

**Impact of Internet on Rural People:
A Case Study of Nangi Village of Maygdi District**

Bimala Adhikari

A Project Report
Submitted to
Central Department of Rural Development
The Faculty of Humanities and Social Sciences
In partial Fulfillment of the Requirements for the Degree of
Masters
Of Arts in Rural Development

Central Department of Rural Development
Tribhuvan University Campus
Kirtipur, Kathmandu

August, 2006

**Impact of Internet on Rural People:
A Case Study of Nangi Village of Maygdi District**

Bimala Adhikari
Symbol No. 3088

A Project Report
Submitted to
Central Department of Rural Development
The Faculty of Humanities and Social Sciences
In partial Fulfillment of the Requirements for the Degree of
Masters
Of Arts in Rural Development

Central Department of Rural Development
Tribhuvan University Campus
Kirtipur, Kathmandu

August, 2006

RECOMMENDATION

This project report entitled “**Impact of Internet on Rural People: A Case Study of Nangi Village of Maygdi District**” has been prepared by Ms. Bimala Adhikari under my supervision in partial fulfillment of the requirement for the Degree of Master of Arts in Rural Development. I here by recommend this project report to the Project Report Evaluation Committee for approval.

.....
Supervisor

Dr. Devendra P. Shrestha

APPROVAL SHEET

This project report entitled “**Impact of Internet on Rural People: A Case Study of Nangi Village of Maygdi District**” submitted to the Central Department of Rural Development Tribhuvan University, by Bimala Adhikari has been approved by the under signed member of evaluation committee.

Evaluation Committee

.....
Prof. Dr. Pradeep Kumar Khadka
Head of Department

.....
Dr. Devendra P. Shrestha
Supervisor

.....
Prof. Dr. Mahendra Singh
External

Date:

ACKNOWLEDGEMENTS

I would like to express my deep gratitude to the Central Department of Rural Development at Tribhuvan University, for allowing me to carry out this project work in partial fulfillment of the requirements for the degree of masters in rural Development.

I am extremely grateful and indebted to my supervisor **Dr. Devendra P. Shrestha**, for providing me an opportunity to conduct this study. I can't forget his cooperative guidance, supervision and inspiration during the preparation of this project work. I must express my deepest respect for his perennial support and encouragement to accomplish this study.

Similarly I must express my heart felt reverence to **Prof. Dr. Pradeep Kumar Khadka**, Head and the research committee of the department for his immense support.

I would like to thank Mr Mahabir Pun who is the team leader of Nepal Wireless Networking project for his valuable helps. Mr. Krishna Pun deserves my sincere thanks for helping me during data collection.

Words are scared to express my gratitude and indebtedness to my brother Mr. Ram C Poudel for his encouragement, tireless support, and cooperation to complete this research work. I would like to thank my husband Mr Rajendra Poudel for creating good environment to work.

Last but not least, I am thankful to the respondents as well as other people of the study area, who provided necessary as well as valuable information and possible help to accomplish this undertaking.

Bimala Adhikari

CONTENTS

	Page No.
RECOMMENDATION	iii
APPROVAL SHEET	iv
ACKNOWLEDGEMENT	v
CONTENTS	vi
LIST OF TABLES	x
LIST OF FIGURES	xii
ACRONYMS	xiii
EXECUTIVE SUMMARY	xiv

CHAPTER - I

INTRODUCTION 1 - 6

1.1. Background	1
1.2. Statement of Problems	4
1.3. Objectives of the Study	5
1.4. Importance of the Study	5

CHAPTER - II

LITERATURE REVIEW 7- 32

2.1. Conceptual Background of ICT	7
2.2. What is Internet.	10
2.3. Electronic Mail (e-mail)	11
2.4. World Wide Web (WWW)	11
2.5. Origin and Growth of Electronic Media	12
2.5.1. Telephone	12
2.5.2. Radio	13
2.5.3. Television	14
2.5.4. Internet	14
2.5.5. Computer	15

2. 6. Brief overview of Nepal's ICT sector	17
2.6.1. General Background	17
2.6.2. Brief Historical Perspective	18
2.6.3. ICT Related Organizations	20
2.6.4. Academic Institutions	20
2.6.5. ICT Related Educational and Training Programs	21
2.6.6. Business Organisations	21
2.6.7. Government Agencies	22
2.6.8. International Organizations	22
2.6.9. Local Non-governmental Organisations (NGOs)	22
2.7. ICT service in rural area	22
2.8. IT Policy 2000 in Nepal	23
2.8.1. Objectives	23
2.8.2. Strategies	24
2.8.3. Policies	24
2.9. National Strategy Paper on ICT	26
2.9.1 Major goals of the 10th Plan	26
2.10. Telecentres/Communication Center: important vehicles for bridging digital divide	26
2.11. Digital Divide	27
2.12. Documentation of ICT Related Report, Thesis, Newsletter, Journal	28

CHAPTER - III

METHODOLOGY 33 - 36

3.1. Research Design	33
3.2. Rationale of the Selection of Study Area	33
3.3. Data Collection	34
3.3.1. Primary Data Collection	34
3.3.2. Secondary Data Collection	35
3.4. Sample design	35
3.5. Data Processing and Analysis	36
3.6. Limitation of the study	36

CHAPTER - IV

SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS 37 - 44

4.1. General Introduction to the Study Area	37
4.2. Social and Demographic Characteristics of Respondents	38
4.2.1. Caste/Ethnic Composition	39
4.2.2. Occupation	39
4.2.3. Education	40
4.2.4. Family Size	40
4.2.5. Gender	41
4.2.6. Age	41
4.2.7. Marital Status	41
4.3. Economic Status of the Respondents	42
4.3.1. Landholdings of the Respondents	42
4.3.2. Livestock Ownership of the Respondents	43
4.3.3. Annual Income	44

CHAPTER - V

IMPACTS OF INTERNET

45 - 66

5.1. Devices In Study Area: A Comparative Overview	45
5.2. Electronic Devices in Nagi Communication Center	46
5.3. Power for the Telecenter	47
5.4. Internet and Its Use Prospective in Nagi Village	47
5.4.1. Time and Frequency of Communication Center Visit by the Users	47
5.4.2. Inspiration to Use Internet	49
5.4.3 Reasons for Using Internet	50
5.4.4. Impacts of Internet	50
5.4.5. Most Benefited Sector of the Community	53
5.4.6. Awareness Level of the People	53
5.4.7. Change in Attitude	54
5.4.8. Education level	56
5.4.9. Access to Information and Communication Services	57

5.4.10. Income Generation - Change in Economic Status	59
5.4.11. Perception toward Internet	60
5.5. Socio-economic Impacts of Internet	61
5.5.1. Infrastructure Development in the Nagi Village	61
5.5.2. Impacts on Communication	62
5.5.3. Impacts on Education	63
5.5.4. Impact on Information Access	63
5.5.5. Change in Attitude of Internet Users	64
5.5.6. Impact on Economy	64
5.5.7. Impacts on Health Care	65
5.5.8. Impacts on Employment	66

CHAPTER - VI

CONCLUSION AND RECOMMENDATIONS	67 - 70
6.1. Conclusion	67
6.2 Recommendations	69
BIBLIOGRAPHY	71 - 75
APPENDIX – I	
APPENDIX – II	
APPENDIX – III	
APPENDIX – IV	
APPENDIX – V	

List of Tables

	Page No.
Table – 2.1: PCO in different region	20
Table – 2.2: Subscribers of different Services as of 14 April, 2006 (Baisakh 1, 2063)	20
Table – 2.3: Academic Institutions in Nepal	21
Table – 2.4: Government Agencies Web-site Net-working	22
Table – 4.1: Distribution of respondents by major occupations.	39
Table – 4.2: Education of the respondents	40
Table – 4.3: Distribution of respondents by family size	40
Table – 4.4: Distribution of respondents by Sex	41
Table – 4.5: Age distribution of of the respondents	41
Table – 4.6: Marital status of the respondents	42
Table – 4.7: Distribution of respondents by sex and marital status	42
Table – 4.8: Family Landholdings of the respondents	43
Table – 4.9: Livestock size of the respondents family	43
Table – 4.10: Annual income of the respondent's family	44
Table – 5.1: Equipments or devices in Nepalese communication centers under Nepal Wireless project.	45
Table – 5.2 : Equipments and devices in Nagi communication center	46
Table – 5.3: Respondents starting using internet	47
Table – 5.4: Frequency of respondents visiting communication center	48
Table – 5.5: Time of respondents using internet	49
Table – 5.6: Inspiration got by respondents to use internet	49
Table – 5.7: Management of time by internet users	51
Table – 5.8: Means of spending time by internet users.	51
Table – 5.9: Time utilization sector of internet users.	53
Table – 5.10: Respondents' opinion on how they are benefited by internet.	55

Table – 5.11: Benefits of internet taken by the users	58
Table – 5.12: Time to get social services in the nearby city/town or in district headquarter.	58
Table – 5.13: Time to get internet services for various users	59
Table – 5.14: Income generation from internet	59
Table – 5.15: Comparison on economic change in Nagi village	65

List of Figures

	Page No.
Figure – 4.1: Distribution of respondents by major caste/ethnic groups	39
Figure – 5.1: Respondents by purpose of using internet	50
Figure – 5.2: Percent of student respondents benefited from internet.	52
Figure – 5.3: Percent of development sectors benefited through internet	53
Figure – 5.4: Types of websites by respondents	54
Figure – 5.5: Opinions on internet by respondents	55
Figure – 5.6: Percent of respondents benefited from internet	56
Figure – 5.7: Purposes of internet using by students	57
Figure – 5.8: Status of students' progress by using internet	57
Figure – 5.9: Impacts on unavailability of internet by respondents.	60
Figure – 5.10: Percent of user's family's response on internet.	61

ACRONYMS AND ABBREVIATIONS

CAN	:Computer Association of Nepal
CBS	:Center Bureau of Statistics
e-mail	:Electronic Mail
HLCIT	:High Level Commission for Information Technology
HMGN	:His Majesty's Government of Nepal
HTTP	:Hyper Text Transfer Protocol
IBM	:International Business Machine
ICT	:Information Communication Technology
ISP	:Internet Service Provider
IT	:Information Technology
LAN	:Local Area Network
MoST	:Ministry of Science and Technology
NCC	:National Computer Center
NPC	:Nepal Planning Commission
NTA	:Nepal Telecommunications Authority
NTC	:Nepal Telecommunication Corporation
NTV	:Nepal Television
NWP	:Nepal Wireless Project
PC	:Personal Computer
PSTN	:Public Switch Telephone Network
RONAST	:Royal Nepal Academy of Science & Technology
TCP/IP	:Transmission Control Protocol/ Internet Protocol
UTL	:United Telecommunication
VDC	:Village Development Committee
VOIP	:Voice Over Internet Protocol
VSAT	:Very Small Aperture Terminal
Wi-Fi	:Wireless Fidelity
WWW	:World Wide Web

EXECUTIVE SUMMARY

Information Communication Technologies usually abbreviated as ICTs, is a new global phenomenon that has penetrated the social, economic and technological development of every part of the world probably at the highest speed in the development processes. In the ICT sector two of the more powerful media are email/internet and interactive websites, which are both example of online networking forums. Internet is network of networks and global LAN where millions of computers are connected to each other. These tools enable individuals to communicate and share information and knowledge.

The present study has shown that email and internet has been gaining popularity not only in urban areas but also in rural villages where it is taken as an appropriate alternative medium of communication and social service delivery. Email and internet is a low cost technology which is affordable and adoptable to rural area in a sustainable manner.

Being a country with complex geography and remote scattered villages, Nepal has significant potentialities of wireless technology. As a viable eco friendly alternative technology, it can substitute time and money for communication purpose.

The study is conducted in Nangi village- 2 of Ramche VDC, Myagdi district. The study area is situated in western Nepal on the Southern flank of the Annapurna and Dhaulagiri ranges of the Himalayas.. Nangi village is located at the altitudinal range of 2260 m in 6-9 hours walking distance from district headquarter, Beni. Nangi village inhabited by Magar community entirely depend on agriculture and income from military services.

This study is conducted with the objectives of analyzing the socio-economic impact of email/internet on its users in Nangi village of Ramche VDC. The study is exploratory as well as descriptive in nature. It is based on a sample of 100 internet users who were selected by using purposive sampling technique. Focus group discussion and key informant interview was also conducted to gather maximum number of information on the subject.

The data related to socio-economic condition and reasons behind Internet using were collected through observation, interview, focus group discussion and structured questionnaire. Analysis of the data is made with numbers, percentages, table and figures. Data has shown how the internet helped to save time, money and reduce workload and improvement on the health, education, change in attitude, economy and life style of the internet users.

Most of the internet users are students and job holders. Data has shown that 55 percent respondents are student's .It shows that generally internet is highly exploited by young generation for the collection of reading materials, chatting and phone with friends/relatives, writing emails, reading news etc.

Internet has been flourishing there as an appropriate media of communication which has significant impacts on its users. As their expectation, they have gained easy, fast and cost effective media for exchange information and it has saved considerable amount of time and money of the villagers. Basically this study has assessed following impacts of internet which have great contribution in the livelihood improvement of internet users.

Infrastructure development in the village, in terms presence of well functioning modern technological devices such as computers, network devices and establishment of hydroelectricity, wind generators and solar panels to run internet.

After internet in village people are using internet for writing e-mails, e-chat and use VOIP telephone to communicate with friends and their relatives in and abroad. Moreover the intra network between villages has also established communication among villagers too. So such facilities increased access on communication for the villagers.

Through tele teaching internet has succeeded the problem of shortage of trained teacher in Nagi as well as nearby remote villages. The survey reveal that highest number of teachers and students use internet as a tool to collect and exchange teaching and study materials. Students are getting wide platform to do extra curriculum activities, general knowledge and more importantly acquire and exchange tips on text books and solutions of many subject related problems.

Despite the remoteness of the area, people are easily getting updated news and information from internet. Out of hundred respondents 64 percent regularly visit web based news like nepalnews.com, times of India, bbc.com etc.

Through internet villagers are getting different social services in their village so the benefits from it have completely changed the attitude of villagers. They are now quite optimistic toward the modern technology and its effectiveness in rural areas.

Local e-business of local products via intra network have greatly encouraged villagers to do organic cheese production, open Nepali paper and handicrafts based small enterprises and marketing the products through internet. Similarly villagers are indirectly getting economic benefits from internet through saving considerable amount of time and money by getting phone, communication and education services in the village.

Internet in the villages has opened new job opportunities in communication center, and by e-business. Computer trainings in village and computer education in the school make young generation more confident and competent to tackle with new environment.

Tele health in the village has increased the quality and availability of healthcare in the rural communities. Though in pilot phase, many villagers have benefited from this service.

In general, internet is found to have very positive impact on the users. The outcome of the study shows that most of the sampled users are very much satisfied with its performance. Since its start internet services are running in good condition. More and more people are attracted toward internet and the project started from Nagi village is now expanded to more 19 villages of three districts Myagdi, Parbat and Kaski. Hence, internet has been flourishing as socially acceptable, technically feasible, financially viable and economically profitable tools to improve the livelihood of rural people. .

CHAPTER - I

INTRODUCTION

1.1. Background

Nepal, a land-locked country with 85% of population live in rural areas and 38% of the population live below poverty line. Analysis of rural household data indicates that only 40% of the income of an average rural household comes from farming and the remaining 60% from other income sources (CBS, 2002). Evidently, most of them need to change their economy to access other sources of income to survive which could possibly generated through let's put ICTs in the hands of the poor.

Nepal is a developing Himalayan country. Due to the complex geo-structure there is not motorable road in hilly areas. Villages are scattered in mountain and population density is very low. Providing facilities in such low population area is very costly for government. Due to the unreachable of irrigation most of the agricultural land should depend on rainy water. Schooling and hospital facilities are very limited. Due to few opportunities no doctors and teachers are available in rural areas. So the life of rural people is very difficult in remote areas.

Until now the villagers are communicating by using years-old practice such as sending letters through village messengers or people travelling from one village to another village, or by walking several hours by oneself to tell the messages. People should depend on local traditional treatment system. Villagers doesn't have idea about the market/price of goods so they can not sell/buy local goods in right price in right time. Somewhere crops are elbowed and loosing allot, and somewhere people are dieing with hunger. All this reason the poverty in rural areas is increasing day by day.

The solution of this problem can be solved by putting ICT in rural people's hand. Because ICT can provide all the facilities in cheap and user friendly way. In the age of information and communication technology, email and internet has been recognized as one of the means of bringing the social and economic changes in the rural people. Internet offers a big scope of new opportunities for communicating and networking among communities to exchanges experience

and new ideas generate and share resources. Information and communication Technology (ICT) can play an effective role in poverty reduction. Poverty is not just a question of income or assets; it is a question of information /knowledge power. Previous time the person who has a lot of money was known as rich person but now the person who has many information and knowledge is known as rich person. Anyways ICT has emerged as a blessing to mankind. We can use it to improve our life and for various purposes, such as to obtain all sorts of necessary information communicate people as a means of education.

Information is power and plays an important role in our everyday life and can empower people everywhere. ICTs (including radio, television, mobile television computer and internet) can empower rural people by raising awareness of their social and political status and creating new economic opportunities. ICTs have opened the windows of opportunities for marginalized people including women and can play an important role in the formal and non formal education of rural people through distance education.

Role of information and communication technology in development can not be underestimated with ICT affecting almost every parts of life. Education, health, entertainment, governance and service delivery all has witnessed a considerable growth with the usage of ICT in the first world. (HLCIT, 2004b).

