुस उपर गरिनेछ ।
९. सेवा उपलब्ध भएपछि सेवा सम्बन्धी कम्पनीको प्रचलित तथा भविष्यमा कायम हुने सबै महशुल तथा निति नियमहरू चाहिन्छले पालना गर्नु पर्नेछ । यसको दुरुपयोग भएको पाइएमा कम्पनीले जुनसुकै समयमा पनि सेवा फिर्ता लिन सक्नेछ ।
१०. रीत नपुगेको तथा आवश्यक विवरण संलग्न नभएको निवेदन मान्य हुनेछैन ।
११. टेलिफोन जडानको लागि प्राइमरी पिपर (दुरसञ्चार कार्यालय देखि स्थाविनेट सम्म) र सेकेण्डरी पिपर (स्वाविनेट बाट चाहिन्छको घर नजिक रहेको पोल सम्म) दुवै खाली हुनु पर्नेछ । उक्त पिपर खाली नभएमा खाली भएपछि वा तब पिपर थप भएपछि मात्र टेलिफोन जडान हुने छ ।
१२. विदेशी संस्थाको हकमा नेपाल सरकारको आधिकारिक निकायबाट अनुमती प्राप्त गरेको वा सम्झौता गरेको हुनुपर्ने छ ।
१३. STD/SD/CallerID/Locking Code/Home Meter / ADSL लगायतका सुविधाहरू प्राप्त गर्न टेलिफोन जडान भै सकेपछि छुट्टै निवेदन दिनु पर्ने छ ।
१४. अनाधिकृत रूपमा वा गत विपरित सेवा उपयोग गरेको कारणले दुरसञ्चार ऐन २०५३ को दफा ४३ (ग) अनुसार सेवा बन्द गरेमा चाहिन्छको पूर्ण मन्जूरी रहनेछ ।
१५. यसका अतिरिक्त नेपाल सरकार तथा नेपाल टेलिकमबाट समय समयमा प्राप्त हुने दुरसञ्चार सेवा सम्बन्धि निति, ऐन, विनियम, नियमहरूको चाहिन्छबाट पूर्ण पालना गर्ने मन्जुर गर्दछु ।

नेपाल टेलिकमको तर्फबाट	चाहिन्छको तर्फबाट
नाम वर:-	नाम:-
दस्तखत:-	निवेदकको दस्तखत:-
कार्यालय:-	संस्था भए कार्यालयको छाप:-
पद:-	
मिति:-	

### आवश्यक पर्ने कागजातहरू

#### क. व्यक्तिगत चाहिन्छको लागि :

१. नागरिकता प्रमाणित प्रति वा नोटरी पब्लिकबाट प्रमाणित प्रति धान १ ।
२. हालसालै खिचिएको पासपोर्ट साईजको फोटो धान १ ।

#### ख. संस्थागत चाहिन्छको लागि :

१. संस्थापकको नागरिकताको प्रमाणित प्रति धान १ ।
२. संस्था दर्ता प्रमाण पत्रको प्रमाणित प्रति धान १ ।
३. कर दर्ता प्रमाण पत्रको प्रमाणित प्रति धान १ ।
४. संस्थाको लेटर प्याडमा निवेदन धान १ ।

#### ग. अन्य :

१. भारतीय नागरिकको हकमा दूतावासबाट जारी प्रमाणपत्रको सम्बन्ध तथा फोटोकपी वा अन्य कागजात पेश गर्नु पर्ने छ ।



# नेपाल टेलिकम

(नेपाल दूरसञ्चार कम्पनी लिमिटेड)

CDMA टेलिफोन दर्ता फारम



प्रयोगकर्ताको पासपोर्ट साइजको फोटो (कृपया फोटोमा स्टिच नगर्नु होला)

1. CDMA टेलिफोनको प्रकार:-  MOBILE  FIXED

2. महसूल बुझाउनेको प्रकार:-  PREPAID  POSTPAID

3. Mobile Directory Number:- [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] (MDN)

4. ग्राहकको नाम, घर:-  
Customer's Name (in BLOCK Letters) [ ]

