E-GOVERNANCE IN NEPAL: PROSPECTS AND CHALLENGES IN IMPLEMENTATION

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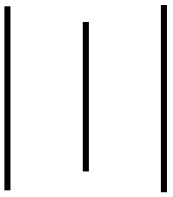

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RECOMMENDATION

This is to certify that the thesis

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DECLARATION

I hereby declare that the work reported in this thesis entitled "**E-Governance In Nepal Prospects And Challenges In Implementation**" submitted to Office of the Dean, Faculty of Management, Tribhuvan University, is my original work done in the form of partial fulfillment of the requirement for the degree of Master of Business Studies (MBS) under the supervision of **Shree Bhadra Neupane** and **Shanker Nath Adhikari** of Shanker Dev Campus, T.U.

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ABBREVIATION

ADB	:	Asian Development Bank
ADB	:	Asian Development Bank
CAN	:	Computer Association of Nepal
EDCF	:	Economic Development Cooperation Fund
EGMP	:	e-Government Master Plan
e-GMP	:	e-Governance Master Plan
e-Governance	:	Electronic Governance
ENRD	:	Electronic Networking Research and Development
G2B	:	Government to Business
G2C	:	Government to Citizen
G2E	:	Government to Employee
G2G	:	Government to Government
GIDC	:	Government Integrated Data Center
GPR	:	Government Process Reengineering
HLCIT	:	High Level Commission for Information Technology
ICT	:	Information and Communication Technology
IT	:	Information Technology
KIPA	:	Korea IT Industry Promotion Agency
MIC	:	Ministry of Information and Communication
NITC	:	National Information Technology Center
NTC	:	Nepal Telecom Company
OECD	:	Organization for Economic Cooperation and Development
RSAT	:	Regional Satellite Trunk
UN	:	United Nation
VSAT	:	Very Small Aperture Terminal
Wi-Fi	:	Wireless Fidelity

CHAPTER - I
INTRODUCTION

The advancement of information and communication technologies is altering the way of life and work, thereby driving economic and social changes. E-Governments have emerged as a means of the public sector to innovate themselves in response to such changes. Some swift countries have recognized the e-Governments as a tool to construct modern competitive governments and ultimately the national developments. Attracted by its potential, other countries quickly followed the path. As a matter of fact, all 192 UN member states are currently providing various e-Government services, attempting to enhance public service delivery and improve government process (*UN; 2008*: 12).

Many economists, management experts and futurists agree that the world has entered the new age of information. The new era is being increasingly referred to as the *Information Age*. The primary drivers of this information age are technology, market, enterprise and marketing entrepreneurship. The emergence of the Internet and developments in processing capacity and data storage during the 1990s has significantly altered the environment for ICT use across society and in government.

In every region of the globe, from developing countries to industrialized ones, central and local governments are putting critical information online, automating bulky processes and interacting electronically with their citizens. Following e-commerce's evolution in the private sector, electronic government seems to be the next generation in the public sector. According to Bose (2004), e-Governance is the application of ICT to innovation in, and improvement of, government services. It has become a popular focus of government efforts in many developed countries such as South Korea, UK and Australia and, more recently, in several developing countries, e.g. Dubai.

The rapid improvements in information and communication technologies are revolutionizing the way modern governments deliver services to the citizens. While the developed countries have been able to benefit greatly from the wide use of IT, many

developing and least developed countries are still grasping to make sense of how IT fits into their problems. The trend is true in the case of e-Governance also. Most implementation of e-Governance implementation in developing and least developed countries fail, with 35% being classified as total failures and 50% as partial failures (*Heeks ; 2003*:2). This is a bitter fact, especially least developed countries like Nepal has very limited resources and money to spend and cannot afford to wastefully spend large amounts of money typically of such projects. In Nepal, e-Governance has been talked about a lot; some government offices have even taken innovative steps towards certain e-Governance projects. In the current scenario the speeds of its development is very slow and even the government is not taking it very seriously. However the development of ICTs and e-Governance are looked upon with great hopes to materialize the country's dream. International organizations such as the World Bank and the ADB, as well as countries such as Korea and India, who are leaders in e-governance, have been supporting Nepal in this regard.