At the first time, appreciative mass communication technology was started after the entrance of Giddhe press in 1901 AD in Nepal, Which is initiated by Rana reign. Besides these, the establishment of Gorkhapatra was the first paper of Nepal .Now we can found more than 1500 newspapers and magazines published in Nepal in one year. Nepal's journey into the world of information and communication technology began three decades ago, with the use of IBM 1410 for the Population Census of 1971. Institutional initiative to promote computer awareness and provide computer literacy began with the government's establishment of the Electronic Data Processing Center in 1974, which was later, named as National Computer Center (NCC). NCC purchased the fourth generation computers in 1981. The computer training in Nepal started from 1971, when American experts provided training in Auto Coder programming to operate the IBM 1401 computer. The promotion of computer education in the national education system started only in the early 1990s (Ghimire *et al.* 2004).

The Footstep of internet technologies in Nepal is introduced only decades ahead. Mercantile office systems became the first internet service provider (ISP) in mid July 1994 when it established an online international link via Nepal Telecommunication Corporation (NTC) to Singapore telecom. At present there are 3 major telecommunication companies and more than 25 internet services providers in the field of telephone and internet technologies. But they are oriented only with the urban market and working for the well classed family (HLCIT, 2004a).

Direct impacts of ICT on poverty reduction take several routes. First, there is the educational aspect. Information and knowledge enable the poor to understand their own circumstances and to voice their own opinions and needs. ICTs such as radio and television have been effectively used in many countries to reach education in poor rural areas. The Internet provides a effective classroom in which powerful interactivity and the sharing of resources and information take place. The second important impact is on health by flow of medical information. The third area of impact is productivity and income generation. ICTs give micro and small enterprises access to market information (faster and cheaper than printed material), input prices and output markets and it may strengthen forward linkages to the market (Akhtar, 2001).

Internet in Nepal started with the e-mail services provided by Royal Nepal Academy for Science and Technology (RONSAT) in 1993 for a limited number of users. In 1995, there were about 150 email addresses in Nepal, which went up to 15,000 in the year 2002, (Bilas, 2000). Internet usage in Nepal has grown impressively over the last few years. Current estimates put the number of internet users to more than 250,000. Altogether, there are 31 ISPs registered in Nepal with majority of them providing their services to the growing number of internet users in the country. (HLCIT, 2005)

1.2. Statement of Problems

In fact, however we define the 'age of information'; it may be more applicable to the city, not the rural area. The masses in rural areas, are still unaware what ICT is or how it can provide benefit to income generating or other improvements of the people. In urban areas, middle class educated people, businesses and young people are concerned with the normal use of technology and its advancement. In developing countries, ICT has already created divide between urban and rural, between men and women, between rich and poor, between educated and illiterate- rather than reducing the gaps and this gap is known as digital divide. (Rana, 2004)

The geographical structure of Nepal is very difficult so people living in remote and mountainous area are not able to get opportunities of information and others modern technology. Due to lack of opportunities and facilities, qualified and energetic teacher and doctors do not want to work in those areas. In few areas Radio and F.M. services are available but this media is only one way of transforming the information. Such medias' are not playing interactive role in providing information to rural people

People living in rural areas are at a particular disadvantage in the digital world facing multiple barriers related both to education, and basic services. Given their central role in the agricultural economy, rural people often have too much work and too little time to become familiar with these new technologies. Having holistic mode of farming system, rural people have more responsibilities to farming, animal husbandry and tackle with limited modern service. So, rural people cannot migrate as easily as with urban people to towns and cities where training in the new technologies are more available.

Nepal, being male dominated country, most of the women is dominated, controlled and exploited by man. As a result they are bounded within a limited area. Due to this major problem women aren't able to get information which empowers them. In this condition internet can potentially help breakdown these problem. Most of the people in the urban area has already realized the important of internet and applied in the daily life and have changed their life style too.

There are many aspects where internet can generate positive impact on rural development by disseminating important information related with agriculture, education, health and other business information to the rural people. Rural people needed a range of information related to agriculture, health, various government schemes, information on legal issues, employment schemes, general information which could be provided through internet (Alexander, 2001; HMGN/MoST, 2000).

In this regard it is important to assess socio-economic impact, awareness and attitudinal change brought about by this technology in rural people. This study is proposed to find out the impact on lifestyle of rural people, which ultimately helps to develop and disseminate the technology to some extent.

1.3. Objectives of the Study

The primary objective of the research is to identify the impact of Email /internet on internet users of Nagi village. The specific objectives are as follows:

1. To document the internet facilities available in Nagi village.
2. To identify the changes in their economic status
3. To assess the impact of information and communication.
4. To assess the change in lifestyle of rural people.

1.4. Importance of the Study

No doubt, internet technology is much suitable for rural people in Nepalese context. Because the demand of internet technology is increasing day by day in rural area. Internet can serve rural people as a powerful tool to successfully face the on going process of globalization, encouraged by these opportunities.

The economy of the country is largely depended on agriculture. The farmers can not sell their products at the appropriate price because they do not get the selling price information of their products .As a result the distributors buy the products from the farmers at lower prices and sell them at the market place in the city area and make the huge profit (Munakarmi, 2003). To minimize in that type of exploitation, ICT can play important role by giving information of Market prices of their products. When they get exact price of their goods and services

the farmer's income will increase and living standard of there is also increased, it was the positive impact of ICT in rural area. Apart from that rural people would get different important information and opportunities on health, education, income generation etc. from email/internet which will make them active and aware so that they will always be competent to achieve best in their life.

In the study area email/internet service has been introduced since 2003. This study is intended to explore the interest and access of local people on email/Internet, as well as find out whether they are feeling its necessity on their daily life, or not. Furthermore caste wise and social class wise, which age-group of people are benefited from email/Internet would also the prime interest of this study.

In this age of communication the two way traffic system of instant message in Email/Internet and its role in the assurance of the fundamental needs of societies like good health/hygiene, balanced nutrition, education, communication, peace and economic development of different levels of people would definitely make them active and help them participate equally in the mainstream of societies and nations' development.

Thus the finding of this study is expected to help planners, policy makers, researchers and development agencies to conduct development program and further research in the area of empowering rural people as well as of the nations as whole.

CHAPTER - II

LITERATURE REVIEW

2.1. Conceptual Background of ICT

Information Communication Technologies usually abbreviated as ICTs, is a new global phenomenon that has penetrated the social, economic and technological development of every part of the world at probably the highest speed in the development processes, the world has never experienced.

ICT is defined as new digital-based technologies that capture, store, process, Communicate and display information from Radio, TV, internet, mobile phone, etc. It is a tool that allows geographical mobility and effective means of disseminating Knowledge. In this modern age “Knowledge has become perhaps the most important factor determining the standard of living-more than property, money and other tool” (www.apdip.net).

Information and communications technologies (ICTs) are powerful tools for empowerment and income generation in developing countries. The cost effectiveness of different ICTs does vary between developed and less developed countries (Grace *et al.*, 2001).

ICTs encompasses computers, fax machines, television sets, radios, internet , e-mail, telephone, photocopy, scanner, plus procedures that together support the processing, storage and delivery of information. Accordingly, the ICT revolution, so called the information or communication or the microprocessor revolution is changing the way we share information be it in agriculture, education, commerce, and health. Governance, leisure and culture and many other fields that constitute development. (Rana, 2001)

Education, knowledge, information and communication are at the core of human progress, endeavor and well-being. Further, Information and Communication Technologies (ICTs) have an immense impact on virtually all aspects of our lives. The rapid progress of these technologies opens completely new opportunities to attain higher levels of development. The capacity of these technologies to reduce many traditional obstacles, especially those of time and

distance, for the first time in history makes it possible to use the potential of these technologies for the benefit of millions of people in all corners of the world (WSIS Declaration of Principles, 2003).

Cukor and McKnight, 1995 have pointed that “Information and Communications Technologies (ICTs) are playing a significant role in economic, political and cultural development of society. The relationship between technologies supporting information processing and distribution, and the application of that knowledge for development purposes has only recently come into focus. The discovery, publication and application of new knowledge, the dissemination of information concerning best practices and the exchange of views and opinions are now considered essential elements of development work. These functions it is now increasingly recognized are effectively facilitated by ICTs. In the area of economic development ICTs can create new jobs, new industry and service sector opportunities and a more educated work force. They make possible the cross-border flow of information, promote international trade, particularly high technology, bits rather than atoms, type trade and help to attract foreign direct investment. ICTs can also contribute to political development by fostering good governance and streamlining bureaucratic procedures through intra-governmental networking. The creative use of ICTs, in the areas of health care, education, environmental protection and in other developmentally important fields can substantially contribute to the advancement of developing societies” (Nicholas, 1995).

ICT has changed the face of modern science and technology research, requiring our research organizations to be linked to each other through an Advanced Network that is connected to the rest of the world. Ready access to a safe, secure, and affordable communications infrastructure that enables national and international collaboration is the other half of the equation to take us forward to the Knowledge Society.

Information + Communication = Knowledge Society

(http://www.tutor2u.net/business/ict/intro_what_is_ict.htm)

However, apart from explaining an acronym, there is not a universally accepted definition of ICT. Because the concepts, methods and applications involved in

ICT are constantly evolving on an almost daily basis. Its difficult to keep up with the changes - they happen so fast. The three words behind ICT are:

- Information
- Communication
- Technology

A good way to think about ICT is to consider all the uses of digital technology that already exist to help individuals, businesses and organizations use information.

Generally information and communication refers to:

- Telecommunication technology: telephone, fax, mobile phone, pager, etc.
- Information technology computer, electronics communication displaying device and technology.
- Electronics media: television, radio,etc
- Information and Communication technology: Technology invented after mingling of telecommunication and information technology –internet, email, computer Network,etc

According to HLCIT, 2004 following information can be received from information technology:-

- . Opportunity for employment
- . Raising of agriculture production
- . Governmental Information
- . Educational resources
- . Market price
- . Investment and economic opportunities
- . Health (HIV/AIDS) information
- . Information regarding development of manpower
- . Information regarding natural resources
- . Information regarding different disease

Two of the more powerful media are email/internet and interactive websites, which are both example of online networking forums. These tools enable individuals to communicate and share information and knowledge.

2.2. What Is Internet

According to the international dictionary of English, internet is the large system of many connected computers around the world which people use to communicate with each other. All computers on the internet communicate with one another using the Transmission control protocol/ internet protocol suite, abbreviated to TCP/IP (Joshi, 2004).

The internet is a computer network made up of thousands of networks worldwide. No one knows exactly how many computers are connected to the internet. It is certain, however that these number in the millions and are increasing at a rapid rate. It is not just one network; it is a coordinated union of a multitude of networks all over the world. Any computer users on internet can contact another user on the internet anywhere in the world. The internet is available to anyone who wants to use it. A majority of the internet users are college students, business man, professionals etc and accessing vast net has become a way of life (Upadhyaya, 2000).

According to Upadhyaya 2000, Internet is network of networks and global LAN (Local Area Network) where millions of computers are connected to each other. An internet user has access to a wide variety of services such as:

- Electronic mail
- File transfer
- Vast information resources
- internet group membership
- interactive collaboration
- Multimedia display
- real time broadcasting
- shopping opportunities etc

2.3. Electronic Mail (e-mail)

Electronic mail (often abbreviated to e-mail) is the transmission of textual materials from one place to another using electronic means for capture, transmission and delivery of information. An electronic mail system is a method of electronically sending message, mail or documents. It is also known as electronic delivery systems or electronic documents distribution/communication. The electronic mail seeks to replace the postal, mail, telephone conversation and face to face meeting (Basandra, 2001).

Electronic mail, e-mail allows computer users locally and world wide to exchange message. Each user of e-mail has a mailbox address to which message are sent. Messages sent through e-mail can arrive within a matter of seconds. A powerful aspect of email is the option to send electronic files to a person's email address (Joshi, 2004).

2.4. World Wide Web (WWW)

According to Title, The World Wide Web (WWW or Web) is one of the many services available on the internet and on private networks. It began at the European Center for Nuclear Research in March 1989.

It is system of internet servers that supports hypertext to access several internet protocols on a single interface almost every protocol type available on the internet is accessible on the web. It has also its own protocol that is Hyper Text Transfer Protocol, or HTTP (Joshi, 2004).

The world wide web also call the web ,www and w3, is information space on the internet where hypermedia documents are stored and can be retrieve by means of unique addressing scheme (Upadhyaya, 2000).

The www consists of files called pages or home pages containing links to documents and resources throughout the internet. www lets us browse a large, worldwide set of services and documents using a tool called hypertext. As information is displayed, certain keywords are highlighted, and we can select more information on those keywords (Basandra, 2001).

2.5. Origin and Growth of Electronic Media

2.5.1. Telephone:

Telephone comes from the Greek word tele, meaning from afar, and phone, meaning voice or voiced sound. Generally, a telephone is any device which conveys sound over a distance. A string telephone, a megaphone, or a speaking tube might be considered telephonic instruments but for our purposes they are not telephones. These transmit sound mechanically and not electrically. A standard dictionary defines the telephone as "an apparatus for reproducing sound, especially that of the voice, at a great distance, by means of electricity; consisting of transmitting and receiving instruments connected by a line or wire which conveys the electric current. On March 10, 1876, in Boston, Massachusetts, Alexander Graham Bell invented the telephone. Thomas Watson fashioned the device itself; a crude thing made of a wooden stand, a funnel, a cup of acid, and some copper wire. But these simple parts and the equally simple first telephone call -- "Mr. Watson, come here, I want you!"

(http://www.privateline.com/privateline_com Telephone History Page One.htm)

The history of the public telephone actually begins in the late 1880's but it was not until the early 1900's that telephone kiosks started to appear. Many early kiosks were silence cabinets and inside shops & other public places and had attendants who would do most of the work. In Nepal Telephone service first started in Kathmandu in 1913. The development of systematic telephone services followed the establishment of the telecommunication Department in 1959 (Rana, 2001).

Tele- communication services first started in Kathmandu in 1913. The development of systematic telephone services followed the establishment of the telecommunication Department in 1959. At present, direct international telephone linkage has been established with 131 countries around the world. Till July 2001, Nepal Telecommunication Corporation (NTC) has distributed 250,000 telephone lines in Kathmandu valley while approximately 55,000 telephone lines are distributed outside the Kathmandu valley. NTC has access to telephone in all 75 districts of the country but only 66 districts have operational exchanges, which make the call cheaper. A telecom regulatory body

called Nepal Telecommunications Authority (NTA) has been recently formed as per the guidelines of the new Telecommunication Act 1997. Besides women living in the centres, others do not have access to telephone services (Rana, 2004).

The number of distributed lines increasing from approximately 65,000 in 1992 to over 4,78,204 (fixed line), Post-paid Mobile Subscribers 1,02,219 and Pre-paid Mobile Subscribers 2,46,400 till 14 April, 2006 (Baisakh 1, 2063). (NTA, 2006)

United Telecom Limited (private sector basic telecommunications operator based on WLL technology) has started its own International Gateway from 19th April 2004 and is providing its service in Kathmandu Valley. Total subscriber of WLL telephone service is 45,032 as of 14 April, 2006 (Baisakh 1, 2063).

Spice Nepal Pvt. Ltd. (private sector mobile operator) has started its operation from 1st October, 2005. Total subscriber of SNPL is 109759 (1365 post paid & 108394 pre-paid) as of 14 April, 2006 (Baisakh 1, 2063). It has recently started its service in Pokhara and Hetauda.

Limited Mobility service is introduced as a new service to allow movement within the local calling area. United Telecom was granted license on Chaitra 11, 2062 (24 March, 2006) and it has already a subscriber base of 3000.

The total telephone penetration rate (i.e. 1 phone to 100 citizens) in Nepal is around 3.66% (2.12% in fixed line + WLL + Limited Mobility and 1.54% in mobile). Total Population is assumed to be 2,53,42,638 (www.cbs.gov.np).

2.5.2. Radio

Radio Nepal was established in April 01, 1951 to inform the public about government activities and it is still owned by the government. In a mountainous country like Nepal, radio broadcasting has proved to be a very effective medium in disseminating information, educating people and entertaining the masses. Eighty to ninety percent of the population listens to radio Nepal.

In 1970s, the government developed the concept "Communication for Development". Radio Nepal first started broadcasting programmes on Agriculture, Health, Forestry, Woman Development, Environment and children. By mid 2000 Frequency Modulation (FM) radio licenses were issued to 12

private groups and six were already broadcasting programmes. FM stations have also been established in palpa, Rupendehi and in jumla it's in testing phase. FM broadcasting stations have gained a wide support from the public as it addresses their needs (Rana, 2001).

2.5.3. Television

Nepal Television (NTV), which is a government, owned channel was started as a project in January 1985 and started broadcasting programmes from December of the same year. Besides NTV, there are other private channels like Kantipur, Image, Nepal, Channel Nepal, Shangrila and space Time. The two major constrains to extend television broadcasting are lack of electricity and the hilly and mountainous terrain. Rural people can now watch the Nepali TV channels provided they have a electricity, a TV set and cable connection. There are around 80 cable televisioin companies operating in the country (Rana, 2001).

2.5.4. Internet

The term internet is the network of network with the features of the electronic mail (e-mail) and messages which directly related to a technology developed to assists people with disabilities. This concept of internet was released in the mid-1960s at the height of the Cold War. The US Department of Defense (DoD) wanted a command and control network that could survive a nuclear war. To promote this concept DoD turned to it's research arm, ARPA (Advance Research Project Agency) and letter it is tuned to ARPAnet. Sometime in the mid-1980s, people began viewing the collection of networks as an internet, and this number growth continued exponentially. When a new application called WWW (World Wide Web) introduced which did not change any of the underlying facilities but made internet easier to use. By 1990s the Internet had grown to 3000 networks and 200,000 computers. In 1992, the one millionth computes were attached all over the world (Tanenbum 1997).