5. ग्राहकको ठेगाना:- (Customer Address) जिल्ला:- [ ]  
 (क) स्यादी:- [ ]  
 बाटु नं:- [ ]  
 गाउँ टोलको नाम:- [ ]  
 घर नं:- [ ]  
 (ख) हाल बसोबास गरिरहेको जिल्ला:- [ ]  
 (स्थायी ठेगाना भन्दा फरक भएमा) बाटु नं:- [ ]  
 गाउँ टोलको नाम:- [ ]  
 घर नं:- [ ]

6. ग्राहकको प्रयोगकर्ताको परिचय: नागरिकता नं:- [ ]  
 Passport No. [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] (Foreigners Only)  
 (Foreigners without a Passport must fill in the Certificate Number issued by the Indian Embassy)  
 बितरण भएको जिल्ला:- [ ]  
 Nationality [ ]

7. ग्राहकको प्रयोगकर्ताको पेशा:- [ ]  
 < लिंग:  पुरुष  महिला

8. ग्राहकको प्रयोगकर्ताको सम्पर्क टेलिफोन नं:- [ ]  
 No. email [ ]

9. ग्राहकको प्रयोगकर्ताको बाजेको नाम:- [ ]

10. ग्राहकको प्रयोगकर्ताको बाबु पतिको नाम:- [ ]

11. संघ संस्थाको नाममा बढाउन भएमा  
 (क) कार्यरत अध्ययनरत संस्थाको नाम:- [ ]  
 (ख) कार्यरत अध्ययनरत संस्थाको ठेगाना:- [ ]  
 (ग) संघ संस्था प्रमुख वा प्रेसिडेंटको नाम:- [ ]  
 (घ) प्यान नम्बर:- [ ]  
 (ङ) सम्पर्क टेलिफोन नं:- [ ]

प्रयोगकर्ताको अाँठा छाप

[ ] [ ]	[ ] [ ]
दायाँ	बायाँ

अाँठको स्पष्ट चित्र [ ]  
 बटु प्रयोगकर्ताको ठेगाना गरेको घर, टोलको नम्बर र बाटोको नम्बर। Site map of the user's residence from the Main Road

अाँठको स्पष्ट चित्र [ ]  
 मिति: [ ]  
 Distance of residence is [ ] meters from nearest Main Road

उत्तर

माथि उल्लेखित व्यहोरा ठीक साबो हो, भुला ठहरेमा कानून बमोजिम सहैला बुझाउँला।

कार्यालय प्रयोजनको लागि मात्र

उपकरणको प्रकार-सप्लिमेन्टरी सेवा:-  SET  R-UM  PDSN (Internet)

Serial Number:

MDN:

सेन्स अधिकारीको दस्तखत: .....

CDMA टेलिफोन प्याकेजको मूल्य रु. .... रसिद नं. .... मिति : २०६...../...../.....

रजु गर्नेको दस्तखत: ..... नाम: ..... पद: .....

ग्राहक सेवा केन्द्र प्रमुखको दस्तखत: .....

नेपाल टेलिकम र श्री ..... बीच सम्पन्न भएको

**सम्झौता**

नेपाल टेलिकम (जसलाई यसपछि कम्पनी भनी सम्बोधन गरिएको छ) र श्री ..... को नाती/नातीनी, श्री ..... को छोरा/छोरी श्रीमती, ..... जिल्ला ..... महानगरपालिका/उपमहानगरपालिका/नगरपालिका/गा.वि.स. बडा नं. .... बस्ने नेपाल टेलिकमद्वारा वितरित CDMA टेलिफोन नं. .... का धनी बन्ने को श्री ..... ना.प्र.प.नं. .... ना.प्र.प. वितरण भएको जिल्ला ..... (जसलाई यसपछि ग्राहक भनी सम्बोधन गरिएको छ) बीच सेवा उपभोग गर्ने वरिष्ठ उद्देश्यले निम्न उल्लेखित शर्तहरू पालना गर्न दुवै पक्ष सहमत भै दस्तखत सहिछाप गरी एक-एक प्रति बुझि लियौं, दियौं।