The Nepal e-Governance Master Plan (e-GMP) has also provided a framework for moving forward. This Master Plan, undertaken by the Nepal High Level Commission for Information Technology with the support of the Korea IT Industry Promotion Agency, has sought to establish the vision, lead applications and management framework including legislation necessary to proceed further. India has provided substantial assistance, particularly by way of infrastructure and connectivity.

In order for the government to function as e-Governance, it must adhere to the following principles: government services should be citizen-focused, accessible and inclusive adopt at managing information.

In order to make e-Governance more accessible, cost effective and responsive, local public services should be:

- Integrated so that they make sense to the citizen.
- Accessible so that the citizen has more choice in how to contact and receive public services at times convenient to the citizen.

- Delivered electronically for faster and better value services.
- Delivered by local and regional partnerships.

There are many definitions of electronic government due to the different perspectives of experts, especially since the term itself is new in the field of knowledge. As a result, there is no one definition enjoying broad acceptance. Our starting point is that the concept of governance refers to a process whereby elements in society wield power and authority, and influence and perform policies whereas the term government refers to the organizations in the public sector.

E-Governance is more than just a government website on the Internet. But what is it exactly? What are the benefits of e-Governance? What can governments do to make it work? Solutions to development issues often require changes to government processes, e.g. by decentralization. Objectives are generally to improve efficiency and effectiveness and to save costs. The driving force can also be public demand for online services and information that increase democratic participation, accountability, transparency, and the quality and speed of services. The implementation and use of ICT solutions can support governance reforms. The purpose of this research is to find benefits, barriers, drivers, and challenges of e-Governance.

1.2 Statement of the Problem

In modern days, e-Governance has been considered as a best tool to develop the country from the most developed to least developed in the world. Almost all countries in the world have tried to design and implement the e-Governance system to some scale and of course Nepal has also initiated some towards the implementation of e-Governance.

In spite of all the initiation, Nepal is still not in the position to implement e-Governance to some acceptable level. Many e-Governance projects conducted by the government fails and it still not success to minimize the digital gap between urban and rural areas of the country. What are the major reasons behind this and what would be the necessary steps to implement it successfully are the major issue of this study.

1.2 Objective of the Study

This study has the following principle aim:

To investigate the dynamic nature of e-Governance, Challenges that influence e-Governance implementation, and possible solutions to implement e-Governance in Nepal over time.

To achieve this aim, the following research questions need to be answered:

- To know the current status of e-governance in Nepal.
- To find out the factors that influence e-Governance implementation.
- List out the Challenges on its implementation.
- Readiness of government to its implementation.
- Comparative study of the government office with/without implementation.
- To find out whether the available resource is utilized or not.
- Further plans and project related to it.

1. 3 Scopes for e-Governance in Nepal

The rationale for establishing e-Governance needs to relate directly to the common needs and goals of the community if it is to form a vision for an e-Governance program in Nepal. The vision needs to be shared by the stakeholders including communities, businesses, special interest groups and others. Such goals commonly include:

- Rural poverty alleviation and improved service delivery to the community.
- Enhanced productivity (and efficiency) of government agencies.
- More effective rule-of-law with a stronger legal system and law enforcement.
- Economic development and strengthening implementation of good governance.

To scope an e-Governance program it is usual to assess the country's readiness for e-Governance. e-Governance readiness is not only a public sector issue it includes considerations of:

- Institutional frameworks and policies.
- Human resources.
- Institutional cultures.

- National infrastructure.
- Economic health, education.
- Information policies.
- Private sector development.
- Legislation and regulation.
- Leadership both political and bureaucratic.

Even where infrastructure is weak there can be effective e-Governance programs that may also provide a catalyst for infrastructure development. Weaknesses in human resources are more problematic and often the skills of the community and private sector will exceed those of the public sector, where technology may be actively resisted regardless of the leadership policy position. After implementation of e-Governance, it is expected to improve stability and efficiency through concentrated central management and minimization of operation cost through centralized installation.

1.4 Significance of the Study

This study covers the social, economical and political aspect of e-Governance implementation in Nepal. This study is highly significant in the sense of understanding the status of e-Governance in Nepal, its relevance and advantages and the primary challenges to implement. It highlights the major challenges to implement and possible strategies towards the solution in Nepalese perspective. The study would be very much helpful to the researchers and readers related to the field of e-Governance in Nepal.

1.5 Thesis Structure

Chapter - 1: Introduction

This chapter provides the brief introduction of e-Governance, the statement of the problem, scope, objective and significance of the study.