The Internet was first introduced into Nepal in 1993 in a venture of the Royal Nepal Academy of Science and Technology (RONAST) and a private company, Mercantile Office Systems (MOS) for the use of transfer e-mail messages of RONAST's scientific community, from Education and Research Network

(ERNET), Bombay. In 1995, a second company, World Link, set up a similar service to the public at a lower price through a cheaper connection to Canada (Magar, 2002). Later in 1997 Nepal government had passed its first telecommunication act, which took into account advances in information and communication technologies. Until that time, all telecommunication was operated by Nepal Government. The new ISPs had been overlooked previously, regarded as nothing more than users of telephone lines, the same as users of fax machines. The new regulations created a licensing structure for private ownership and operation of all forms of telecommunications. While licensing of land-line systems required a great deal of capital and experience on the part of the licensee, VSAT (Very Small Aperture Terminal) licenses and technology were within the reach of the ISP companies, who were now required to apply for e-mail and Internet service licenses (NTA,1997).

The private VSAT connections reduced the Internet cost drastically, and Nepalese started to subscribe particularly to the e-mail services in growing numbers. There are currently 31 ISPs in the country. There are now more than 25,0000 Internet accounts in the country. Now there are numerous Internet cafes in Kathmandu and other main cities and many individuals rely on these for access. The cost of access at these cafes is extremely low; less than 20 NRS per hour. Young people, in particular, are being drawn to the use of e-mail and the Internet. Among them vast majority of young users download games and music. Chat groups are particularly popular with young people. Older people use e-mail to keep in touch with colleagues, friends, and relatives overseas. In-country, they use e-mail as a more efficient way to transmit documents and official and important communication. But still there are very few people care about its power to access information (Upadhaya, 2003).

2.5.5. Computer

We live in the computer age. Most of our day to day activities are being influenced by the use of computer. While in areas like science and technology improvements can't be achievements without computers. It has become necessary for everyone to have a basic knowledge of computer (Saxena, 1998).

According to international dictionary of English, Computer is an electronic machine which is used for storing, organizing and finding words, numbers and pictures, for doing calculations and for controlling other machines (Cambridge, 1995).

Computer is an electronic device that can perform mathematical and logical operation at very high speed (Joshi, 2004).

Basandra, 2001 says that a computer may be defined as a machine that can solve problem by accepting data, performing certain operation and presenting the results of those operations under the direction of detailed step by step instructions. He also address that a computer is a machine that handles data. Data are facts that are gathered and entered into the computer. The computer stores, retrieves, sends, receives, analyzes and synthesizes the data to produce information. The term computer is used to describe a device made up of a combination of electronic and electromechanical components. By itself, a computer has no intelligence and is referred to as hardware. A computer or computer system does not come to life until it is connected to the other parts of its system. A computer system is a combination of five elements. They are as follows:

- Hardware
- Software
- People
- Procedure
- Data/ information

According to Saxena 1998, there are five major characteristics of computers which have made them so powerful and useful. They are as follows:

- Speed
- Accuracy
- Consistency
- Storage capacity and
- Flexibility

The Computers have with us for a very long time. About 3000 to 5000 years ago, Chinese introduced the abacus. It is manual calculating device and is still used as a calculator in china. (Joshi, 2004) In Nepalese context, Nepal does not have a long history computer. Nepal entered the computer age when it brought IBM 1410 for the population census of 1971 and then formed National Computer Centre (NCC) in 1974. Nepal Electricity and National Computer Centre (NCC) were the institutions, which started using fourth generation computers in 1981. Later on, the Faculty of Civil Engineering of Institute of Engineering brought microcomputers to launch computer courses in 1992. (HLCIT, 2004a). Till 1991 there were 5694 and till 2003 there were 264371 numbers of computers were imported from abroad (HLCIT, 2004b).

2. 6. Brief Overview of Nepal's ICT Sector

2.6.1. General Background

Information and Communication Technology (ICT) today has appeared to be one of the World's biggest industries. The international market for software and ICT enabled services is expected to increase to \$8.5 trillion by the year 2008 (da Silva, 2004). ICT sector is, therefore, likely to play a dominant role in the economy of the world as this sector has become an activity of global importance and significance. The ICT sector has emerged as a sector with greater economic implications. The promotion and development of ICT sector can play a vital role in accelerating the development process of the country. Considering the importance of information and communication as a necessary infrastructure for the overall development of the country, Continuous efforts are required for the development of this sector including the adoption of Modern information technology (HLCIT, 2004a).

Many governments of the world have placed an emphasis on the growth and development of ICT sector in recent years and Nepal is no exception. In order to accelerate economic growth, this sector has shown high potential to generate income, foreign exchange and employment. The ICT sector is important for Nepal as there is availability of skilled manpower and scope exists for their further development. Like other sectors of the economy, this sector does not

produce undesirable environmental side effects. Moreover, this sector promotes entrepreneurship innovation, knowledge and ideas (STPI, 2001).

An important feature of ICT sector is that ICT is related to almost all other sectors of the economy, e.g., education, trade, industry, agriculture, services, entertainment, research, and so on. Hence, development of this sector would lead to the development of all other sectors as well. This sector can act as a lead sector as ICT has changed many aspects of human activities like communications, business, services, and other sectors (HLCIT, 2004b).

The Tenth Plan of Nepal has recognized the role of information technology which undoubtedly plays a vital role in socio-economic development of the country. Nepal can benefit a lot from information technology by promoting ICT related industries. However, the Nepalese ICT sector is relatively new and still small. Though computers are being used by government and non-government agencies, the ICT sector is yet to be well structured and organized in Nepal (NPC, 2002).

2.6.2. Brief Historical Perspective

The installation and operation of Main Frame IBM-141 computer in 1971, in the National Computer Center (NCC) at the Kathmandu in 1971 for the National Population Census, saw the advent of Electronic Data Processing Technology in Nepal. NCC was established with the purpose of giving computer related services to government bodies, developing computer manpower and enhancing computer consciousness. Later on NCC used ICL-2950/10 Main Frame computer a DG Mini-computer, a Prime Mini-computer. Including Ministry of Environment, Science and Technology, there are National Information Technology Center and High Level commission for Information Technology (HLCIT) which are responsible apex body for implementing ICT in Nepal.

According to Computer Association Nepal (CAN) there are 2550 ICT related organizations including all the ICT companies, Academic Institutions, Trading and Service Providers (CAN, 2004).

Urban centers other than Kathmandu valley suffer from specialized man powers such as Developer and System Analyst, Programmer, Network Engineer,

Database Administrator, Web Developer and Graphics Designer, MIS Expert, Computer and Electronic Engineer, IT Marketer and IT Lecturers. The proportion of employed ICT workforce is estimated at 69.4% in Kathmandu valley and 30.57% out side Kathmandu valley (HLCIT, 2004A).

With a primarily agrarian economy and rural population in Nepal, ICT is an ideal vehicle for achieving its poverty reduction development goal. One of the difficulties of extending development infrastructures and services in Nepal is its rugged terrain. Its topography consists of 17% flat land (the Terai) and 83% in the hills and rugged mountains. Approximately 85% of the total 24.8 million (2004 estimates) live in rural areas and more than half in the mountains. Electrification through the national grid has covered only 40% of the country while concerted efforts have been made to electrify other areas through alternative energy means like solar photovoltaic systems and micro-hydro projects. The overall literacy rate is 54% (CBS, 2001) and the per capita income is less than US\$210. As against the urban areas, development indicators of rural areas point to low access to communication facilities, markets and services. Rural people manifest with lower status in education, health and sanitation and empowerment.

Despite ambitious plans and programmes set in the Tenth Plan such as establishing 1500 telecenters within the plan period (2002-2007), about 50 telecentres have been established. Likewise, slightly over 50% of the total 3915 VDCs have been extended telephone services as against the planned 100% coverage during the plan period. The plan also emphasizes the involvement of the private sector in the development and promotion of telecommunication in rural areas. It also has incorporated the policy of expansion of internet services to all VDCs to develop IT sector in the rural areas.

According to the report of Nepal Telecommunication Authority the following rural service penetration levels as of 14 April, 2006 (Baisakh 1, 2063). Percentages identified in the table refer to the percentage of VDCs with at least one PCO in the specified region.

Table - 2.1: PCO in different region

Region	Total VDCs	VDCs Served with at least one PCO	% of VDCs Served with at least one PCO
Nepal	3,914	1,974	50.4%
Eastern Development Region	893	462	51.7%
Central Development Region	1199	602	50.2%
Western Development Region	864	498	57.6%
Mid-Western Development Region	575	218	37.9%
Far-Western Development Region	383	194	50.7%

Source: www.nta.gov.np

Table - 2.2: Subscribers of different Services as of 14 April, 2006 (Baisakh 1, 2063)

Sn	Service	Subscribers
1	Fixed line telephone	4,78,204
2	Post-paid mobile (NDCL + SNPL)	1,02,219 + 1365 = 1,03,584
3	Pre-paid mobile (NDCL + SNPL)	2,46,400 + 108394 = 2,86,355
4	Internet (with e-mail)	50,000
5	Wireless in Local Loop (NDCL + UTL)	51,000 + 4560 = 55,560
6	GMPCS	858
7	Internet users (50,000x5)	2,50,000 (Assuming 5 users per subscriber)
8	Limited Mobility Service	3,000

Source: www.nta.gov.np

2.6.3. ICT Related Organizations

There are various types of organizations involved in ICT related activities. They include Academic Institutions, Government Agencies including ministries and departments, International Organizations, Local Non-governmental Organizations, Professional and Private Organizations. List of ICT companies, academic institutions, service providers of Nepal are given in appendix I.

2.6.4. Academic Institutions

ICT related education is a recent phenomenon in Nepal. Earlier, students used to go out of the country for ICT related education. At present, there are five

universities in Nepal, of which four universities have been administering ICT related programs leading to various forms of bachelor, master and doctorate degrees. The status of Academic Institutions in Nepal is presented below.

Table – 2.3: Academic Institutions in Nepal

Institutions	Number of college	Percents(%)
Thibhuvan University	252	78.8
Kathmandu University	12	3.8
Purbanchal University	33	10.4
Pokhara University	19	6.0
Total	316	100.0

Source: www.cbs.gov.np

2.6.5. ICT Related Educational and Training Programs

Proper mobilization, utilization and enhancing quality of ICT workforce is necessary for ICT sector development. For this, it is essential to review and expand ICT courses in universities and colleges together with training and orientation to increase both quality and quantity of ICT workforce. In Nepal, there are number of academic and training institutions that provide ICT related education and trainings. ICT related education/training institutes offer basic/office package/windows, graphics, webpage ,hardware, networking, accounting, electronic, diploma, programming, software, language, database, digital view, BIT/BCA, DCA/DSI, advanced courses, ideal courses like DHNT, AutoCAD, CICA and so on. The survey revealed that there were about 39,808 students/trainees in the academic and training institutions in 2004.

2.6.6. Business Organisations

There are several business organisations in ICT sector, which may be classified as firms dealing with Hardware and Software, Internet/e-mail (ISP), Cyber nets, Domain registration, Web-housing and Designing, and Computer Training and Education. The largest number of firms are the firms dealing with Training and Education (67.84%), followed by the firms dealing with Hardware and Software (15.74%), firms dealing with Cyber Net (13.50 %), and firms dealing with Domain Registration and Internet Service Providers (less than 2 %) (CAN, 2003).

2.6.7. Government Agencies

The government agencies form one of the important ICT users. The government agencies having access to web-site and networking although limited in number at the moment, the situation is likely to be changed soon. There is a growing awareness among the various ministries, departments and other agencies for access to website and networking of the computers. The facilities of web-site and net-workings have already started in many of the ministries and departments.

Table - 2.4: Government Agencies Web-site Net-working

Government Agencies	Web-site	Net-Working
Ministers	31	10
Departments	23	28
Total	54	38

Source: www.most.gov.np.

2.6.8. International Organizations

There are several international organizations operating in Nepal. The international nongovernmental organizations, which are currently under operation in Nepal constitute 114 as reported by Social Welfare Council (SWC). There are more than two dozens of bilateral and multilateral organizations operating in Nepal. They are all equipped with modern ICT facilities.

2.6.9. Local Non-governmental Organisations (NGOs)

There are altogether 16,104 local NGOs scattered all over the country. However, NGOs with well equipped ICT facilities are limited. On an average, the number of NGOs per district is observed to be 250. In this way, NGOs in Kathmandu valley (Kathmandu, Lalitpur and Bhaktapur districts) is estimated at 645. NGOs with ICT facilities including websites and networking outside Kathmandu valley are negligible. However, the local non-governmental organizations are also interested in having ICT facilities in their organizations.

2.7. ICT Service In Rural Area

HMGN has taken an approach of taking ICT enabled services in all the VDCs of the country by the end of the Tenth Plan period. The sector goal is to make

affordable access of ICT for the rural poor and the application of ICT to support rural development. Recognizing the important role of extending ICT services in the rural areas to contribute to the poverty alleviation linked developmental goal of the country, the rural information centre was highlighted for the first time in the IT Policy 2001 (HLCIT, 2004a).

The Tenth Plan envisages setting up 1500 rural information centers during the plan period (2002 to 2007) to connect the rural areas with the rest of the world and to global information that would contribute to the development of these areas. However, only about 60 telecenters have been established in 23 districts of the country under the sponsor of different agencies. HLCIT has established 6 and NITC 15 including 9 set up under IT for Development program of UNDP and which were transferred to NITC. In the non-governmental sector, Rural-Urban Participation Project (RUPP) of Ministry of Local Development has 7 centers while Rural Education And Development (READ) has 15 centers. SAP Nepal has established 10 resource tele-centers (HLCIT, 2005) in various districts which are equipped with one or more computers, printers, internet connectivity and scanning machines basically for secretarial use. While RUPP focuses on networking of urban markets with bordering rural markets, (RUPP-2003) READ works for library development in various parts of Nepal (READ, 2005). Likewise, in the private sector, fourteen telecenter are being operated by Nepal Wireless Networking Project (NWNP) in Myagdi district. NWNP focuses on education and telemedicine (Pun et al. 2006).

2.8. IT Policy 2000 in Nepal

Realizing the importance of IT, Nepal's first IT policy was announced in the year 2000 with the vision of "Placing Nepal on the global map of IT within the next five years (NPC, 2000). The objectives of the policy are as follows.

2.8.1. Objectives

- A. To make Information Technology accessible to the general public and increase employment through this means.
- B. To build a knowledge-based society.
- C. To establish knowledge-based industries.

IT Policy 2000 adopts some strategies and policies to accomplish the above-mentioned objectives through rapid development and extension of information technology in a fair and competitive manner. The strategies cover wide spectrum of information technology including E-Commerce (E-business), tele-medicine, tele-processing, distant learning, from internet. Similarly, action plan has been drawn to implement the national IT Policy and fulfill its objectives. The strategy and policy of IT policy are as follows.

2.8.2. Strategies

- High Priority to R & D
- Development of Competent IT Manpower
- Encourage Domestic and Foreign Investment
- Promotion of e-commerce
- IT, a tool to e-governance
- Promotion of IT industry
- Computer Education Curriculum starting from the school level
- IT Network extension to rural areas.
- Export of IT services worth Rs. 10 billion within next 5 years

2.8.3. Policies

The policies to be pursued for the implementation of the above-mentioned strategies shall be as follows:

- Declare IT sector a priority sector.
- Adopt one window system
- Priorities R & D in IT
- Provide Internet facility gradually to all VDCs
- Assist and encourage educational Institutions for domestic and Foreign Training in IT
- Computer the system in all Government Offices
- Develop physical and Virtual IT parks
- Use IT to promote e-commerce, e-education, e-health etc.
- Establish Venture Capital Fund in PPP
- Enact necessary laws to provide legitimacy to IT application.

IT policy and strategy was formulated by National Planning Commission of Nepal Government in the year 2000. The subsequent follow-up and implementation activities saw the formation of high level institutional entities aimed at ensuring effective implementation of IT policy and launching activities aimed at mainstreaming ICTs into national development agenda. The formation of High Level Commission for IT under the Chairmanship of the Prime Minister and that of National Information Technology Centre, as its secretariat collectively provide cogent institutional framework for the development of

ICT sector in the country. These encouraging policy responses have further been complemented by the recent passage of Electronic Transaction Act, 2061 and submission of revised IT policy to the council of Ministers for consideration and approval (www.hlcit.gov.np).

IT policy and other regulatory and facilitative instruments have created conducive environment for the growth of ICT sector in the country. Among others, the policy embraces the notion of encouraging private sector participation in the area with a clear focus on attracting foreign investment. In addition, IT policy also lays equal emphasis on the role of infrastructure. The construction of IT Park at Banepa is a clear step in this direction. In addition, the policy puts forth provisions aimed at promoting point of presence of ISP's to areas outside Kathmandu valley (HLCIT, 2004c).

Guiding principles of Nepal's IT policy

- Promote private sector participation in the development of ICT sector
- Create conducive environment for foreign investment in ICT sector
- Take initiatives aimed at mainstreaming ICTs into national development agenda
- Leverage power and resourcefulness of ICTs to achieve wide ranging socio-economic objectives.
- Promote diffusion of ICTs into underserved and remote areas and among socially disadvantaged communities.

2.9. National Strategy Paper on ICT

The Tenth Plan of the government emphasizes the development of the ICT sector to achieve overall development targets. Following are the initiatives taken by the Tenth Plan in the development of information and communication technology sector:

- Encouraging private sectors for development and promotion of information technology sector in order to eradicate poverty.
- Developing sustainable and competitive information technology by using modern technologies in the rural areas.
- Introducing new development programmes in information technology for socio-economic development

2.9.1 Major Goals of the 10th Plan

- Providing 40 telephone service facilities to every thousand people
- Providing telephone services in every Village Development Committee
- Developing sustainable and competitive information technology by using modern technology in the rural areas.
- Introducing new development programmes in information technology for socio-economic development
- To encourage private sectors to be involved in providing services related to Information and Communication.