- शर्तहरू:**
- 1) सेवा उपभोगको लागि कम्पनीद्वारा बिक्री गरिने R-UIM (Removable User Identification Module) Card/ सेटको मूल्य (कम्पनीमा सेट मौज्जद रहेसम्म) Activation Charge, सञ्चालन महसुल इत तथा नेपाल सरकारले तोक्यो इञ्जिनियरिङ कर रकम ग्राहकले कम्पनीमा बुझाउनु पर्नेछ।
  - 2) ग्राहकलाई कम्पनीद्वारा बिक्री गरेको सेटमा बिक्री गरेको मितिले ३ महिनाको अवधिभित्र सेटको उत्पादन खराबीको कारणले सेवा सञ्चालनमा अबरोध आएमा नि:शुल्क नयाँ सेट उपलब्ध गराइनेछ, तर उक्त अवधिभित्र ग्राहकको असावधानीले गर्दा उक्त सेट टुटफुट भएमा वा हराएको अवस्थामा कम्पनीले निर्धारण गरेको सेटको मूल्य ग्राहकबाट असुली गरी नयाँ सेट उपलब्ध गराइनेछ।
  - 3) उक्त अवधि पश्चात् सेटमा जुनसुकै प्रकारको खराबी आएमा पनि कम्पनीले निर्धारण गरेको सेट /R-UIM Card को मूल्य ग्राहकबाट असुल गरी नयाँ सेट / R-UIM Card उपलब्ध गराइनेछ।
  - 4) कम्पनीबाट CDMA Fixed Telephone लिएका ग्राहकहरूले जुन ठेगानामा लिएको हो सोही ठेगानामा मात्र उक्त फोन सञ्चालन गर्नुपर्नेछ।
  - 5) सेट /R-UIM Card हराएमा अतिमूल्य सम्बन्धित कार्यालयमा लिखित सूचना दिएर सेवा बन्द गराउनु पर्नेछ। सेवा फु. सञ्चालनको लागि थुला इन्जाइनर महसुल भुक्तानी गर्नुपर्नेछ।
  - 6) उपभोग गरेको सेवा अवच्छेद भएमा ग्राहकले कम्पनीको टेलिफोन मर्मत शाखाको तोकिएको स्थानमा सूचना गर्नुपर्नेछ। सूचना प्राप्त पश्चात् कम्पनीले Fault पत्ता लगाई अवच्छेद सेवा अविनाश्य मुद्दात गर्नेछ।
  - 7) जुनसुकै पक्षको लागि सेवा लिएको वा उपलब्ध भए सम्झौताको शर्त: इरसवार ऐन, नियम, नीति, एवं अन्य प्रचलित कानूनको प्रतिकूल हुने गरि गैर कानूनी तथा अनाधिकृत रूपमा सेवा प्रयोग भएको पाइएमा कम्पनीले सेवा बन्द गरी प्रचलित कानून अनुसार कारवाही गर्नेछ।
  - 8) कम्पनी ग्राहकले लिएको सेवा, सुविधा जस्ताका प्रयोगको लागि आफ्नै सौकीनको सम्पूर्ण जिम्मेवारी जसको नाममा दता भएको छ सोही ग्राहकले नै बहन गर्नुपर्नेछ।
  - 9) सेवाको सञ्चालन अन्य वा सुविधाहरू तोकिए अनुसारको रकम बुझाई ग्राहकले माग गरेको खण्डमा समताने भ्याएसम्म कम्पनीद्वारा उपलब्ध गराइनेछ।
  - 10) सेवाको सम्बन्धित कम्पनीको विद्यमान नीति, नियम, विनियममा अविद्यमान हुने परिवर्तन तथा भविष्यमा बन्ने नयाँ नीति, नियम, विनियम सम्बन्धित निकायको स्वीकृति प्राप्त भएपछि सार्वजनिक सूचना प्रकाशित गरे पश्चात् उक्त नीति, नियम, विनियमहरू दुवै पक्षलाई मान्य हुनेछ र त्यसलाई यो सम्झौताको अभिन्न अंग मानिनेछ।
  - 11) प्राविधिक कारणबाट कम्पनीले ग्राहकको नम्बर परिवर्तन गर्नु पर्ने भएमा कम्पनीमा १५ दिनको अग्रिम सार्वजनिक सूचना दिई नम्बर परिवर्तन गर्ने सक्नेछ।
  - 12) यस सम्झौतामा उल्लेखित शर्तहरू परिवर्तन तथा वा गर्नु परेमा नेपाल इरसवार प्राधिकरणको स्वीकृति पश्चात् सार्वजनिक सूचनाबाट वा वा परिवर्तन गर्ने सक्नेछ। यसरी सूचनाबाट वा बाका शर्तहरू यस सम्झौताको अभिन्न अंग मानिनेछ तर शर्त परिवर्तन गर्दा १५ दिन अगावै ग्राहकलाई सूचित गरिनेछ।