Chapter - 2: Literature Review

This chapter presents a literature review on e-Governance and reviews the many definitions, categories and benefits that are described in the existing e-Governance literature. It also describes some issues faced by the implementation of e-Governance both in general and least developed countries particular. A relationship of e-Governance with e-Commerce is also included. Furthermore, a brief overview of implementation of e-Governance in Korea, USA and Hungary is provided.

Chapter - 3: Research Methodology

This chapter provides a literature review on research methodologies and its applications. It presents the methods that were used in this research. It includes detail data collection and sources of data collection.

Chapter - 4: Data Presentation and Analysis

This chapter provides the detail data analysis and empirical work that have taken place. It also presents the detail findings of the study. It includes discussion on the overall findings.

Chapter - 5: Summary, Conclusion and Recommendations

Finally this chapter summarizes and concludes this research, the possible strategies towards the solution and highlights the possible further works.

CHAPTER - II
LITERATURE REVIEW

2.1 Conceptualization of e-Government

"An e-Government is a complex socio-technical system in which heterogeneous stakeholders are interactively entangled to fulfill their best interests. Rich and diverse researches have examined and analyzed multiple issues in implementing the e-Government among developed countries" (*Nour; 2007*:4).

The term 'e-Government' is diversely defined by different scholars, public officers and other stakeholders. Narrowly, an e-Government indicates a system of effective provision of public services via information and communication technologies. It also implies electronic transaction between the government and other actors such as citizens or businesses in society through new technologies including the internet. The concept of an e-Government includes all applications of information and communication technologies that improve efficiency, effectiveness, transparency and accountability of daily administration of government. Expanded from the definition of a simple electronic administration of central and local governments, the broader concept of an e-Government stands for a more citizen-friendly government that provides enhanced public services and improves productivity of the governments via extended networks and advanced technologies.

Developing further from the definition of an e-Government, the e-Government performance has been defined and measured in various ways. Mere successful application of technological innovation cannot constitute successful e-Governments. Studies on developed countries imply that successful e-Governments are those that achieve multiple values like efficiency in administration, innovation in organization, effectiveness of public services, and transparency and participation (*Nour; 2007*: 6; *Caroline; 2008*: 7). Similarly, Moon and Norris (2005) consider administrative change, efficiency and revenue generation as critical e-Government outcomes. Also, Nour (2007) proposed efficiency, effectiveness, access, accountability, equity, empowerment and participation,

transparency, availability of services, responsiveness and integrity as critical goals of an e-Government, and investigated a relationship between these goals and contextual factors such as the degree of e-Government readiness and the level of democratization. These studies show that an e-Government is considered successful when it realizes these visions and goals.

e-Government is an ambitious and challenging government initiative for electronic service delivery and electronic democracy, with firm targets for implementation. e-Government means exploiting the power of information and communications technology .It is about putting citizens and customers at the heart of everything we do, and building service access, delivery and democratic accountability around them. It is about using technology to break down social exclusion. It is about supporting the transformation of public agencies into more open, accountable bodies, which can enable and encourage citizens to exercise their rights and responsibilities, and contribute to the modernization of country. From this broad statement e-Government may mean different things to different people, and priorities will also differ, but at its root it means that government is accessible electronically. And the Government has set some firm targets to achieve this. In order to be the government as e-Government it must have to follow the following principles:-

- **Government Services should be citizen-focused.** People do not need to know how government is organized or who does what. Services need to be offered in ways that make sense to the customer.
- **Government Services should be accessible.** All services which can be delivered electronically should be whether over the Internet, through mobile phones, digital TV, Call centers, or personal computers.
- **Government Services should be inclusive.** New services must be developed so that they are available to all and easy to use.
- **Managing Information.** Information policies must be adopted which are coherent and compatible so that the best use is made of Government's valuable knowledge and information resources.

In order to make e-Government more accessible, cost effective and responsive, local public services should be:

- Joined up so that they make sense to the citizen.
- Accessible so that the citizen has more choice in how to contact and receive public services at times convenient to the citizen.
- Delivered electronically for faster and better value services.
- Delivered by local and regional partnerships.
- Delivered seamlessly so that citizens are not asked to provide the same information more than once.
- Open and accountable so that the performance levels of local services are transparent and citizens can contact local representatives electronically and participate electronically in local decision making.