2.10. Telecentres/Communication Center: Important Vehicles for Bridging Digital Divide

A telecenter may be defined as a “shared site that provides public access to information and communications technologies.” Just as the post office or telegraph center provided people with public access to communication services, telecenter today serve a similar purpose. However, today’s telecenter are digital, with access to email, the Internet and the World Wide Web. Telecenters are growing everywhere in the emerging nations. They play an important role in the building of human capital. The definition of a telecenter is as varied as the activities it offers. Some telecenters merely provide telephone services and

some others provide basic internet service. They may also include access to fax, phone, and photocopying. In other parts of the world, these telecenters may include targeted activities in education and training, health, e-commerce, e-government services and more. Telecenters also vary from one model to another, even within a country. In some other places school computer labs are turned into telecenters after school hours – these are called School-based Telecenters (SBTs). Some of them are converted into Multipurpose-based Telecenters (MPTs) (Colle and Roman, 2003).

Nepal's first Rural Tele Centre was officially inaugurated on August 29, 2003 at Bhimphedi Rural Market Centre (RMC). The launching of the Tele Centre at Bhimphedi marked beginning of planned establishment of Tele Centres in selected wards and rural market centres in Nepal where Rural-Urban Partnership Programme has been launched (Adhikari, *et al.*, 2003).

The Programme has developed a strategy to establish Tele Centers in the complete ownership of the community. Till date, RUPP supported to establish Tele Centers in Bhimphedi VDC, Kohlpur VDC, Itahari Ward No. 2, Devithan TLO, Dulegaunda VDC, Rangeli VDC, Biratnagar Ward no. 6 & 16 and Pokhara Ward no. 18. Realizing the good experience of RUPP in Tele Center, His Majesty Government of High level commission for Information Technology (HLCIT), National Information Technology Center (NITC), Rural Urban Partnership Program (RUPP), UNESCO and some private organizations has been established more than 30 telecenters in different parts of Nepal (Adhikari, *et al.*, 2003). List of telecenters established by different organizations in Nepal are provide in appendix II.

2.11. Digital Divide

Most of us do not live in the digital age. Over 80% of the world's population does not have access to information communication technologies (ICTs). The gap between people who are able to use and benefit from technologies and those who are not is referred to as the "digital divide". Only ten percent of the world's population uses the internet and this access is skewed. While 58% of people in US and Canada are users, only 5% in Asia Pacific and less than 1% in Africa have access. This divide is also uneven within countries and

communities. In the United States, only 31 percent of students enjoy Internet access at home and only 56 percent of students have Internet access at school. This phenomenon can be conceived of as a gap in terms of ICT implementation, access and usage rates occurring between regions, developing and developed countries, mature and emerging markets, or within countries or communities (Aalami and Pal, 2005).

The digital divide combines a few phenomena together e.g. language divide, income divide, gender divide, Education divide, urban-rural divide, access and facilities divide, etc. In Nepal and other developing countries ICT has already created a social divide. It has spawned the divide between urban and rural between men and woman, between rich and poor, between educated and illiterate- rather than reducing the gaps. The digital divide is pervading gradually not only between the North-South but within individual countries (Mahmud, 2005).

Many believe that access to information communication technologies (ICTs) will minimize this gap and bring human progress, improved standards of living, and the benefits associated with informational economies.

Bridging the digital divide two of the more powerful media are email/internet and interactive websites, which are both example of online networking forums. These tools enable individuals to communicate and share information and knowledge (Rana, 2001).

2.12. Documentation of ICT Related Report, Thesis, Newsletter and Journals.

The study has stated that provision of ICTs in rural areas in community should be demand driven. The situation of demand driven can only be reached by building awareness of the people for ICTs which is one of principles on which rural ICT development is proposed in the study (MOIC, 2006).

According to the ILO ICTs can contribute significantly to socio- economic development, but, investment in them alone are not sufficient for development to occur (ILO, 2001).

Telecommunication is a necessary but not sufficient condition for economic development (Schmandt *et.al*, 1990).

Martin and Mc keown (1993) suggested that the application of ICTs is not sufficient to address problem of rural areas without adherence to principles of integrated rural development. Unless there is minimal infrastructure development in transport, education, health and social and cultural facilities. It is unlikely that investments from ICTs alone will enable rural areas to cross the threshold from decline to growth.

The internet has also already proved itself in developing countries in increasing both the incomes and quality of services received by citizens. Using internet based system to make phone calls has reduces the cost of international communication: the internet is being used to ease the export and import the goods; and countries such as India are earning billions of dollars a year exporting IT services and software (Grace *et al.*, 2001).

Sitaula (2006) found that the modern IT and the development of the internet has motivated the people of 21st century towards the globalization. The implementation of internet updates the people according to the change of the human civilization around the modern world . The result of the study shows that the internet has became the best source of education,business, communication, entertainment, medicine etc.The Urban areas are enjoying these facilities and are moving with the change of technology and getting the benefits than the rural people.

The significance of the Internet as a powerful tool for sharing knowledge was emphasized by Joseph Stiglitz, former chief economist of the World Bank, at the First Development Network Conference which took place in Bonn, Germany in December of 1999.

Lawrence and Giles (1999) pointed out that in development work this immense network of networks presents both risks and opportunities. On the risk side, the growth of the Internet has been much greater in the United States and in other developed countries than in the developing world. This may make the Internet a tool of enhancing rather than narrowing the gap between developed and developing nations. This factor, however, is counterbalanced by the

opportunities provided by the greater and more readily accessible knowledge pool the Internet makes available to those with access to it. "Today, a child anywhere in the world who has access to the Internet has a modern Alexandria Library at her fingertips." Indeed, according to a 1999 report, at that time, there were 800 million webpages representing 6 terrabytes of data over 3 million servers.

The importance of the ICTs has been fully recognized by the development community. In 1980 the UNESCO General Conference initiated the international Programme for Development of Communications (<http://www.unesco.org/opi/eng/unescopress/98-58e.htm>).

Thapaliya (2006) observed that information and communication technology in itself is not sufficient condition for developing rural people's life standard. But ICT can be used as a necessary tool to uplift rural people lives from poverty. The study also concluded that a dedicated local person Mr. Mahabir Pun from Nangi of Myagdi district of Nepal has realized it and addressed ICT tool as an integrated approach in primary sector of rural areas such as education, health, good governance, local business and communication in his village. With the support of foreign volunteers, Mr Pun had first introduced a wi- fi network in Myagdi district in 2003 which is the first mountain village with internet connection in Nepal.

Maharjan (2006) mentioned that by the help of information technology, students will be able to search the required contents and information on the internet .Through the use of chatting and audio video conference techniques, students will get chance to share their knowledge and also can send email with different attachments to other students or teacher to solve his/her problems. So use of ICT in village provide a lot of benefits to the students and teacher.

A study conducted by Baskota (2005) entitle "Possibilities of telemedicine through wireless Ethernet technology in western Nepal" concluded that telemedicine is a new concept in medical world. The implementation of this technique in other developed country proven that it can bring evolution in medical science. It is quite time saving for better improvement on health

service and also shows that the bringing telemedicine can't obstacle in any rural people 's life but they can get benefit from this advance service in health care.

A farmer in Parbat district continually received agricultural market information via the Internet available through the telecenter located in Katuwa Chupari. He discovered that certain variety of cauliflower grown in Nepal is in demand for a pickle making in South India. Based on this information from the Internet, he decided to grow this variety of cauliflower in place of rice and his income grew eight times higher. A typical situation in the future where Information and Communication Technologies (ICT) driven services offered at the tele-center determines success and failure of the rural farmers. If designed and implemented properly tele-center can play an important role towards reducing the isolation and marginalization of rural communities by encouraging participation in decisionmaking process that directly influences their lives. Through telecenter, rural population can coordinate development efforts in local regions for increased efficiency and effectiveness. They are able to gain information related to agriculture, education, health, nutrition, and small business entrepreneurship (Shah, 2005).

For the first time in Nepal, the citizens would be able to collect the citizenship card through the computers. Ministry of Home in coordination with the High Level Commission for Information Technology launched the system in the three districts, viz Kathmandu, Bhaktapur and Lalitpur. This system will enable the Government to keep reliable and fast retrieval of citizenship data of the citizens. The government has issued near about 10.2 million citizenship card to the citizens. With the help of this Computerized system the records of the citizenship card can be viewed anywhere from the Country (HLCIT, 2005).

Increasing numbers of NGOs in Nepal are using e-mail and the Internet in their work. The main initiative that spurred the use of these technologies by NGOs was the Electronic Networking for Sustainable Mountain Development project, or Electronic Networking Project (ENP) for short, which began in April 1997 (HLCIT, 2004b).

Telemedicine is one of the important services provided through internet in different parts of the world especially in rural areas where modern health care

facilities such as sophisticated treatment equipments, manpower are not available. There is a practice in which doctor in city sitting in front of computer checks his patient living in remote areas through internet. Such cases are not new in Nepal too. Recently model hospital, Kathmandu provided same types of treatment to the Historic Janaandolan, 2063 injuries by taking instructions of American Doctors (Kantipur, 2006).

Richardson (1997) says that In rural areas, access to communication and information sharing systems can provide simple, but dramatic benefits. For example, the HealthNet Internet service that operates in Zambia is able to provide rural health care professionals with access to medical databases and rapid medical advice from specialist physicians around the world. Such information can literally make the difference between life and death. In Mexico and Chile, rural farmers are able to obtain timely and accurate commodity prices from Internet and fax services, and use this information to bargain for prices from brokers that are 15 to 20 percent higher than they were previously able to obtain (personal communication from a Mexican farmer). Such price differences, within an agricultural system with increasing input costs, tight profit margins, and global competition, can make the difference between a farmer staying in business or losing the farm.

CHAPTER - III

METHODOLOGY

Research methodology is a systematic way to solve the research problem. This study aims to analyze the socio-economic impact on internet users. In order to fulfill targeted objectives, this study has used both primary as well as secondary data. It is mainly based on primary data. For the success of this study, following methodology has applied to ascertain the data or information from field.

This study has carried out on the basis of exploratory research design because the study has focused on the impacts of internet/email on internet user, their activities/participation and benefit to them. Moreover, the study has also gathered information on the trend of awareness, attitude, socio-economic change, lifestyle, education condition and effective use of internet. In this regard it was an exploratory research. The study has also examined the workload reduction and time and money saving of the internet users.

3.1. Research Design

It has documented quantitative as well as qualitative data. Structured questionnaire was used to collect the quantitative information. Specifically purposive sampling was used. Limited number of respondents has interviewed for the primary data collection and other required information.

3.2. Rationale of the Selection of Study Area

Nangi village, ward no 2 of Ramche Village Development Committee (VDC) is situated in the north part of the Maygdi district. It is in 8-9 hours walking distance from the district headquarter, Beni. Since 1997 computer education has been started in Nangi village by Himanchal Higher Secondary School and from last 3 years computer science study is going on in 10+2 level.

Internet connection in this village is probably the first attempt in the Himalayan remote areas of Nepal. Through wi-fi technology internet connection in this village was established in 2003 from Pokhara (Nadipur, Dip - 925 m) and Mohora (3320 m) rely stations by the initiation of Nepal Wireless Project. After

internet invaded the village, its services attract more and more surrounding villages. Now 14 high hills villages of three districts viz. Kaski, Myagdi and Parbat are benefited from the internet based services.

Himalayan Higher secondary School in Nagi village is the central office of Nepal wireless project and first Internet benefited village so, this village is selected for the study. E-mail and Internet service is open to all the general people in the village. Beyond this, tele-medicine, tele-education and local e-commerce programs are also running via. wi-fi enabled intranet

3.3. Data Collection

The study has mainly based on primary data. According to the necessity secondary data has also used to support the study. Primary data has collected from interview using structured questionnaire. PRA tool has also been adopted to collect primary data.

3.3.1. Primary Data Collection

3.3.1.1. Interview

Different people who are using e-mail/internet from different walk of life were selected and asked number of questions regarding internet and its impact on rural people. Key informants like internet service provider, telecenter heads/staffs, School and village library head where email/internet services is available were interviewed to achieve more data about internet and its impact. Observation of the internet user of rural people behaviors and activities was another way of obtaining primary data, which was also adopted.

3.3.1.2. Questionnaire

A list of questionnaire that covers almost all aspects of the objectives of the study was prepared and disseminated to the internet user for filling them up. Structured questionnaire was also used. Apart from key informant interview and focus group discussion, convincing number of respondent was also selected through purposive random sampling method.

3.3.1.3. Field Visit and Observation

The telecentres, village school ,health center and library where Email/internet services is available was visited and the activities going on was observed. Relevant data was recorded while observing the rural people activities and behaviors in the telecentres.

3.3.1.4. Focus Group Discussion

For the very specific data collection, 5 focus group discussions consisting 10-15 people each was conducted. This participant was user of the internet and other interested people. The focus groups discussion was held in separate age groups with the active participation of internet users including women/girls. Discussion was focused on interest of participation on internet, advantage of internet, changes brought by internet on public's socio economy, attitude and behavior change, related problems they are facing and more other relevant issues.

3.3.2. Secondary Data Collection

Secondary data was obtained through various survey reports, journals, related articles, books, booklets and previous published unpublished researches. Literature review was also be done for the same purpose.

3.4. Sample design

The universe of the study is Nagi Village, ward no. 2 of Ramche Village Development Committee in Myagdi district. Communication centre is located inside the Himalayn higher secondary school and remains open daily at 7.00 AM to 5.00 PM. In the emergency case villagers can use the services at any time. Five days long observation was made in the communication centre, documenting details (Name, age, sex, occupation, purpose of visit, time duration etc.) of the internet users.

Visitors come in communication centre for different purposes like learning computer typing, get computer software and hardware trainings, and use internet based services. The objective of the study is to derive impacts of internet and its related services on the respective users so, based on the total documentation of communication centre visitors during observation periods,

study respondents were selected through purposive sampling. Among total record of 163 visitors documented during observation period, hundred respondents strictly using internet and internet based services were selected for the study taking age, gender, ethnic group, occupation, education as a selection criteria.

3.5. Data Processing and Analysis

The data obtained from the field visit was coded and categorized according to the requirement. Then the coded data was converted into tables with percentages. Simple statistical tools were used to analyze those coded data. After data processing, important data related with the objectives was presented in tables, bar and pie diagrams.

3.6 Limitation of the study

Present study is based on the rural people of Nagi village of Myagdi district. The study is very specific like that of case studies. The respondents were selected and limited through the internet users of ward no. 2. The study had also been conducted within a short time period. So, the conclusion drawn from this study is more indicative rather than conclusive. The conclusion can not be generalized for the whole. But the conclusion might be valid to some extent to those areas which have similar geographic and socio-economic settings.

CHAPTER - IV

SOCIO-ECONOMIC CHARACTERISTICS OF THE RESPONDENTS

4.1. General Introduction to the Study Area

Nangi is a small village in the mid-hills of Nepal. Nangi village is located in western Nepal on the Southern flank of the Annapurna and Dhaulagiri ranges of the Himalayas. Dhaulagiri I (8,167 m, 26,795 ft) and Annapurna I (8091 m, 26,545 ft) are the seventh and the tenth highest peaks of the world. This village is between six to nine hours walking distance from the district headquarter of Myagdi district, Beni. The elevation of Nangi village is about 2,260 m. (7,345 ft).

According to CBS total population of Nangi village is 800 (CBS, 2001). It is at the center of five other villages with a total population of about 3,500. Agriculture is the primary source of livelihood for the people of Nangi. The practice of farming is still traditional. The main crops grown in the village are potatoes, corn, millet, barley, beans and buckwheat. About 99% of the people in the village are farmers, and their farming system is only for subsistence. Due to complex terrain and less fertile nature of soil, production from whole year even can't fulfill the food requirement of the family. The main source of the cash income for the villagers is military service. This area is home to the Pun Magars. Young people from this village prefer to join the military service rather than work at other jobs because joining military services generally in UK and India is a part of culture of the Magars. Right now, there are 75 retired soldiers in the village and 40 soldiers are working in the Indian Army.

The weather in Nangi is generally cool and temperate. During the fall (late September to early December), the average temperature varies between 10 to 26 degrees C (50 - 80 degrees F). It is usually sunny and clear, warm during the day and cool at night. In winter (late December to the end of February), the temperature goes below freezing at night, with periodic snowfalls. Spring (March – May) is warm, dry and sometimes hazy. The monsoon season begins in the month of June and can often last through early September. Monsoon winds bring about 200 cm (78 inches) of rain every year, making the landscape especially lush and green at this time of year.

Initial phase of development was started in the village by establishing a primary school in 1956 by the retired Gurkha soldiers of the village who fought in Second World War. These retired soldiers served as teachers during the early years of the school. In 1966, the school was upgraded to include a middle school. Then in January 1993, Himanchal Higher Secondary School had come into existence. Himanchal Higher Secondary School has become the center point of community development in Nangi village, offering basic education and vocational training to the students.

This school runs the Nepal wireless networking project started with Mahabir Pun dreams in 1997 to connect Himanchal High School of Nangi to the internet. The Nepal wireless Networking project was not started as a result of the policies and decisions made by international organization or the Government of Nepal. It started with a dream, and the dream unexpectedly turned in to a project in pursuit of finding ways to bring internet and telephone at Himanchal Higher secondary school, Myagdi district, Nepal.