<b>नेपाल टेलिकमको तर्फबाट</b>	<b>ग्राहकको तर्फबाट</b>
नाम: .....	नाम: .....
दस्तखत: .....	दस्तखत: .....
कार्यालय: .....	*कार्यालयको नाम: .....
पद: .....	*कार्यालयको ठेगाना: .....
मिति: २०६...../...../.....	मिति: २०६...../...../.....
कार्यालयको छाप: .....	*कार्यालयको छाप: .....



# नेपाल टेलिकम

(नेपाल दूरसंचार कम्पनी लिमिटेड)

## मोबाईल सेवा निर्देशनालय

**पोस्ट-पेड मोबाईल टेलिफोनको आवेदन फारम**

(व्यक्तिगत प्रयोगजनका लागि)

प्रयोगकर्ताको फलपेट  
साइजको फोटो  
  
(कृपया फोटोमा स्थिर  
बननुहोस्)

कार्यालय प्रयोजनको लागि
दर्ता नं.
मिति

१. आवेदकको नाम, बस्ने स्थान: \_\_\_\_\_

२. आवेदकको ठेगाना:

(क) स्थायी : काई नं. \_\_\_\_\_ घर नं. \_\_\_\_\_ सडकको नाम \_\_\_\_\_ टोलको नाम \_\_\_\_\_

जन्मस्थान \_\_\_\_\_ जिल्ला \_\_\_\_\_ गा.वि.स./अनुराधपुर \_\_\_\_\_

(ख) अस्थायी : (स्थायी ठेगाना भन्दा फरक भएमा) \_\_\_\_\_

३. आवेदकको पेशा : \_\_\_\_\_ श. लिङ्ग :  पुरुष  महिला

कार्यस्थल संस्थाको नाम : \_\_\_\_\_

कार्यस्थल संस्थाको ठेगाना : \_\_\_\_\_

४. आवेदकको बाबु/पतिको नाम : \_\_\_\_\_

५. आवेदकको बाजेको नाम : \_\_\_\_\_

६. आवेदकको सम्पर्क टेलिफोन नं. : \_\_\_\_\_ ट. ई-मेल \_\_\_\_\_

७. सेवाको किसिम :  लोकल, एस.टी.डि.  अर्गै एस.डि. १०. आवेदकको परिचय : \_\_\_\_\_ जिल्ला \_\_\_\_\_

नागरिकता/पासपोर्ट नं. \_\_\_\_\_

(क) माथि उल्लेखित व्यहोरा टिक्क सही हो, भुक्तान वदरेमा कानून बमोजिम सहीला, बुझाउँछु ।  
 (ख) नेपाल टेलिकमको प्रचलित तथा भविष्यमा कायम हुने महसूल दर, शर्त एवम् नीति नियमहरू पालना गर्नेछु ।  
 (ग) मेरो नाम दर्ता भएको मोबाईल टेलिफोनबाट अरु कसैले प्रयोग गरी कुनै दुरुपयोग वा अनिर्दिष्ट कार्य भएमा समेत कानून बमोजिम पूर्ण रूपमा जिम्मेवार हुनेछु ।  
 (घ) अतिरिक्त रूपमा वा शर्त विपरित सेवा उपभोग गरेको कारणले दूरसंचार ऐन २०५३ को दफा ४३ (ग) अनुसार सेवा बन्द गरेमा मेरो सम्मुरी छ ।  
 (ङ) मोबाइल टेलिफोन हराएमा तत्काल बन्द गरेको लागि नेपाल टेलिकममा लिखित सूचना दिने छु ।  
 (च) नेपाली नागरिकताको प्रमाणित प्रतिलिपि, विदेशी नागरिकको हुकमा पासपोर्टको प्रमाणित प्रतिलिपि यस आवेदन साथ संलग्न गर्नुपर्नेछ ।