There are many definitions of electronic government due to the different perspectives of experts especially since the term itself is new in the field of knowledge. As a result, there is no one definition enjoying broad acceptance. In fact, some researchers use the terms 'e-Governance' and 'e-Government' interchangeably to describe the same issue, while for others they bear different meanings. Our starting point is that the concept of governance refers to a process whereby elements in society wield power and authority, and influence and perform policies whereas government refers to the organizations in the public sector.

2.1.1 Definition of e-Government

"e-Government" refers to the use of ICT and e-commerce to provide access to government information, communicating within the government organization, delivery of public services to their citizens and business partners.

There are different definitions from many different perspectives of e-Government. The table below provides the sample of sample of definitions.

Table 2.1

Definition of e-Governance

Author	Definitions
World Bank, 2007	"E-Government" refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.
Cook et. All, 2002	E-Government has four dimensions in relation to major functions and activities of governments: e-Services (delivery of government information electronically), e-Management (use of ICTs to improve management and communication within and outside government structures), e-Democracy (use of ICTs to enhance citizen participation in democratic activities) and e-Commerce (online transaction of goods and services)
Bhatnagar (2002)	Sharing and delivering services to citizens and businesses for the purpose of reducing corruption, strengthening accountability, reducing time and cost, and increasing transparency.

2.1.2 Comparison between e-Government and e-Governance

The terms e-Governance and e-Government are often used interchangeably. The choice of terms depends on what they are emphasizing; e-Governance emphasizes the governing processes whereas e-Government emphasizes the electronic infrastructure. e-Governance is a broader topic that deals with the whole spectrum of the relationship and networks within government regarding the usage and application of ICTs e-Government is actually a narrower discipline dealing with the development of online services to the citizens such as e-taxation, e-transportation or e-health.

e-Government and e-Governance is a completely different topic on the basis of the services providing by it. e-Government is an institutional approach to jurisdictional

political operation. e-Governance is a procedural approach to co-operative administrative relations, i.e. the encompassing of basic and standard procedures within the confine of political administration. The ‘e’ part of both the e-Government and e-Governance stands for the electronic platform or infrastructure that enables and supports the networking of public policy development and deployment. It is by now widely acknowledged that the original impetus for acquiring and using electronic apparatus in government and governance arose from the earlier success with the same kind of strategy in commerce.

2.1.3 e-Government and e-Commerce

Some researchers have argued that e-Government is follow-on from e-Commerce since both of them support the electronic mediation of transactions over potentially great distances and both also require consumer/citizen trust because of the absence of face-to-face interaction. In addition, both are/can be based on Internet technology designed to facilitate the exchange of goods, services and information between two or more parties. Therefore, utilizing ICT not only enables the private sector to reduce costs but also increase profits and make their products more available to consumers, it can also help government agencies to improve the efficiency of their services, adopt a more customer-oriented approach, and save on operating costs, which becomes increasingly important under current economic conditions. However, there are many differences between these paradigms, illustrated in the table below:

Table 2.2

Differences between e-Government and e-Commerce

e-Commerce	e-Government	References
Refers to the commercial use of Internet technology to sell and purchase goods or services	e-Government focuses on delivering their services to citizens without expecting profit.	Jorgensen and Cable, 2002
e-Commerce deals with private sector with more freedom for doing their own business	e-Government deals with the public sector which has many features including roles limited by legislation and complex accountability. Also, actions must be justified and objectives and outputs are difficult to state or measure	Holtham, 1992 and Carter and Belanger, 2004
e-Commerce is allowed to choose its customers	e-Government agencies are responsible for providing access to information and services to any citizen and the entire eligible population, including individuals with lower incomes and disabilities	Carter and Belanger, 2005
Decision–making can be centralized and easy to make a decision than public sector.	Decision-making authority is less centralized in government agencies than in businesses. This dispersal of authority impedes the development and implementation of new government services	Moon, 2002
Is designed to be accessible for whom able to achieve services.	The digital divide makes e-Government task of providing universally accessible online government services challenging	Wilford, 2004 and Fountain, 2003
The commercial view is the main purpose for its adoption	The political nature of government agencies is a feature that distinguishes e-Government from e-Commerce	Warkentine tal, 2002
The goal is to obtain the profit and reduce the cost.	In a democratic government, public sector agencies are constrained by the requirement to allocate resources and provide services that are “in the best interest of the public”	OECD, 2004

It is important to realize the similarity and differences between e-Commerce and e-Government. This is because a lot of issues must be considered according to the environment of implementation. In addition, it is quite hard directly to transfer results obtained in other field, such as e-Commerce, to the field of public sector without considering many issues such as social factors, organizational factors and human factors.