As the school is at very remote area, lack of trained teachers always became obstacle in every academic years. To solve this problem a USA graduate of the village Mr. Mahabir Pun establish Nepal Wireless Networking Project. The project started in 1997 to connect Himanchal High School to the Internet became successful by his passion, and tireless efforts, even at the worst situation of political conflict in the Nation.

The long-term goal of Nepal Wireless Networking project is to maximize the benefits of wireless technology for the rural population in mountainous areas in order to make their life a bit easier and more enjoyable (*Pun et al.* 2006).

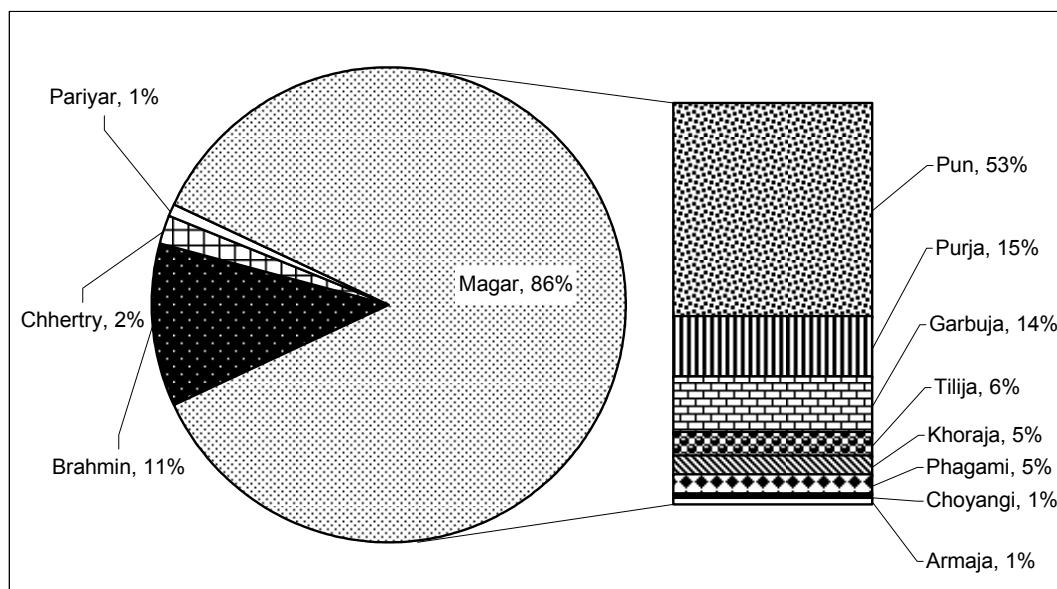
4.2. Social and Demographic Characteristics of Respondents

Questionnaire includes two major sections related to demographic and economic characteristics of respondents. Following section is designed to discuss on the socio-cultural and economic status of the respondents of the study area.

4.2.1. Caste/Ethnic Composition

Based on the sample of the study, the dominant ethnic group is Magar, followed by caste Brahmin, Chhetry and Pariyar. Following Figure 4.1. presents the number of respondents indicating the caste/ethnic group composition.

Figure – 4.1: Distribution of respondents by major caste/ethnic groups



Above Figure 4.1. also shows highest number of respondents from Magars followed by other casts. Out of total Magar community Pun are the highest number of respondents followed by Puria, Garbuja, Tilija, Phagami and Khoraja. Choyangi and Armaja are groups are relatively few. It is clearly evident that Pariyar represent lowest and Magar represent highest respondents.

4.2.2. Occupation

Total respondents were categorized into the six occupations namely Agriculture, Business, Carpenter, Service, Student, and Unemployed. Following Table 4.1 shows the number of respondents in each of these categories.

Table – 4.1: Distribution of respondents by major occupations.

Sectors	Agriculture	Business	Carpenter	Service	Student	Unemployed
Respondents	14	1	1	26	55	3
Percent	14	1	1	26	55	3

Source: Field Survey, 2006

Out of total respondents 55 percent users are students followed by 26 percent service holders, 14 percent agriculture i.e farmers. Similarly, 3 percent account unemployed respondents. The least 1 percent each respondents are represented from business and carpentry services respectively.

4.2.3. Education

The Table 4.2 presented below shows the education level of respondents. Respondents from secondary level are 37 percent and lower secondary level is 35 percent. But there is high variance between high education level 24 percent and primary education level 4 percent. Obviously Internet resource is important to more educated persons.

Table – 4.2: Education of the respondents

Education level	Primary level	Lower secondary level	Secondary level	High level
Respondents	4	35	37	24
Percent	4	35	37	24

Source: Field Survey, 2006

4.2.4. Family Size

Family size was designed into ten groups. Minimum number of family members is 3 and highest number of family is 12. It was categorized after the data collection. Following Table 4.3 presents the distribution of family member.

Table – 4.3: Distribution of respondents by family size

Family Number	3	4	5	6	7	8	9	10	11	12
Respondents	3	31	28	22	7	2	4	2	0	1
Percent	3	31	28	22	7	2	4	2	0	1

Source: Field Survey, 2006

The highest portion by 31 percent of respondents have four members family followed by 28 percent of respondents having five and 22 percent of the respondents having 6 members in their family. The family size with seven to ten members are also considerable. In general, most of the respondents are small family and there is not any single person.

4.5.5. Gender

Both the gender was represented in the study. The male female ratio of the respondents is presented in the following Table 4.4.

Table – 4.4: Distribution of respondents by Sex

Gender	Male	Female
Respondents	72	28
Percent	72	28

Source: Field Survey, 2006

Among total sample, the percent of male is 72 and female is 28. Relatively male have the accessibility into the education and they are educated than the female. Therefore, availability of internet to female respondents is low than the male respondents.

4.2.6. Age

Age of the respondents is categorized into three groups. These groups are 20 or below, 21 to 30, and above 30. Following Table 4.5 shows the frequency table of these three groups.

Table – 4.5: Age distribution of of the respondents

Age group	20 or below	21-30	Above 30
Respondents	62	21	17
Percent	62	21	17

Source: Field Survey, 2006

Among the Internet users most of the respondents are from very young group. The percentage of such respondents within or nearby teenage are 62 percent. Among others the age group of 21 to 30 covers 21 percent and above the age of 31 has covers 17 percent. This result shows internet use is lower among the higher age groups.

4.2.7. Marital Status

Following Table 4.6 shows the distribution of respondents by marital status.

Table – 4.6: Marital status of the respondents

Marrital status	Single	Married
Respondents	77	23
Percent	77	23

Source: Field Survey, 2006

Out of the total respondents more were found unmarried. It is because the age group of the Internet users was found in and around the teenage. Therefore, the survey result shows 77 percent of the respondents unmarried and rest 23 percent married.

Here, further analysis is made to find examine the marital status of respondents by sex. Following Table 4.7 presents the actual result of the marital status between both gender of the respondents.

Table – 4.7: Distribution of respondents by sex and marital status

Single		Married	
Male	Female	Male	Female
54	23	18	5

Source: Field Survey, 2006

Relatively more male are found unmarried than the female Nevertheless, the result of marital status is not very meaningful for the further analysis.

4.3. Economic Status of the Respondents

Landholdings, livestock holdings, sources of income, and annual income are the major areas investigated to find out the economic status of the respondents. Analysis of economic situation is relevant to find out the context of Internet users too.

4.3.1. Landholdings of the Respondents

Landholding of the respondents determines their economic status. More landholding shows the strong economic condition whereas the little shows the poor economic status of the respondents in the study area. The respondent's family landholding is taken as the basis of investigation.

Table – 4.8: Family Landholdings of the respondents

Sn	Land	Percent of Respondents
1	Landless	0
2	1- 5 ropani	18
3	6- 10 ropani	57
4	11- 15 ropani	14
5	16- 20 ropani	5
6	21-25 ropani	3
7	Above 26 ropani	3
	Total	100

Source: Field Survey, 2006

Above Table 4.8 shows the distribution of landholding pattern of the respondents. Out of the total sampled population, there were no landless respondents. The highest more than half of the respondents (57 percent) possess 6 to 10 *ropani* of land. Second group having 1 to 5 ropani land is 18 and landholding of 11 to 15 ropani group is 14 percent. Only few respondents have landholdings above 15 ropani. Cumulative percent of respondents having more than 15 ropani land are only 11 percent.

4.3.2. Livestock Ownership of the Respondents

Integrated crop-livestock farming is the typical nature of Nepalese farmers of hilly region. The sampled respondents also showed same behavior. Respondents owned a total of 1066 livestock (334 cows, 4, yaks, 115 buffalos, 225 goats and 388 hens) at an average of 10.66 cattle per respondent's family. Following Table 4.9 demonstrates the details.

Table – 4.9: Livestock size of the respondents family

SN	No. of Livestock	Respondents	Percentage
1	0	0	0
2	1-5	30	30
3	6-10	35	35
4	11-15	16	16
5	16-20	12	12
6	21-25	1	1
7	26-30	2	2
8	31-35	3	3
9	above 36	1	1
	Total	100	100

Source: Field Survey, 2006

All the respondent's family keep livestock, at least birds. Survey found the highest 35 percentage of respondents keep 6-10 livestock, followed by 30 respondents owned 1-5 livestock, 16 respondents keep 11-15 livestock and 12 respondents having 16-20 livestock.

Similarly, one respondent each keep 21-25 and above 36 livestock respectively and three respondents owned 31-35 livestock and two respondents keep 26-30 livestock.

4.3.3. Annual Income

Data was obtained to assess the annual income of the respondents' family under three different categories. The categories and distribution of the respondents who fall into different annual income are presented in the following Table 4.10

Table – 4.10: Annual income of the respondent's family

Income (Rs.)	Upto 1000	Upto 10000	more than 10000
Respondents	77	23	1
Percent	77	23	1

Source: Field Survey, 2006

Here, highest number of the respondents families annual income falls into the first up to 1,000 category that clearly indicates the poor economic status of the respondents. Twenty three percent respondents reported up to 10,000 family income and the least one respondent's family have more than 10000 annual family income.

CHAPTER- V

IMPACTS OF INTERNET

5.1. Devices In the Nepal Wireless Project Area: A Comparative Overview

Nepal wireless project is now extended in 19 communication centers of three districts namely Myagdi, Parbat and Kaski. Presence of computers and other electronic devices in each communication center is given in Table 5.1.

Table – 5.1: Equipments or Devices in Nepalese communication centers under Nepal Wireless project (2006).

SN	Tele centers/Station	Devices						
		Desktop PC	Laptop	Printer	PC machine	Web camera	Scanner	Network
1	Chandrakot	2	-	-	-	1	1	1
2	Deep (station)	1	-	-	-	-	-	2
3	Ghara	3	1	-	-	-	-	1
4	Ghorepani	-	3	-	-	-	-	1
5	Histan	6	4	1	1	-	1	1
6	Khibang	3	-	1	-	-	-	1
7	Khopra	-	2	-	-	-	-	1
8	Lopre	2	2	-	-	-	-	1
9	Majgaun	2	-	-	-	1	1	1
10	Mohora (station)	-	2	-	-	-	-	4
11	Nadipur (station)	2	1	-	-	1	-	2
12	Nagi	10	3	2	1	2	1	2
13	Narchyang	4	3	1	-	-	-	1
14	Om hospital	1	1	1	-	1	-	1
15	Paudar	7	7	1	-	1	-	1
16	Ramche	3	2	-	-	-	-	1
17	Sikha	8	3	1	-	-	-	1
18	Tatopani	3	2	-	-	-	-	1
19	Tolka	7	-	1	-	2	1	1

Source: www.nepalwireless.net

Above Table 5.1 clearly presents the available equipments and devices in nineteen Nepalese communication center. Nagi has the highest number of desktop computers among all the communication center. It also has significant number of other devices. Pauder communication center has 7 laptops and Histan has 4 whereas Nagi communication center has only three laptops. Mohora has 4 network devices whereas Nagi has only two. Nevertheless, the

available devices seems balanced in Nagi, Histan, and Pauder. Comparatively, Nagi communication center seems one of the best among all the nineteen communication center in Nepal.

5.2. Electronic Devices in Nagi Communication Center

It is necessary to analyze the devices available in the Nagi communication center to understand the infrastructure development in the study area. A short historical review of past three years would be meaningful here. Therefore, following Table 5.2 is designed to present the details of the devices and equipment available in the past three years in Nagi communication center for a case analysis of the study area.

Table – 5.2 : Equipments and Devices in Nagi communication center

SN	Devices	No of devices per year			
		2003	2004	2005	2006
1	Desktop PC	6	10	6	20
2	Laptop	3	2	2	3
3	Printer	1	2	1	2
4	PC machine	-	1	1	1
5	Web Camera	1	-	1	2
6	Scanner	-	-	1	1
7	Network	2	2	2	2
9	UPS	1	1	1	1
10	Generator	1	1	1	1
11	Batteries	-	2	2	2
	Total	15	21	18	35

Source: www.nepalwireless.net

The number of devices in Nagi Communication Center is in increasing trend except some drop down in the year 2005. There were total 15 devices in the year 2003 that has significantly increased next year. However, due to the political anomalies the communication center could not repair and maintain the devices therefore the number of functional devices drop down. Now, in the year 2006 the existing number of devices has reached highest number that is thirty five. There are twenty desktop, three laptops, two printers, two web cameras, two networks, two batteries, and one-one each other required equipments. The status of the available devices in the communication center seems satisfactory and in the increasing trend. The devices used in Nagi communication center has been significantly increased in 2006 in comparison with the year 2003.

5.3. Power for the Telecenter/Communication Center

Before 1996 the village had no electricity. With the effort of local people in 1997 small hydro-electric generator had been installed. To avoid occasional interruption in power supply villagers have bought Kerosene generator. Due to irregular supply of kerosene people are not able to run computers. To fulfill this trouble again project has bought 2 batteries. Similarly to connect other network in relay station solar power, air dynamo and human generator is also used.

5.4. Internet and Its prospects in Nagi Village

Nagi village is the first internet invaded area in Myagdi district, probably the first remote village in Nepal. Local people are getting internet related services since three years. Now the services are becoming a part of life of local people. Nagi villagers and villagers from surrounding area are taking services like internet phone, email, internet, news, tele health and tele education from the communication center. Status and impacts of internet on local peoples lifestyle have been tried to analyze here.

5.4.1. Time and Frequency of Communication Center Visit by the Users

Though internet services was started couple of years ago, awareness on people in computer education is relatively old in Nagi village. Computer users especially students, teachers and community leaders of the village are fully aware and technically sound in operating computer. Except students and teachers, use of internet for another users is entirely need base.

5.4.1.1. Beginning of Using Communication Center

This communication center was started in 2003. Most of the respondents have started to visit communication center from one year ago.

Table – 5.3: Respondents starting using internet.

Start time of internet user	Respondents	Percent
One month ago	34	34
Six month ago	8	8
One year ago	58	58
Total	100	100

Source: Field Survey, 2006

Above table 5.3 shows that among 100 sampled internet user 58 percent of the users had started to visit communication center for one year ago. 34 percent and 8 percent respondents have started to visit communication center from one month ago and six month ago respectively.

5.4.1.2. Frequency of Visiting Communication Center

Using internet services entirely depends on the user's interest and need. Some users use it frequently (more than one attempt in a day), some everyday (Once in a day) while some use it occasionally (once, twice or thrice in a week). The Table 5.4 shows that the maximum no of participants visit communication center Everyday. The participants making use of communication center occasionally are also noticeable which represents the 34 percent. There are 10 participants who use communication center frequently. 56 percent of participants visit communication center everyday, it proves that they are making use of internet facilities good enough.

Table – 5.4: Frequency of respondents visiting communication center.

Sn	Use of communications center	Respondents	Percent
1	Frequently (more than one visit in a day)	10	10
2	Everyday (Once in a day)	56	56
3	Occasionally (once, twice or thrice in a week)	34	34
	Total	100	100

Source: Field Survey, 2006

5.4.1.3. Time of Using Internet

Internet service is available early at the morning up to late evening. In the emergency case any people can use it at any time. Communication center is located at the computer lab of Himanchal Higher Secondary school, situated at the center of the village. So the users around village have easy access to services. However time of using internet depends on the distance of the user's home from the school. The Table 5.5 below shows that maximum number of respondents, 44 percent use internet from morning-afternoon, followed by morning users 19 percent, evening users 16 percent, afternoon users 15 percent and afternoon-evening users 6 percent. Detailed observation of communication centre reveals that internet users use internet least for 30

minutes up to one and half hours. However student respondents were found, using internet for two hours in a day too.

Table – 5.5: Time of respondents using internet

Sn	Time of using internet	Respondent	Percent
1	Morning-afternoon	44	44
2	Morning	19	19
3	Evening	16	16
4	Afternoon	15	15
5	Afternoon-evening	6	6
	Total	100	100

Source: Field Survey, 2006

5.4.2. Inspiration to Use Internet

Internet is the latest new technology for communication which is more effective, advantageous, easy, fast, reliable and more time and money saves than other communication media. At the first, people need inspiration factor to use any new technology. Generally people get those information and inspiration from their neighbors, interpersonal relationship and their family. Concerned agencies and Companies also necessarily play vital role to disseminate their technology by motivation .But in our case Mahabir Pun play vital role to aware about internet to those people who never listened internet before. Following Table 5.6 indicates the detail.

Table – 5.6: Inspiration got by respondents to use internet.