आवेदकको हस्ताक्षर : \_\_\_\_\_

नेपालीमा : \_\_\_\_\_

अङ्ग्रेजीमा : \_\_\_\_\_

मिति २०६ / /

ठोडा घुम्न

हामी \_\_\_\_\_ बायी

### कार्यालय प्रयोजनको लागि मात्र

दूरसंचालन रजि. नं.को

नाम : \_\_\_\_\_ पद : \_\_\_\_\_ इलाका/दर : \_\_\_\_\_ मिति २० / /

धरौटी रकम रु. \_\_\_\_\_ अन्य उद्भाव इस्तुर जम्मा रु. \_\_\_\_\_ ब्यवसायको इस्तखत : \_\_\_\_\_

रजि. नं. \_\_\_\_\_ रजि. नं. \_\_\_\_\_ मिति २० / /

आवेदक सेवा केन्द्र प्रमुखको इस्तखत : \_\_\_\_\_

सिमकार्डको सिरियल नम्बर : \_\_\_\_\_ एकाउण्ट नम्बर : \_\_\_\_\_

सिमकार्ड एक्टिभ गर्ने पदाधिकारीको इस्तखत : \_\_\_\_\_ मोबाइल नम्बर : \_\_\_\_\_

मिति : २० / /

माथि उल्लेख गरे बमोजिम सिरियल नम्बर भएको सिमकार्ड बुझिदिए । आवेदकको इस्तखत : \_\_\_\_\_



वर्ता नं. ....  
मिति : २०.....



**SKY  
PHONE**

**नेपाल टेलिकम**  
(नेपाल दूरसंचार कम्पनी लिमिटेड)

**PHONE**

श्रीमान् कार्यालय प्रमुख च्यु  
नेपाल टेलिकम  
द.स.का. ....

**विषय:** SKY फोन /C-Phone/ (Prepaid / Postpaid) टेलिफोनको रिमकाट/फोन उपलब्ध गराउने बारे ।

महोदय,

मैले प्रयोग गरि आएको SKY (Prepaid / Postpaid) / C-Phone नम्बर ..... को रिमकाट / C-Phone हराएको/ बिग्रेको हुँदा लाग्ने शुल्क लिई अर्को रिमकाट / C-Phone उपलब्ध गराई दिनु हुन अनुरोध छ ।

क) Data (Internet) सुविधा छ/छैन ।

ख) अन्य सुविधा .....

**संलग्न कामजातहरू**

- १) नागरिकताको प्रतिलिपी- पान १
- २) Welcome Letter को प्रतिलिपी- पान १
- ३) अन्य-

**निवेदक**

ग्राहकको नाम :-  
दस्तखत :-  
मिति:-

**कार्यालय प्रयोजनको लागि**

- १) रेकर्ड अनुसार निवेदकले पेश गरेको विवरण ठिक छ/छैन ।
- २) उल्लेखित प्रि-पेड ग्राहकको Balance रु. .... र Recharge गर्ने अवधि..... सम्म भएकोले R-uim Card परिवर्तन गर्ने मिल्ने/नमिल्ने देखिन्छ ।

रजु गर्नेको (सहि/मिति)

र.नं.....बाट R-uim Card परिवर्तन दस्तुर रु..... प्राप्त भयो ।

R-uim Card No. .... ।

ब्यासियरको (सहि/मिति)

CDMA नम्बर :-

नयाँ रिमकाटको नम्बर :-

रिमकाट दिने पदाधिकारीको दस्तखत ..... मिति २० । ।

माथि उल्लेख गरे बमोजिमको R-uim Card बुझिलिई ।

ग्राहक/निवेदकको दस्तखत

साधारणतया रिमकाट परिवर्तनको लागि प्राप्त निवेदन उपर काबोही भई रिम परिवर्तन दस्तुर बुझाएको भनि घन्ट रिम चालु (Active) गरिनेछ ।





## Annex-4 Questionnaire for Status of Telecommunication Services

दुरसंचार सेवाको स्तर मूल्यांकन सम्बन्धि प्रश्नावली:

१ नाम: .....