2.1.4 Categories of e-Governance

As e-Governance can be viewed as involving interactions and relationships among citizens, government entities, businesses, its functionality can be classified into four main categories as listed in table shown below.

Table 2.3

e-Governance Categories

Category	Abbreviation
Government to Citizen	G2C
Government to Government	G2G
Government to Business	G2B
Government to Employee	G2E

These categories are defined below.

2.1.4.1 Government to Citizen (G2C)

It deals with the relationship between government and citizens. G2C will aim at connecting citizens to government by talking to citizens and supporting accountability, by listening to citizens and supporting democracy, and by improving public services. *The spirit behind G2C services will encompass all the services that the Government is delivering to its citizens.* It will involve better services to the citizens through single point delivery mechanism and will involve areas like:

1. Payment of utility bills and taxes
2. Registration of vehicles and Issuing and renewing of driving license.
3. Issuing of passports and nationality card.
4. Citizen health services through e-Medicine
5. E-Education for the citizens

2.1.4.2 Government to Government (G2G)

This can also be referred as *e-Administration.* It refers to the relationship between governmental organizations and interaction between their officials. It involves improving government processes by cutting costs, by managing performance, by making strategic

connections within government, and by creating empowerment. It will involve networking all Government offices so as to produce synergy among them.

- For example use of e-mail for internal government communication.
- The cross-linking of various departments and exchange of information amongst various components will simplify the process of Governance through e-secretariat.
- Built citizen confidence by the help of e-Police.
- Improving the activities of court using e-Court.
- Establishing state wide networks that involve linking all the departments of the Government with various district headquarters and the state capital, facilitating the flow of information between the various state departments and it's constituents.

2.1.4.3 Government to Business (G2B)

It consists of the electronic interactions between government agencies and private business entities. Businesses as well as citizen carryout the transactions with government. For examples

- Government procurement process through internet.
- Renewing registration, paying taxes and downloading tender's information.

2.1.4.4 Government to Employee (G2E)

This is to increase the productivity of both government and its employees by principally enabling the former to interact more effectively with the later. G2E services include information on government rules, policies and civil rights as well as e-learning capabilities.

2.1.5 Why e-Governance for Development?

As is true all over the world, government in the developing and least developed nations costs too much, delivers too little, and is not sufficiently responsive or accountable. Good governance reforms aim to address these shortcomings. This is progresses after many years of effort in implementing such reforms has been much more limited than expected. e-Governance offers a new way forward, helping improve government processes, connect citizens, and build interactions with and within civil society. What exactly has e-

governance got to offer? At root, it has the power of ICTs, which provide three basic change potentials for good governance for development:

Automation

Replacing current human-executed processes which involve accepting, storing, processing, outputting or transmitting information. For example: the automation of existing clerical functions.

Informatisation

Supporting current human-executed information processes. For example: supporting current processes of decision making, communication, and decision implementation.

Transformation

Creating new ICT-executed information processes or supporting new human-executed information processes. For example: creating new methods of public service delivery.

These change potentials, in turn, can bring – singly or in combination – five main benefits to governance for development:

Efficiency Gains

Governance that is cheaper: producing the same outputs at lower total cost. Governance that does more: producing more outputs at the same total cost. Governance that is quicker: producing the same outputs at the same total cost in less time.

Effectiveness Gains

Governance that works better: producing the same outputs at the same total cost in the same time, but to a higher quality standard. *Governance that is innovative*: producing new outputs.

These are the direct and objective benefits. ICTs can bring many others. For example, use of ICTs by government can bring benefits both internally and externally:

- Internally, providing benefits such as better staff motivation or greater political control or an improved public image.
- Externally, by delivering cheaper, better services to those who depend on government. Indirectly by demonstrating the benefits of ICTs to the wider population; by catalyzing the local IT industry; and by encouraging foreign investment.

2.1.6 Stages of e-Governance Evolution

Stage I - Emerging

A government's online presence is mainly comprised of a web page and/or an official website; links to ministries or departments of education, health, social welfare, labor and finance may/may not exist. Much of the information is static and there is little interaction with citizens.