Inspiration Factor	Respondents	Percent
Institution	13	13
Person (Mahabir Pun)	68	68
Communication Media	19	19
Total	100	100

Source: Field Survey, 2006

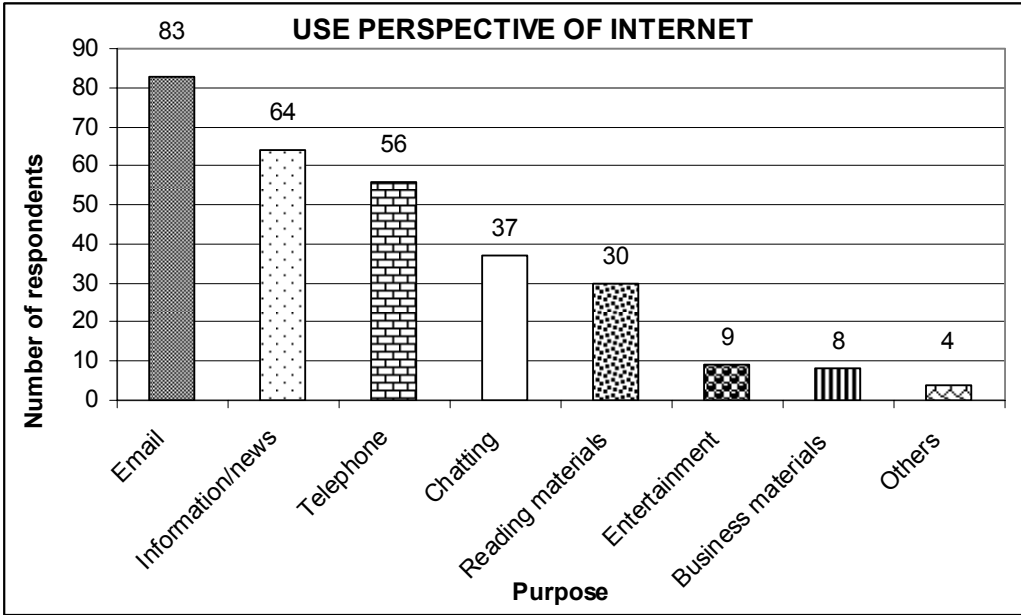
Above Table 5.6 reveals that 68 percent of the total internet user have know it's importance and necessary by Mahabir Pun who is the person who connect that village with internet using wi-fi technology in 2003 with the help of international volutary. 13 percent respondents have known it's necessary and advantages through institution and 19 percent have from Communication Media. From Focus group discussion it is also found that most of the educated persons have used internet from their self-understanding. And illiterate and just

literate people have used internet by the inspiration of those people who have already used internet and Mahabir Pun.

5.4.3. Reasons for Using Internet

By nature human being wants more comfort. This study also shows that respondents are motivated towards internet because it saves their money and time. They use internet to know about world sitting in remote area. They also feel that internet makes the big world as a small village. A multiple choices question was asked to the respondents about the use prospective of internet. The highest number of respondents use internet to email followed by getting news/information, phone, do chat, for collection of reading materials etc. The following Figure 5.1 gives detail on in what purpose local people are using internet.

Figure – 5.1: Respondents by purpose of using internet



5.4.4. Impacts of Internet

Internet has direct and indirect impact on different sector of the community. Few observable impacts have been discussed below.

5.4.4.1. Time Management

Time management is very important for the economic development of the community. Out of 100 respondents 70 percent of respondents normally use internet during the leisure time, 21 percent respondents use internet when they want to know something and rest 9 percent use it, when they desire to talk with relative and friends. The following Table 5.7 shows that highest number of villagers are utilization their time for the betterment of their life and society.

Table – 5.7: Management of time by internet users.

Sn	Time of Internet Use	Respondents	Percent
1	Use of leisure time	70	70
2	Want to talk with relatives and friends	9	9
3	Want to know something	21	21
	Total	100	100

Source: Field Survey, 2006

Similarly a multiple choice question was asked to the respondents on how they used to spend time before installation of internet in their village (Table 5.8). Out of 5 options, 63 percent of respondents were utilizing time working in the agriculture lands followed by doing study (41 percent), spending time with family (25 percent), gossiping with the friends (12 percent) and playing cards 4 percent. The data shows that internet is providing wide platforms to the villagers for the utilization of time to do more creative and productive works discouraging spending time for no things.

Table – 5.8: Means of spending time by internet users.

Sn	Means of spending time	Respondents	Percent
1	Working in the agriculture fields	Out of 100 – 63	63
2	Doing study	Out of 100 – 41	41
3	Sitting with family	Out of 100 – 25	25
4	Gossiping or talking with friends	Out of 100 – 12	12
5	Playing cards	Out of 100 – 4	4

Note: Multiple responses, therefore total add up more than 100

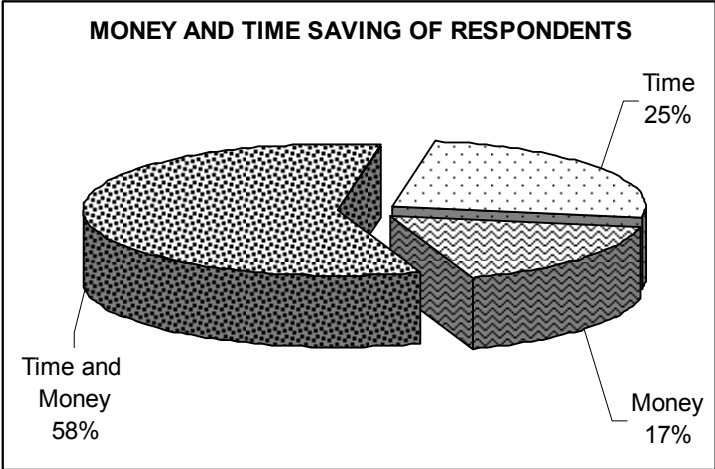
Source: Field Survey, 2006

5.4.4.2. Time and Money Saving

After installation of internet in village people are getting regular service of information and communication. Before that they have to travel long spending

significant amount of money to get same services. Giving priority on money and time we have inquired the thoughts of users on internet benefits. Out of 100 respondents the highest 58 percent feel that they are saving both time and money after getting needed services in village. While 25 percent of the respondents thought that they are saving only time and 17 percent feel, saving of their money. It shows that after establishing the communication center most of the respondents are saving more time and money, which proves gradual livelihood improvement of rural people by utilizing saved time and money in other sector which is clearly mention in Figure 5.2.

Figure – 5.2: Percent of respondents benefited from internet.



5.4.4.3. Utilization Pattern of Saved Time

Internet users have utilized their saved time in various sectors, which has brought positive impacts in their lives. Following Table 5.9 shows that highest number of users 46 percent user their saved time in agriculture followed by 44 using time in the field of study (text book, homework and newspapers), 39 percent users utilize time in domestic activities, income generating activities 10 percent, and talking with friends and relatives 7 percent. This shift through the use of internet naturally leads toward the better living standard along with significant workload reduction.

Table – 5.9: Time utilization sector of internet users.

Sn	Time Utilization Sector	Respondents	Percent
1	Agriculture	Out of 100 – 46	46
2	Studies for knowledge	Out of 100 – 44	44
3	Domestic activities	Out of 100 – 39	39
4	Income generating activities	Out of 100 – 10	10
5	Communication with relatives/ friends	Out of 100 – 7	7

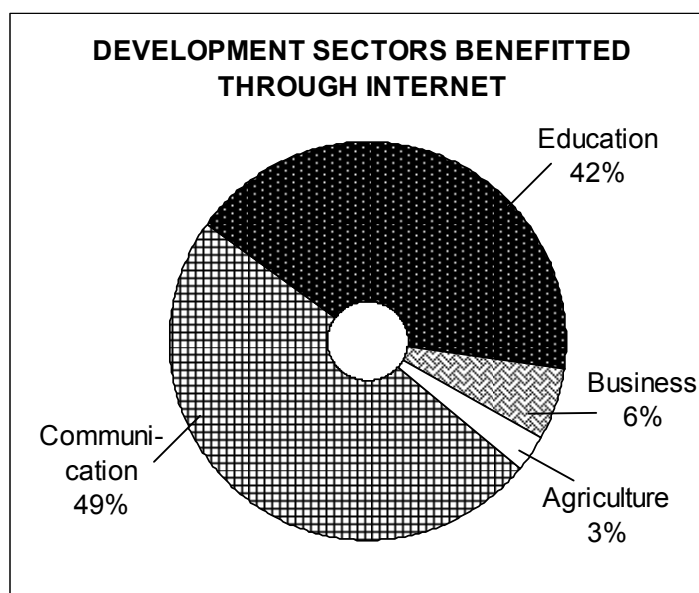
Note: Multiple responses, therefore total add up more than 100

Source: Field Survey, 2006

5.4.5. Most Benefited Sector of the Community

A general question was asked among the respondents about which sector is most benefited through the internet. Out of 100 respondents 49 percent identified communication/information as highly benefited sector, followed by education (42 percent), business (6 percent) and agriculture (3 percent) mentioned in Figure 5.3.

Figure – 5.3: Percent of development sectors benefited through internet

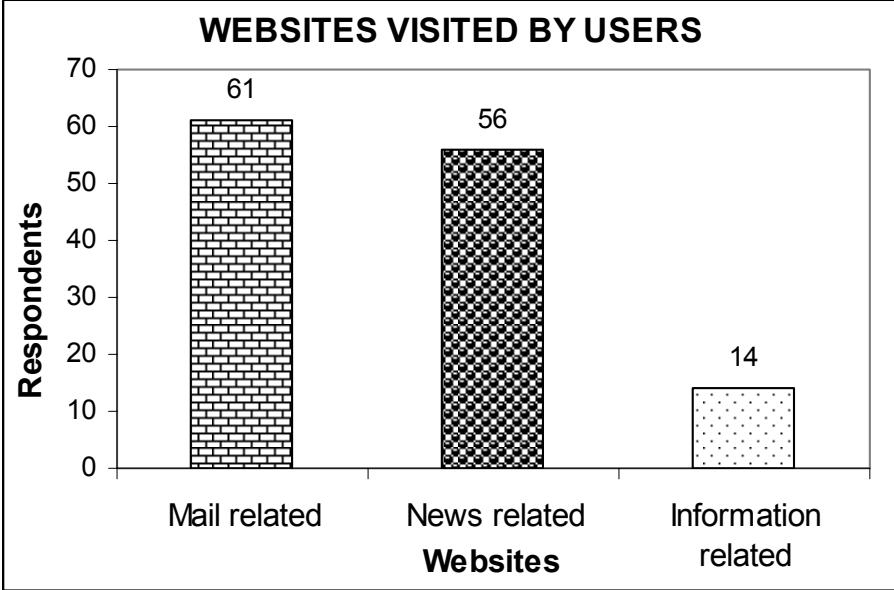


5.4.6. Awareness Level of the People

Awareness level of the users was judged by taking information on the name of websites commonly visited by the respondents. Figure 5.4 shows that out of 100 respondents the highest 61 percent visit mail related websites (Yahoo, Hotmail, Google, Webmail, and nepalgossip etc) followed by news related

websites (nepalnews, bbcnepal, radionepal etc.) and the least browse information related websites (balsansar, khhatam, himanchal, hknepal, totosports, fifaworldcup, santababa etc.).

Figure – 5.4: Types of websites by respondents



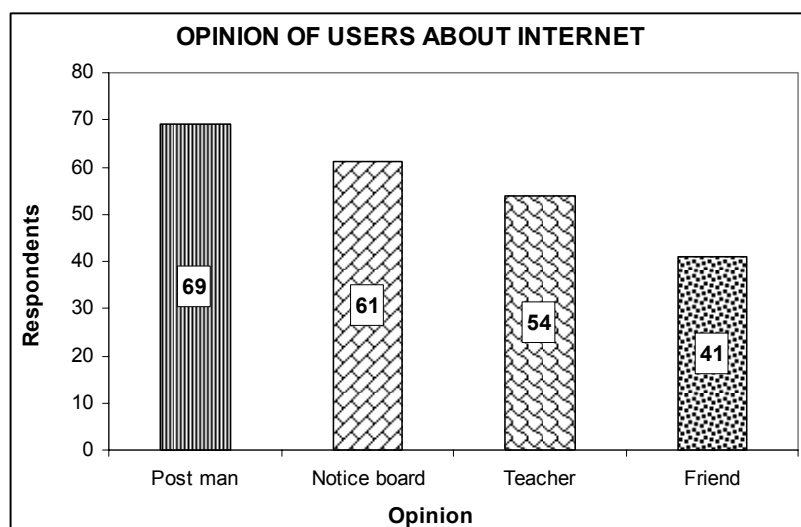
Note: Multiple responses, therefore total add up more than 100

5.4.7. Change in Attitude

Use of Internet services by local people for different purposes shows its importance in the livelihood of the villagers. Use of internet depends on the need of users. By profession as well as by occupation internet users have need based understanding of internet.

Two questions were asked to know the attitude of the users on internet. A multiple choice question “What you think about internet” was made with the users. Out of 100 respondents 69 percent believe it like post man (email); 61 percent take it as notice board (updated news); 54 percent as teacher (teaching material) and 41 percent as friends (chat, entertainment). The following Figure 5.5 dealt on it. As it is a reliable means of information transfer in community the highest percent of users take it as postman.

Figure – 5.5: Opinions on internet by respondents



Note: Multiple responses, therefore total add up more than 100

In the same context another question “How you are benefited by internet” was also asked. As in Table 5.10 given below out of total respondents 68 percent told that they are benefited from internet through its easy means of communication facility (internet phone, email) followed by 46 percent, who thought that internet is saving their time providing services in their village for which they have to spend long time traveling long way to district head quarter or nearby city. Similarly 39 percent told that internet benefited them by saving money, providing many services in villages; 35 percent view that they are benefited by getting updated news in the village and rest 4 percent thought internet is providing food for them by giving job opportunities (some work in communication center, some are doing business through internet and some are getting computer based training in the communication center that help them to get jobs).

Table – 5.10: Respondents’ opinion on how they are benefited by internet.

Sn	Opinion	Respondents	Percente
1	Easy communication	Out of 100 - 68	68
2	Saving time	Out of 100 - 46	46
3	Saving money	Out of 100 - 39	39
4	Providing updated news	Out of 100 - 35	35
5	Providing food	Out of 100 - 4	4

Note: Multiple responses, therefore total add up more than 100

Source: Field Survey, 2006

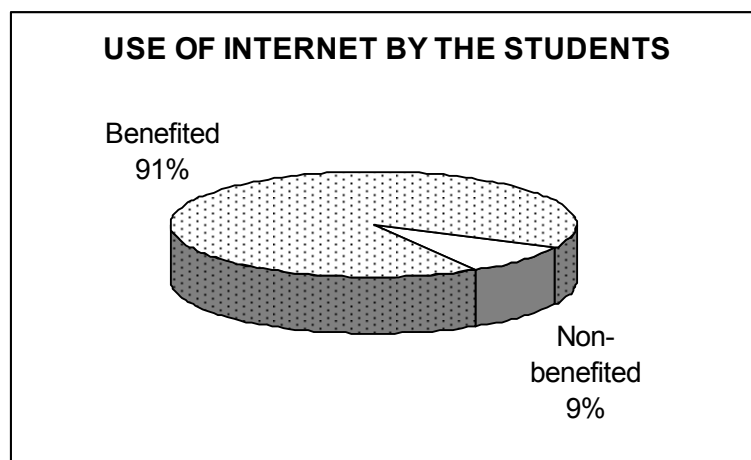
5.4.8. Education level

Internet is a good tool for the students to collect necessary course related information as well as materials on extra curriculum activities. Students used to collect text book materials and information on general knowledge from internet. Further, students are also getting notes and important tips on many course related subjects from their friends of nearby schools and occasionally from overseas too. Himanchal school have, school level collaboration with schools of city (Gandaki Boarding School, Pokhara; Manakamana boarding school Pokhara etc) which facilitate students to share their problems and materials.

5.4.8.1. Education

With the student respondents a question was asked about the role of internet in their study (Figure 5.6). Out of total 55 student respondents, 91 percent (50) told that they are benefited by the internet, while 9 percent (5) don't agree with former. The following table shows their response toward internet.

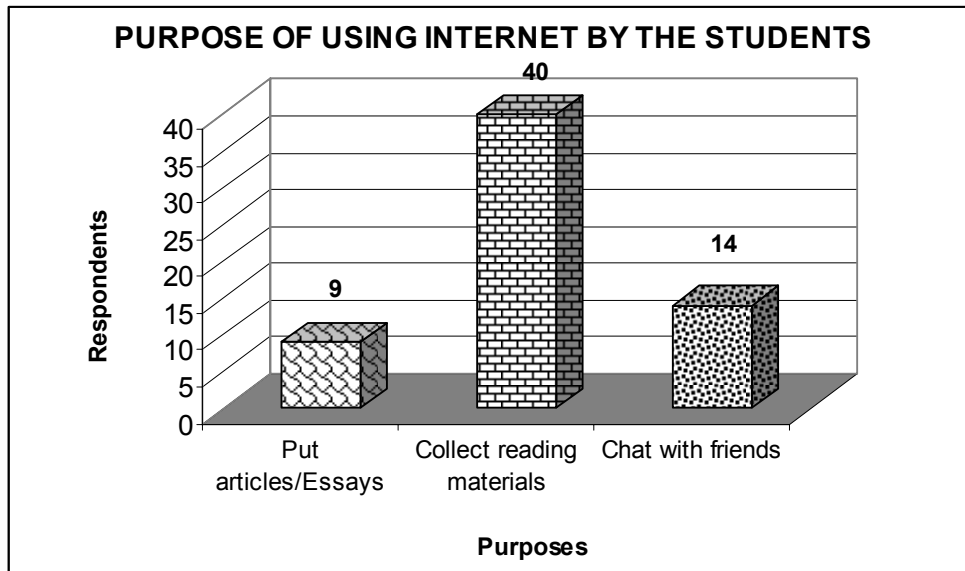
Figure – 5.6: Percent of student respondents benefited from internet



5.4.8.2. Purpose of Using Internet by the Students

The internet using students were asked to mention for what purposes they use internet. Out of 55 students respondents of total 100 respondents, 64 percent collect reading materials from internet, 22 percent chat with friends on course materials and 14 percent put articles and essays in different websites. The following Figure 5.7 gives detailed information on the question, for what purpose they use internet.