२ उमेर:..... लिंग..... पेशा.....

३ ठेगाना: ..... गा. वि. स/न.पा ..... जिल्ला.....

४ तपाईंको घरमा कतिवटा टेलिफोन छन् र कुन कुन कम्पनीको छन् ?

५ तपाईंले कहिले देखि उक्त फोनहरु प्रयोग गर्दै आउनु भएको छ ?

६ तपाईंलाई उक्त फोन लाईनहरु प्राप्त गर्न के -कति समय लागेको थियो ?

७ तपाईंको घरको सदस्यहरु मध्ये क-कसले कुन कुन कम्पनीको टेलिफोन प्रयोग गर्नुहुन्छ ?

८ तपाईंलाई टेलिफोन सेवा अथवा मोबाइलको सेवाको गुणस्तर के -कस्तो लाग्छ ?

९ तपाईंको टेलिफोन अथवा मोबाइल प्रयोग गर्दा डायल टोन नआउने समस्या के -कति झेलनु भएको छ ?

१० साधारणतया टेलिफोन लइन मर्मत गर्न कति समय लाग्ने गर्छ ?

११ तपाईंको टेलिफोन वा मोबाइल नेटवर्कमा कल डायल गर्दा सजिलैसंग सम्पर्क हुन्छ कि दुई पटक ,३ पटक वा धेरै पटक प्रयास गर्नुपर्छ ?

१२ तपाईंलाई टेलिफोन सेवा बिल कतिको भरपर्दो लाग्छ ? कहिलेकाही बिल रकम घटी वा बढी आउने गरेको छ ?

१३ तपाईंको बिचारमा कुन कम्पनीको मोबाइल फोनको नेटवर्कमा तुरुन्त सम्पर्क हुन्छ ?

१४ तपाईंले मोबाइलफोनमा गर्नुभएको कुराकानी कतीको किलिलियेर हुन्छ ?

१५ सामान्यतया कुनै मोबाइलको नेटवर्क गएमा पहिलेकै आबस्थामा आउनलाई कति समय लाग्ने गर्छ ?

१६ मोबाइलामा GPRS, 3G वा WiMax सेवाको गुणस्तर के -कस्तो लाग्छ ?

१७ एउटा कम्पनी फोनबाट अर्को कम्पनीको फोनमा कल गर्दा सजिलैसंग लाग्छ ?

१८ मोबाइलबाट नेटवर्कमा थप सुबिधा लिन कति समय लाग्नेगर्छ ?

१९ सामान्यतया मोबाइलबाट कति समयमा सम्पर्क हुने गर्छ ?

२० मोबाइल फोनमा कुराकानी हुँदैगर्दा कल फेल हुने समस्या तपाईंले कतिको झेलनु भएको छ ?

२१ कुन मोबाइल नेटवर्क कम्पनीको सेवा तपाईंलाई भरपर्दो लाग्छ र किन ?

२२ कुन मोबाइल कम्पनीप्रति तपाईंको विश्वास र आस्था बढी छ ?

२३ कुन टेलिफोन/ मोबाइल कम्पनीको सेवाबाट तपाईं सबैभन्दा बढी प्रभावित र सन्तुष्ट हुनुहुन्छ ?

....धन्यवाद....

## Annex-5: Questionnaire for Telecom office staffs

### Questionnaire

Dear Sir/Madam,

As partial fulfillment of the requirements for MBS degree from Tribhuvan University. I am conducting a study in Management Information System (MIS). I have chosen my subject matter of the study & statements of problems are related to the MIS and its application to the organization. My thesis is titled" *Use of Management Information System on Telecommunication Companies in Nepal-A case study of Nepal Telecom & Ncell*". So, I would like to request you a kindly spare a few minutes to complete the questionnaire. Thank you in advance for your kind corporation

Your response will be kept confidential & will be used only for the purpose of the study.

Name.....  
Designation.....  
Organization.....  
Organization Type.....  
Address/Telephone.....  
E-mail Address.....

Please put a tick mark (✓ ) as you feel appropriate the following queries:

1. Nowadays, MIS is the basic needs of any Organization
  - a. Agree
  - b. Disagree
  - c. If any.....
  
2. MIS and computer system is necessary for organization
  - a. To make correct decision
  - b. To increased the productivity & reduce cost
  - c. To implement the decision more effectively
  
3. MIS is very important for organization at the....
  - a. Top level management
  - b. Middle level management
  - c. Operational level management
  - d. Tactical Level management

1. Please, mention in which management function, MIS plays vital role as information support & decision making?
  - a. Planning
  - b. Organizing
  - c. Staffing
  - d. Directing
  - e. Controlling
  
2. After the application of MIS in organization, the productivity & efficiency is increased by:
  - a. 1 to 20 %
  - b. 21 to 40 %
  - c. 41 to 60 %
  - d. 61 to 80 %
  - e. 81 to 100 %
  
3. Please mention what type of information's plays vital role in your organization?
  - a. Planning information
  - b. Controlling information
  - c. Knowledge information
  - d. Organizational information
  
4. MIS used in organization division/ Departments to make decision & update information flow within the organization?
  - a. software unavailability /High cost of Software
  - b. Lack of IT experts & software Engineers
  - c. High cost to implements MIS
  - d. Not enough training to use software & Hardware.
  
5. You are satisfied with the existing Management Information System in your Organization?
  - a. Yes
  - b. No
  - c. I don't know.

.....Thank you.....

## Annex-6: Key Global Telecom Indicators for the world Telecommunication Service Sector

### Key ICT indicators for developed and developing countries and the world (totals and penetration rates)

	(millions)							Per 100 inhabitants						
	2005	2006	2007	2008	2009	2010	2011	2005	2006	2007	2008	2009	2010	2011
<b>Fixed-telephone subscriptions</b>														
Developed	570	565	546	544	555	548	539	47.2	46.5	44.8	44.4	45.1	44.4	43.6
Developing	673	696	708	705	694	680	665	12.7	13.0	13.0	12.8	12.4	12.0	11.6
World	1'243	1'261	1'254	1'249	1'249	1'227	1'204	19.1	19.2	18.8	18.5	18.3	17.8	17.3
<b>Mobile-cellular subscriptions</b>														
Developed	992	1'127	1'243	1'325	1'384	1'413	1'514	82.1	92.9	102.0	108.3	112.6	114.5	122.3
Developing	1'215	1'619	2'126	2'706	3'263	3'898	4'457	22.9	30.2	39.1	49.1	58.4	68.9	77.8
World	2'207	2'747	3'369	4'031	4'647	5'311	5'972	33.9	41.7	50.6	59.9	68.2	77.1	85.7
<b>Active mobile-broadband subscriptions</b>														
Developed	N/A	N/A	225	336	450	516	635	N/A	N/A	18.5	27.4	36.6	41.8	51.3
Developing	N/A	N/A	43	86	165	256	458	N/A	N/A	0.8	1.6	3.0	4.5	8.0
World	N/A	N/A	268	422	615	773	1'093	N/A	N/A	4.0	6.3	9.0	11.2	15.7
<b>Fixed (wired)-broadband subscriptions</b>														
Developed	148	188	219	251	271	293	309	12.3	15.5	18.0	20.5	22.1	23.8	25.0
Developing	71	95	126	157	193	235	280	1.3	1.8	2.3	2.9	3.5	4.1	4.9
World	219	283	346	408	465	528	589	3.4	4.3	5.2	6.1	6.8	7.7	8.5

	(millions)							(%)						
	2005	2006	2007	2008	2009	2010	2011	2005	2006	2007	2008	2009	2010	2011
<b>Households with a computer</b>														

Developed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	55.3	58.2	62.3	66.1	69.1	71.5	74.2
Developing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	14.1	15.3	17.2	19.5	21.2	22.7	24.8
World	N/A	N/A	N/A	N/A	N/A	N/A	N/A	25.8	27.5	29.8	32.5	34.5	36.2	38.4
<b>Households with Internet access at home</b>														
Developed	N/A	N/A	N/A	N/A	N/A	N/A	N/A	44.7	48.2	53.4	57.7	62.6	66.4	70.3
Developing	N/A	N/A	N/A	N/A	N/A	N/A	N/A	8.1	9.6	11.1	12.5	14.1	16.6	20.5
World	N/A	N/A	N/A	N/A	N/A	N/A	N/A	18.5	20.6	23.0	25.1	27.4	30.3	34.1
<b>Individuals using the Internet</b>														
Developed	614	649	719	749	768	824	870	50.8	53.4	59.0	61.2	62.5	66.8	70.2
Developing	407	501	645	810	978	1'189	1'396	7.7	9.3	11.9	14.7	17.5	21.0	24.4
World	1'022	1'150	1'364	1'560	1'746	2'013	2'265	15.7	17.5	20.5	23.2	25.6	29.2	32.5

Rounded values.