Figure – 5.7: Purposes of internet using by students

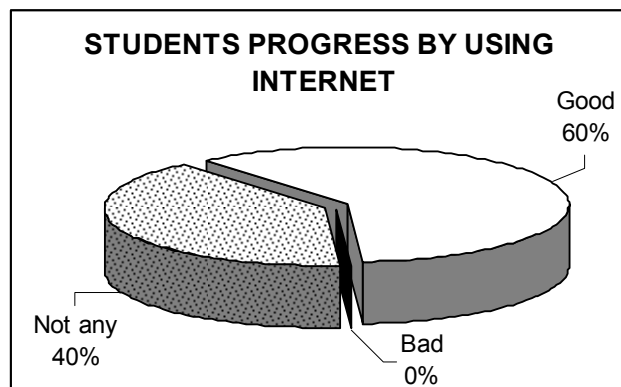


Note: Multiple responses, therefore total add up more than 100

5.4.8.3. Impact of Internet on the Learning Behavior of Students

Above table 4.29 shows that students use internet as a tool to learn and collect reading materials. To know more about their progress in their study we have asked question related with the real impact of internet in their academic career. Out of 100 respondents 55 students response is given in the following Figure 5.8 about their academic progress by using internet.

Figure – 5.8: Status of students' progress by using internet



5.4.9. Access to Information and Communication Services

As in Table 5.11 shown below multiple choices were given to respondents on the benefits of the internet. Out of total 100 respondents the highest 83 percent were benefited by taking phone services while the second highest number of

respondents 72 percent each said that they are benefited in getting updated news/information and sending mails to friends and relatives. Similarly out of 100, 18 respondents were benefited in getting reading materials through internet, 17 enjoy through browsing entertaining sites and 1 was benefited by earning money through business dealing.

Table – 5.11: Benefits of internet taken by the users

SN	Benefits of internet	Respondents	Percent
1	Phone	Out of 100 - 83	83
2	News and information	Out of 100 - 72	72
3	Sending mail	Out of 100 - 72	72
4	Collect reading materials	Out of 100 - 18	18
5	Entertainment	Out of 100 - 17	17
6	Earning from business	Out of 100 - 1	1

Note: Multiple responses, therefore total add up more than 100

Source: Field Survey, 2006

5.4.9.1. Access on Social Services before Internet

Basic services like news and information, phone, collection of reading materials, entertainment etc. are only available in the district headquarter, very far from the Nagi village. Out of 100 respondents the least 9 percent were 1 hour far and 13 percent are 2-3 hours far from the services. Which shows these respondents are at the nearest side of Ramche VDC from the district headquarter. The majority of the respondents who are 4-6 hours far (32 percent), 1 day far (24 percent) and more than 1 day far (22 percent) are the internet users of Nagi village as well as inhabitants from farthest side of the VDC. The accessibility of the respondents before installation of internet in their areas to get basic facilities is given in the following Table 5.12.

Table – 5.12: Time to get social services in the nearby city/town or in district headquarter.

SN	Time to get facilities	Respondents	Percent
1	1 hour way	9	9
2	2-3 hours way	13	13
3	4-6 hours way	32	32
4	1 day way	24	24
5	More than 1 day way	22	22
	Total	100	100

Source: Field Survey, 2006

5.4.9.2. Access on Social Services after Internet

Now after the installation of internet services in the village the basic services like news and information, phone, availability of reading materials, entertainment means are easily available among the users. Out of 100 respondents the highest 65 percent and 12 percent are internet users in and from nearby neighbouring village of Nagi. While the rest 12 percent and 11 percent are 41-60 min and above 60 min (up to 3 hours) far from the Nagi telecentre respectively. The accessibility of the respondents after installation of internet in their areas to basic facilities is given in the following Table 5.13.

Table – 5.13: Time to get internet services for various users

SN	Time to get facilities	Respondents	Percent
1	1-20 min	65	65
2	21-40 min	12	12
3	41-60 min	12	12
4	above 60 min	11	11
	Total	100	100

Source: Field Survey, 2006

5.4.10. Income Generation - Change in Economic Status

Respondents were asked about their economic improvement through internet. Among 100 respondents 61 percent said that they have got improvement in their economic status while rest 39 percent didn't agree with former respondents. Though the 61 percent even don't have any direct economic benefit on monetary value, the logic behind their agrees with the earning from internet is saving of time and money which they did by using internet in the village. If not for the same services they have to travel long way up to district headquarter or nearest city (Pokhara) spending large sum of money and time. Details data is given in the Table 5.14 below.

Table – 5.14: Income generation from internet

SN	Income generation from Internet	Respondents	Percent
1	Yes	61	61
2	No	39	39
	Total	100	100

Source: Field Survey, 2006

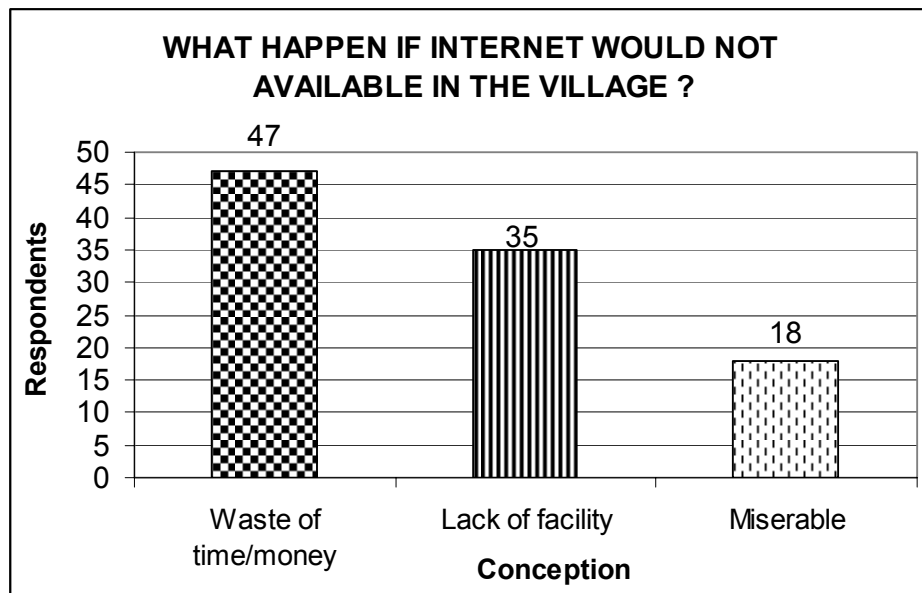
5.4.11. Perception toward Internet

People are using internet services according to their needs, however we have made general queries on what actually users and their family think about internet services in the village. Respondent's satisfaction and their family's thoughts on internet have been discussed below.

5.4.11.1. Respondents Thoughts

Local people are using internet from the beginning. The above queries and response made by the respondents clearly shows their positive attitude toward the internet facilities. In this regard respondents were asked question, about what you feel when existing internet facilities remain no longer in the village. In this question as in Figure 5.9 out of 100 respondents 47 percent mention that there will be waste of time and money as before, 35 percent responded that the village will be more lacking the needed facilities and rest 18 percent took as miserable moment.

Figure – 5.9: Impacts on unavailability of internet by respondents.

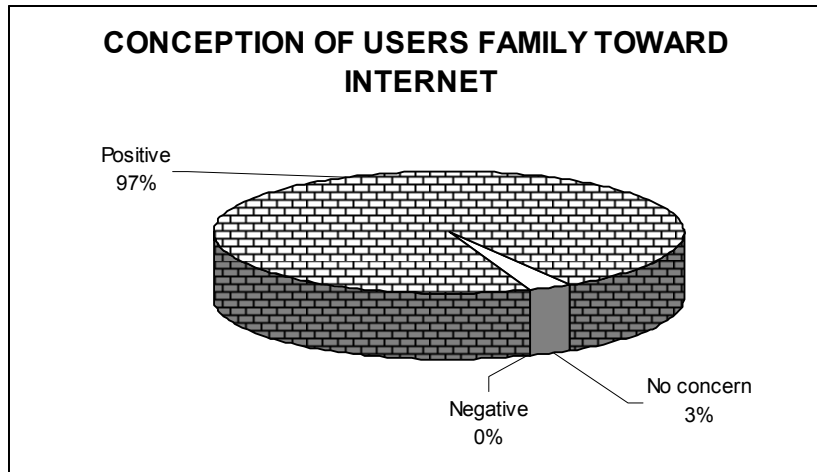


5.4.11.2. Family Response

Family response was also inquired about the internet facility available in the area (Figure 5.10). Out of 100 respondents the highest 97 percent made

positive response, 0 percent has negative response and the remaining 3 percent were not in concern about the facility.

Figure – 5.10: Percent of user’s family’s response on internet.



5.5. Socio-economic Impacts of Internet

Key respondents interview, internet users data collection and analysis, focus group discussion and observation of developments in the study area shows multifacet socio-economic developments of Nagi people and the village. Based on that sector wise development of internet on internet use is briefly discussed in following paragraphs.

5.5.1. Infrastructure Development in the Nagi Village

The Nangi village is one of the remote villages of Myagdi district, about seven hours walking distance from district headquarter. Most of the basic facilities were lacking in the village. However after installing internet the village is now connected to the every parts of the world through its different services like internet phone, email, internet based news etc. By the initiation of Mr. Mahabir Pun (a USA graduate of Nagi village) the development process in internet has been started.

Basic infrastructure for internet services was computer lab setup by Mahabir himself and few abroad volunteers in the Himanchal school. On 2003 school was formally connect by internet through Wi-Fi (wireless fidelity) technology from the nearest Internet Service provider (Worldlink Communication) in

Pokhara. After internet in Nangi village, village communities as well as abroad volunteers are encouraged to bring computers in the village. This news spread all over the world by BBC website and TV channels. Even today we can see this news in BBC website which is given in its reference page. The development in Nangi spread to its neighboring villagers encouraging interconnection to 5 villages by making Nangi as base station. Now there are significant number of computers and modern electronic devices in the Nangi village.

Till study time date the Nepal Wireless Project started from Nangi village extended to more 14 remote villages (excluding four relay stations) of Myagdi, Parbat and Kaski districts. The very interesting and encouraging development is that people established micro-hydro power in their village for the purpose of running computers. Also where micro-hydro is not possible people them self setup solar energy in their village for power supply. In this context presence of computers, modern electronic network devices and their services in remote villages of Nepal is a great achievement in the infrastructure development of our country.

5.5.2. Impacts on Communication

After establishing computer lab in Nangi village and connected this lab with internet, people are using this centers as communication center. During survey the internet users were seemed hanging around computers for e-mail, internet, chatting and use VOIP telephone to communicate with friends and their relatives in and abroad. Moreover this network has established inter-village communication among villagers too for which they seems very much proud with this technology. The inter-village network within communication center established villages of 2-4-6-8 hours walking distance provided connectivity with local people and facilitate domestic activities between villages like communication with relatives, local level trade of agriculture products (cereals, vegetables, ghee) and animals (buffalo, goats, yaks etc).

The most important part of the impact in communication can be seen that many people are using Microsoft Net meeting application for communication purpose. Reason behind is that, they can have PC-to-PC voice conversation as well as communication by typing text. Although most of the people are not perfect in

English, they are using roman language for communication and also using Unicode Nepali language for writing mails. This study strongly justifies that internet users are very much known with communication software like MSN messenger, yahoo messenger, Microsoft Net meetings and VOIP telephone system. As our discussion we knew that internet users who are not students are familiar using English roman language and Unicode font for writing mails. Such commonly practiced method within local internet users of Nagi village justifies the advance development in communication in the study area.

5.5.3. Impacts on Education

According to the project leader Mr. Mahbir Pun, internet was introduced in Nagi village for the purpose to fulfill the shortage of qualified teacher in his village. Gradually with computers in school, a optional subject computer science was introduced in the secondary level. Initially with the international volunteers, school managed to conduct computer science teaching which also became base for developing own well trained, capable human resource in the school. In the 2005-06 academic year the 25 students were taking computer science as major subject in 11 class. Nagi school is also conducting teleteaching program with its neighbouring communication centers located at the school. This remote teaching practice done through internet is fulfilling the shortage of qualified teachers in the area.

Further the data collected during the study also showed that students and teachers are greatly exploiting internet to collect teaching and study materials. Students are getting wide platform to do extra curriculum activities increases general knowledge and more importantly acquire and exchange tips on text books and solutions of many subject related problems. The official website of Nepal Wireless Project has provided internal local website where teachers and students can exchange study materials. This website is password protected so can be viewed within the communication centers.

5.5.4. Impact on Information Access

The study shows that internet based information mainly electronic daily news papers, TV channels and radio programs are visited by 64% of respondents out of 100. National and international newspapers (nepalnews.com), and TV

channels are normally updated in the minimum time interval so information gap in remote areas and city has been completely removed by this services in Nagi.

5.5.5. Change in Attitude of Internet Users.

Internet in the village has entirely changed the life style of the local people. After having internet based facilities people don't want to remember previous remote rural Nagi village which was very far from latest developments and basic facilities. To get minimum facilities of communication & information, health care, education etc. people have to spend 6-10 hours daily spending a great amount of money and time.

Internet in the village has opened many opportunities and development possibilities for local people. They are now regularly using telephone services; are aware with latest news on activities and development inside and outside the nation, regular contact with relatives and friends through email, increases the educational opportunities in the village, trying to get quality service of healthcare and looking for the internet based income generation. In this connection the rural people of Nagi have experienced the benefit of internet and believe that if there is mutual understanding and collaborative efforts internet would provide more facilities than they are getting now to improve their livelihoods and make their life more comfortable. Although not any sorts of benefits gained through internet by local people in terms of monetary values were recorded, internet users are very optimistic to their saved time and money.

5.5.6. Impact on Economy

This study shows that internet facility is very beneficial. After internet is available in the village, IP telephony helps individual to reduce the long distance telephone costs. In the context of Nepal a minute call to US costs about Rs 180 per minute via PSTN services, where as the same call through IP telephone costs about Rs 5 per minute. The immediate economic benefit of an internet facility is most evident when time and money are saved. They have opportunity to accumulate more money from other income generating activities, agriculture and domestic activities after utilizing saved time. Local e-commerce program in wireless networks help people to sell local product in local market easily helping

in income generation of rural people. Some significant economic changes in the village gathered through focus group discussion are given in table 5.15 below.

Table – 5.15: Comparison on economic change in Nagi village

Sn	Before internet connection	After internet connection
1	The only way to get phone and information facilities is to walk 6-10 hours up to Myagdi headquarter spending a lot of time and money	Now phone and updated news services are available in the village.
2	Shortage of trained teacher, text books, and other reading materials. For the problem school administration and students were to spending a lot of money each year	Reading materials are fully accessible in the village through internet connection and teleteaching. The problem of shortage of trained teacher in the area is also solved in some extent.
3	For village level communication and domestic dealings local people were spending money and time traveling up to 6-8 hours	Village level communication can be done easily through intra network between each communication centers
4	Village level exchange of goods, business dealing of cattle and local productions were very rare and costly	Intranetwork between communication centers of village promote numbers of local products (goats, buffalos, yaks, ghee, honey, cereals, fruits, seed and seedling of vegetables/cereals/pseudo cerals) selling and buying
5	There were no opportunity for jobs	Few jobs are created in communication centers. Majority of young generation in the village are trained in computer technology making them ready for new job opportunities.
6	People were spending significant amount of time, and money in getting treatment facilities for emergency health related complications.	Telemedicine in village has decreased there expenditure and tension in some extent.
7	Not any income generation opportunities were seen	Local people are working for organic cheese production, establish small micro enterprises of handicrafts, Nepali paper and its marketing through e-business approach.

Sources: Focus group discussion (2006)

5.5.7. Impacts on Health Care

Nagi village lack well trained medical doctors and treatment equipments. With the efforts of local people, hospital is able to provide service on primary aid but for few emergency problems occasionally happen in village recently started telemedicine service is becoming very effective to avoid worsening of

complications. Telemedicine actually bring medical doctors virtually in the remote villages to provide medical assistance to the villagers. In conjunction with Om Hospital in Pokhara, medical services are offered using network cameras.

5.5.8. Impacts on Employment

In the study area the internet facilities has created some part time and full time jobs in the communication centers as well as volunteer opportunities. Even a small network can create several jobs in that area where very little jobs are available for college graduates. Further computer education, regular practice on internet and familiarity with computer and internet technology is building the capacity and confidence of internet users that helps them getting jobs inside as well as out side the country. Computer training frequently conducted by communication centers also enables local people looking for comparatively high tech jobs.

Chapter - VI

CONCLUSION AND RECOMMENDATIONS

6.1. Conclusion

In the age of 21 Century, email and internet has been recognized as one of the means of bringing the social and economic changes in the rural area of developing countries so it is very much suitable in the Nepalese context also. This new technology is socially acceptable, technically feasible, financial viable and economically profitable. The technology if managed properly is a very cost effective technology which is affordable and adoptable to rural area in a sustainable manner.

Nepal doesn't have a long experience of information technology. In the urban areas e-mail and internet were introduced one decade earlier. But it has recently been introduced in rural areas. In such remote areas information technology was established with the concept of tele-centers normally called as communication centers.

Nepal wireless project has contributed a lot in the development of information technology in the remote areas. Myagdi is one of the remote districts of western Nepal but it can be compared with any other developed district in terms of information technology. Nepal wireless project has provided computers to more than 15 schools with internet connection in the northern part of myagdi. The people of that area are using email and internet comfortably. In the area of Nepal wireless project, two schools have already introduced computer education while some of other schools are in a hurry to begin it.