N/A: Not available.

The developed/developing country classifications are based on the UN M49, see: <http://www.itu.int/ITU-D/ict/definitions/regions/index.html>.

**Key ICT indicators for the ITU/BDT regions (totals and penetration rates)**

	(millions)							Per 100 inhabitants						
	2005	2006	2007	2008	2009	2010	2011	2005	2006	2007	2008	2009	2010	2011
<b>Fixed-telephone subscriptions</b>														
Africa	10	11	11	11	12	12	11	1.5	1.5	1.5	1.5	1.6	1.5	1.4
Arab States	30	31	33	35	34	35	35	9.4	9.6	10.1	10.3	9.9	9.8	9.6
Asia & Pacific	559	577	579	567	574	557	540	15.1	15.5	15.4	14.9	14.9	14.3	13.8
CIS	64	69	72	73	73	74	73	23.0	24.7	25.8	26.1	26.3	26.4	26.3
Europe	273	273	265	261	261	258	253	45.5	45.2	43.7	42.8	41.6	41.9	40.9
The Americas	291	284	278	287	276	274	274	33.0	31.9	30.9	31.5	30.0	29.5	29.2
<b>Mobile-cellular subscriptions</b>														
Africa	87	129	174	246	297	363	434	12.4	17.9	23.5	32.4	38.2	45.6	53.1
Arab States	85	126	175	214	265	310	350	27.1	39.3	53.0	63.4	76.6	87.8	96.9
Asia & Pacific	834	1'074	1'398	1'773	2'166	2'625	3'009	22.6	28.8	37.1	46.6	56.3	67.6	76.7
CIS	166	227	267	312	356	377	408	59.7	81.8	96.1	112.2	127.7	135.1	146.0
Europe	550	610	677	714	718	726	747	91.6	101.1	111.6	117.1	117.1	117.9	120.8
The Americas	459	552	649	741	814	876	989	52.1	62.0	72.1	81.5	88.5	94.3	105.4
<b>Active mobile-broadband subscriptions</b>														
Africa	N/A	N/A	N/A	N/A	N/A	14	27	N/A	N/A	N/A	N/A	N/A	1.8	3.3
Arab States	N/A	N/A	N/A	N/A	N/A	26	42	N/A	N/A	N/A	N/A	N/A	7.4	11.7
Asia & Pacific	N/A	N/A	N/A	N/A	N/A	281	422	N/A	N/A	N/A	N/A	N/A	7.3	10.7
CIS	N/A	N/A	N/A	N/A	N/A	63	87	N/A	N/A	N/A	N/A	N/A	22.5	31.3
Europe	N/A	N/A	N/A	N/A	N/A	174	226	N/A	N/A	N/A	N/A	N/A	28.2	36.5
The Americas	N/A	N/A	N/A	N/A	N/A	206	279	N/A	N/A	N/A	N/A	N/A	22.1	29.7

Individuals using the Internet														
Africa	17	24	29	48	61	80	101	2.4	3.3	3.9	6.4	7.8	10.0	12.4
Arab States	25	35	44	58	72	87	105	8.1	10.9	13.4	17.2	20.8	24.5	29.1
Asia & Pacific	344	394	503	612	721	868	1'000	9.3	10.6	13.3	16.1	18.8	22.3	25.5
CIS	27	35	47	54	66	95	114	9.8	12.6	16.8	19.5	23.8	33.9	40.7
Europe	278	300	339	367	382	406	423	46.3	49.7	55.9	60.1	62.4	65.9	68.4
The Americas	316	346	385	403	424	458	502	35.9	38.8	42.7	44.2	46.1	49.3	53.4