A study conducted in the Nagi village, head office of Nepal Wireless Project has suggested that the internet access in the villages has brought some social and economic changes to the villagers. There is wide range of positive impacts in people's thinking towards the email and internet. As villagers are regularly using many internet based services like VOIP phone, electronic news, email, browsing education materials, tele-education and tele-health; local people are

quite optimistic on modern technology that can assist them in the remote areas to improve their livelihoods.

Though Nepal Wireless Project concept was the dream of single man Mr. Mahabir Pun, it proliferates deeply in the surrounding rural villages by the intense collaboration and cooperation of needy villagers. Possible services in the villages through internet encourage local people to buy computers, gather electronic devices and electric equipments in the rural areas making them rich in modern devices. Establishment of hydro power, wind energy generator and solar energy stations not only fulfill their demand of energy for running computers but also make their village light.

Easy and reliable means of communication and information gaining methods through internet enable different types of users to exploit this service. National and international phone service, email to the friends and relatives, regular update from news and intra network communication within communication centers have increased the communication opportunities and made them aware on latest developments.

Tele education has solved the deficiency of trained teacher in remote area. Further introduction of computer science subject after installing internet in the villages provide better opportunities to the rural students becoming aware on latest development and make them confident to cope with new environments in urban areas. It also make students self dependent and competent who used to browse text related information as well as information on extra curriculum activities through internet.

Local people are taking economic benefits through saving their money and time by using internet services in their own village. The saved time and money have provided them opportunity to focus more household activities, education of children and income generating activities. Further internet has also provided them wide platform from which they can earn money through local e-commerce programs initiated by Nepal Wireless Projects on Nepali paper, making organic cheese and developing small scale handicraft industry.

Telemedicine has increased the quality and availability of healthcare in the rural villages. Though in its testing phase, its systematic implementation would open

new opportunities in treatment methods for most of our rural people who are far from basic health care services from years. Internet in the village is gradually generating job for younger generations. Though jobs in communication centers is nominal; e-learning programs, computer training and computer teaching in the schools opened wide platforms for young people to look for different types of jobs. Computer and internet trained users of the village are easily getting quality jobs in overseas countries like as golf countries, Korea, Malaysia etc.

Survey showed that young generation is more interested on the internet. Normally school children seems to hanging in front of computer making them busy on gathering information, browsing news, chatting with friends and enjoying with internet tips. To optimize benefits of internet different types of programs addressing the interest and problems of different types and levels of people have to be developed.

Despite multi facets benefits of internet and its positive impacts, there are some shortcoming of the existing network. Due to lack of electricity in relay station the network sometime doesn't run regularly for 24 hours. Solar energy is the major source of power supply in Mohora relay station. This hill is generally covered with clouds so power supply occasionally becomes problem in running network connection. Similarly, very few people are working as dedicated staffs in the network. If any problem occurred in the network, it takes 2-3 days for maintenance.

Due to lack of monitoring and news/information filter system possible negative impact of the network would be the danger of spreading rumors through intra network and the public interactive web.

At last it is concluded that internet is best alternative in providing services that can improve livelihood of rural people residing remote areas of Nepal.

6.2 Recommendations

- More Awareness raising programs among people should be started for wider application of email and internet.
- Training on computer applications have to be conducted more to optimize the benefit of email by all types and level of people.

- Minimum rules and regulations have to developed and implemented for systematic running of communication centers.
- Monitoring, evaluation and supervision should be made transparent and conducted in regular basis.
- Communication Centers should develop news/information filter systems inside its network.
- For better implementation and functioning of each communication centers government should assist the project in different levels.
- Priority should be given for various incomes generating activities.
- Online study system and distance learning system should be developed which will assist other remote school in teaching and other sorts of communication.
- Internet and email facility in everybody's home is almost not possible till now. So the sufficient number of information center should established.
- In the study we find that woman participation is very low so woman participation should be increased by providing necessary trainings.
- Computer education should be made compulsory in the schools to promote IT and bring awareness on modern communication systems.
- Concept of Nepal wireless project should replicated in other remote villages of Nepal.

BIBLIOGRAPHY

- Adhikari, R, Shrestha, SD and MC Lal. 2005. ICTs for Increased Trade Competitiveness "Nepali e-Haat Bazaar". Rural Urban Partnership Programme, Kathmandu.
- Akhtar, S. 2001. ICT for Development. Upadhaya GR Raj and Diebold A. (eds.) Proceedings of International Conference on Information Technology, Communications, and Developments (ITCD)-2001, 29-30 November, Kathmandu, Nepal. Published by Friedrich-Ebert-Stiftung.
- Alami, JR and J, Pal. 2005. Rural Telecenter Impact Assessments and the Political Economy of ICT of Development (TCT4D). BRIE Working Paper 164. Berkeley Roundtable on the International Economy (BRIE). University of California, Berkeley. USA.
- Alexander GF. 2001. ICT and poverty: The indisputable link paper for Third Asia Development Forum on "Regional Economic Cooperation in Asia and the pacific". Organised by Asia Development Bank, 11-14 June 2001, Bangkok.
- Basandra, SK. 2001. Computers Today. Galgotia Publications Pvt. Ltd. New Delhi.
- Baskota S. 2005. Possibilities of Telemedicine Through Wireless Ethernet Technology in Western Nepal. A Dissertation Submitted for Partial Fulfillment of the Requirements of Honors Degree in Bachelor of Computer Application. College of Information Technology and Engineering, Department of Science and Technolgy, Kathmandu.
- CAN, 2003. CAN Directory-2003. Computer Association of Nepal. Kathmandu.
- CAN, 2004. CAN Directory-2004. Computer Association of Nepal. Kathmandu.
- CBS, 2001. Statistical Year Book of Nepal. Center Bureau of Statistics, Kathmandu, Nepal.
- CBS, 2002. Statistical Year Book of Nepal. Center Bureau of Statistics, Kathmandu, Nepal.

- Cambridge, 1995. Cambridge International Dictionary of English. Low price edition. Cambridge University Press.
- Colle R. and R. Roman. 2003. A Handbook for Telecenter Staffs. Cornell University Ithaca, New York.
- Cukor P and L. W. McKnight, 1995. Knowledge Networks, the Internet, and Development. Edward R. Murrow Center . Fletcher School of Law and Diplomacy, Tufts University
- da Silva, FQB. 2004. The Role of Information Technology on the Establishment of competitive Software Enterprises in a Global Market. Brazilian programme for Excellence in Software.
- Ghimire Purushottam, Adhikari RK and DB, Khadka. 2004. First Regional Conferences on Follow up to the first phase and preparation for the second phase of the world Summit on the Information Society. Information communication and space Technology Division (UNESCAP) Bangkok.
- Grace J., Kenny, C. and Q. Zhen-wei. 2001. ICTs and Broad Based Development. Washington, DC. World Bank.
- HLCIT, 2004. Newsletter. Issue 1 (Ashoj-Mangsir). High Level Commission for Information Technology, Nepal.
- HLCIT, 2004a .Desk and Field Research on ICT Resources In the Kingdom of Nepal. High Level Commission for Information Technology. Singhadurbar Kathmandu Nepal.
- HLCIT, 2004b. Toward the Digital Future: A Fact Book on Information and Communications Technology Sectors of Nepal. High Level Commission for Information Technology. Singhadurbar Kathmandu Nepal.
- HLCIT, 2004c. Newsletter. Issue 2, Year 1. High Level Commission for Information Technology. Singhadurbar, Kathmandu, Nepal.
- HLCIT, 2005. Newsletter. Issue 5, Year 1. High Level Commission for Information Technology. Singhadurbar, Kathmandu, Nepal.
- ILO, 2001. World Employment Report. International Labour Organization.

- Joshi, RP. 2004. Basic Computer Theory. Dikshanta Pustak Bhandar.
- Kantipur, 2006. Janaandolan - 2 Ka Ghaite ko Nayaprabidi Bata Upachar. Kantipur Daily Newspaper. Baisakha 25, p 3.
- Lawrence S. and L. Giles. 1999. Accessibility and Distribution of Information on the Web. <http://wwwmetrics.com>
- MOIC. 2006. Study on Increasing ICT Access in Rural and Peri-urban Areas of Nepal. Final Report. Ministry of Information and Communication. Kathmandu.
- Magar, M. 2002. Country report on Internet in Nepal. APT Training Course on Broadband Internet Technology and Applications. February 25 - March 1, 2002 Kobe City, Japan
- Maharjan, B. 2006. Role of IT and Its Impacts In Community School: A Case Study of Himanchal Higher Secondary School, Nagi of Myagdi. A Dissertation Submitted for Partial Fulfillment of the Requirements of Honors Degree in Bachelor of Computer Application. College of Information Technology and Engineering, Department of Science and Technolgy, Kathmandu.
- Mahmud, AS. 2005. Crisis and Need: Information and Communication Technology in Development Initiatives Runs through a Paradox. (from internet)
- Martin, WJ and Mc keown, SF. 1993. The potential of information and Telecommunication Technology for Rural Development. Information society, Vol 9, No,2. pp.145
- Munankami RB, 2003. Harnessing ICTs for Local Development: Case of Rural-Urban Partnership Programme in Nepal. (From Internet)
- NPC, 2000. IT Policy Nepal. Nepal Planning Commission. Singhadurbar, Kathmandu.
- NPC, 2001. The Tenth Plan 2002 – 2006. National Planning Commission, Kathmandu, Nepal.
- NTA, 2007. Nepal Telecommunication Act. Nepal Telecommunications Authority, Singhadurbar, Kathmandu.

- NTA. 2006. Management Information System (MIS). Nepal Telecommunication Authority (NTA), Kathmandu.
- Nicholas Negroponte, 1995. Being Digital, Knopf.
- Pant LB. 2000. Polices Trends and Prospects of E- learning in Nepal. (From internet)
- Pun, M, Shields R, Poudel R and Philip Muccii. 2006. Wireless Nepal for an Inclusive Society. Himanchal Higher Secondary School, Myagdi, Nepal
- READ, 2005. Annual Report. Rural Education and Development, Baluwatar.
- RUPP. 2003. Annual Report. Rural Urban Partnership Program, Kathmandu.
- Rana S. 2001. Using ICT in Development: Perspectives on Nepali Experience". Gaurab Raj Upadhaya and Alfred Diebold (Eds.) A paper presented in conference interntional conferences on information Technology Communications and Development. 29-30 November, 2001, Kathmandu, Nepal.
- Rana S. 2004. Using ICT in development: Perspectives on Nepali Experience. Mahila web, Nepal.
- Richardson D. 1997. The Internet and Rural and Agricultural Development: An Integrated Approach. Sustainable Development Department.
- STPI, 2004. Incubation Facilities Offered at STPI. Mumbai, STPI, India.
- Saxena, SA. 1998. First Course in Computer. Bikas Publishing Pvt. Ltd, India.
- Schmandt J, Frederick W, Robert HW and S Strover. 1990. Telecommunication and rural Development: A study of Business and public service Applications. Austin University of Texas, Austin, USA.
- Shah BP. 2005. Telecenter Is Not A Cow. High Level Commission for Information Technology Newsletter, Year 2, Issue 6.
- Sitaula H. 2006. The Possibilities of Internet Access in Rural Area: A Case Study of Annapurna Region Where Nepal Wireless Project Has Been Implemented. A Dissertation Submitted for Partial Fulfillment of the Requirements of Honors Degree in Bachelor of Computer

Application. College of Information Technology and Engineering,
Department of Science and Technolgy, Kathmandu.

Tanenbum AS. 1997. Computer Networks. Third Edition. Prentice-hall of India
Pvt. Ltd.

Thapaliya K. 2006. Possibility of Local E-business in Rural Area of Annapurna
region: A Case Study Where Nepal Wireless Project Has Been
Implemented. A Dissertation Submitted for Partial Fulfillment of the
Requirements of Honors Degree in Bachelor of Computer
Application. College of Information Technology and Engineering,
Department of Science and Technolgy, Kathmandu.

Upadhaya, GR. 2003. Indreni-the Nepali Intranet : A platform for Electronic
Publishing and Information Sharing in Nepal. Nepal Intranet Users
Group, Kathmandu.

Upadhyaya, CN. 2000. Diploma in Computer Application. Technolink Center,
Kathmandu.

http://www.privateline.com/privateline_com Telephone History Page One.htm

http://www.tutor2u.net/business/ict/intro_what_is_ict.htm

<http://www.unesco.org/opi/eng/unescopress/98-58e.htm>

www.apdip.net

www.cbs.gov.np

www.cbs.gov.np

www.enrd.org

www.hlcit.gov.np

www.most.gov.np.

www.nta.gov.np

APPENDIX – I

Table - 1. List of ICT Companies/Academic Institution/ Service Providers in Nepal

S.n	Organization Type	Numbers
1	Software Development	120
2	Universities	4
3	Trading	1000
4	ISP	29
5	Networking	70
6	System Integrator	30
7	Training Institute	1000
8	VSAT Service provider	9
9	Pager Service provider	6
10	GSM Mobile Telephone Service provider	2
11	WLL Telephone Service provider	2
12	IT enabled Service	29
13	Consultancy	81
14	Graphic Designer	34
15	Web Services Provider	23
16	Solution Provider	39
17	JV company	9
18	Interactive Multimedia CD-Rom Developers	3
19	IT media	2
20	Others	58

Source: CAN-2004

Table - 2. Service Providers of Nepal

Sn	Name	Address
Basic Telecom Operators		
1	Nepal Doorsanchar Company Limited	Bhadrakali Plaza, Kathmandu
2	United Telecom Limited	Triveni Complex, Putalisadak, Kathmandu
Cellular Mobile Operator		
1	Nepal Doorsanchar Company Limited,	Pulchowk, Lalitpur
2	Spice Nepal Pvt. Ltd.	Mero Mobile Building Lalitpur
Rural Telecom Operators		
1	STM Telecom Sanchar Pvt. Ltd.	Thirbam Sadak 5, Baluwatar, Kathmandu
Limited Mobility Service based on wireless telecommunication to be operated in specified area		
1	United Telecom Limited	Triveni Complex, Putalisadak, Kathmandu

Sn	Name	Address
Internet Service Providers		
1	Mercantile Communications Pvt. Ltd	Durbar Marg, Kathmandu
2	Worldlink Communications Pvt. Ltd	Jawalakhel, Lalitpur
3	Everest Net Pvt. Ltd.	Ekantakuna, Jawalakhel, Lalitpur
4	Global Internet Services Pvt. Ltd.	Ward No-3, Bihar Area, Lalitpur
5	Himalayan Online Service Pvt. Ltd.	Durbar Marg, Kathmandu
6	Infocom Pvt. Ltd.	Hattisar, Kathmandu
7	Nepal DoorSanchar Company Limited (NDCL)	Pulchowk, Lalitpur
8	I MAX Pvt. Ltd.	Ranjana Galli, New Road, Kathmandu
9	Square Network Pvt. Ltd.	GPO-8975, EPC-1389 Sanepa-2, Lalitpur
10	Sailung Dot Com Pvt. Ltd.	Bhanuchowk, Dharan
11	Fewa Net Pvt. Ltd.	Mahendra Pool, Pokhara, Kaski
12	Cyber Space Pvt. Ltd.	Adarshanagar, Birgunj
13	Netlink Communications Pvt. Ltd	P.O.box- 7940 Bagwatimarg , Naxal, kathmandu
14	Global Net Pvt. Ltd.	Bharatpur, Chitwan
15	Himal Technologies Pvt. Ltd.	5409, Jayabageswori Kathmandu
16	Subisu Cablenet Pvt. Ltd.	Baluwatar, Kathmandu
17	Spacetime Internet Pvt. Ltd	Minbhawan, Kathmandu
18	Mero ISP Pvt. Ltd	Kantipur, Kathmandu
19	Pokhara I-net Pvt. Ltd.	Gairapatan, Pokhara, PO Box-86
20	Japan Nepal Information Technology Pvt. Ltd.	Kalikasthan, Kathmandu, Nepal
21	Computer Click Online Pvt. Ltd.	Putalisadak, Kathmandu
22	Personal Broadband Nepal Pvt. Ltd.	
23	IP Communications Pvt. Ltd.	Putalisadak, Kathmandu
24	Netplus Technology Pvt. Ltd.	Sanepa, Lalitpur
25	Heath Net Nepal	Maharajgunj Kathmandu
26	Global Plus Networks Pvt. Ltd.	Durbarmarg, Kathmandu
27	Buddha Net Pvt. Ltd.	Baidam, Pokhara
28	Stupa Net Pvt. Ltd.	
29	Namche Networks Pvt. Ltd.	Manbhawan, Lalitpur
30	Spice Nepal Pvt. Ltd.	Mero Mobile Building Ekantakuna, Jawalakhel-4, Lalitpur
31	Broadlink Network and Communication Pvt. Ltd.	Baneshwore, Kathmandu

Source: www.nta.gov.np

APPENDIX – II

Tele-centers established in Nepal by various agencies.

A. High Level Commission for Information Technology

Bashamadi, Makwanpur

Birendranagar, Surkhet

Gaighat, Udaypur

Panauti, Kavre

Silgadi, Doti

Tukucho, Mustang

B. National Information Technology Centre

Devighat, Nuwakot

Dumraha, Sunsari

Gerkhutar, Nuwakot

Jomsong Airport, Mustang

Jomsong, Mustang

Katuwachauhari, Parbat

Kobang, Mustang

Krishna Chwok, Chitwan

Madhesa, Sunsari

Majhphani, Parbat

Marpha, Mustang

Milanchwok, Parbat