Stage II - Enhanced

Governments provide more information on public policy and governance. They have created links to archived information that is easily accessible to citizens, as for instance, documents, forms, reports, laws and regulations, and newsletters.

Stage III - Interactive

Governments deliver online services such as downloadable forms for tax payments and applications for license renewals. In addition, the beginnings of an interactive portal or website with services to enhance the convenience of citizens are evident.

Stage IV - Transactional

Governments begin to transform themselves by introducing two-way interactions between 'citizen and government'. It includes options for paying taxes, applying for ID cards, birth certificates, passports and license renewals, as well as other similar G2C interactions, and allows the citizen to access these services online 24/7. All transactions are conducted online.

Stage V - Connected

Governments transform themselves into a connected entity that responds to the needs of its citizens by developing an integrated back office infrastructure. This is the most sophisticated level of online e-Government initiatives and is characterized by:

1. Horizontal connections (among government agencies)
2. Vertical connections (central and local government agencies)
3. Infrastructure connections (interoperability issues)
4. Connections between governments and citizens
5. Connections among stakeholders (government, private sector, academic institutions, NGOs and civil society).

2.2 e-Governance Case Studies

2.2.1 e-Governance in Korea

In Korea in September 1993, the term “Electronic Government” first appeared in official documents. This period was also a turning point for the infrastructure of e-governance in Korea. The developing of e-governance in Korea is increasing every year and the project that have been launched from following year of 1993 are:-

- The Ministry of Information and Communication (MIC) was launched the next year in 1994.
- Framework on Informatization Promotion Act” by the National Assembly which became the basis for policies on informatization and e-governance in 1995.
- In 1997, an evaluation system for informatization projects was introduced while plans were made for implementation of the advanced information and communication technology.
- “The Participatory Government’s Vision and Direction of E-Government” was announced in May 2003, and the ”E-Government Roadmap” based on the vision of realizing the “World’s Best Open e-Government” was released in August of the same year.

2.2.2 e-Governance in USA

Different Administration (i.e. Clinton administration, Bush administration) wanted to use information technology to improve. Americans' quality of life and reinvigorate the economy. The administration identified technology as the "engine of economic growth." Among its top priorities was accelerating the development of a National Information Infrastructure of high-speed telecommunications networks, advanced computer systems, and software. Electronic government can overcome the barriers of time and distance to perform government business and give people public information and services whenever and wherever. To bring electronic government into reality, two things were thought to be required and they are:

- Leadership to place information technology at the centre of the business.
- Commitment to the necessary support mechanisms.

Expanding electronic Government, or “e-Government,” was one of the five key elements of the President’s Management Agenda. Initiated in July 2001, this effort was designed to make better use of information technology (IT) investments to eliminate billions of dollars of wasteful federal spending, reduce government’s paperwork burden on citizens and businesses, and improve government response time to citizens – from weeks down to minutes. A key goal is for citizens to be able to access government services and information within three “clicks,” when using the internet. The Federal government is taking a two-pronged approach in e-Government One path is through modernizing IT investments within agencies using the principles of e-business. The second path is through integrating IT investments across agencies centered on groups of citizens (i.e., individuals, businesses, other governments and federal government employees). There have been measurable improvements in how government serves citizens to date, as a result of both agency-specific efforts and the 24 cross-agency initiatives.

2.2.3 Lessons Learned from e-Government in Hungary

Hungary is one of the developing countries in Europe. E-Government development and its implementation are not up to the level in Hungary comparison to other countries of

European Union. However the speed of e-Government development in the country is highly satisfactory comparison with most of the Asian countries and the country like Nepal can learn a lot of things from its development. The history of e-Government in Hungary is not so long but e-Government indicators are good. For several years, Hungary has focused on delivering the 20 e-services benchmarked by the EU. This has led to the delivery of a number of e-services for citizens and businesses within specific sectors, and many services have been put on line quickly. There are many reasons for being the success of implementing in a short period of time. The main reasons are leadership commitment, High Priority, political stability, technological culture, European Union encouragement and assistance and Competency among European countries.

The main objectives of the e-Government program are to provide citizen-friendly services and to improve the efficiency of internal operations according to its motto: "a service-provider state in the service of its citizens." Similarly establish a network infrastructure such as a government backbone network connecting all government bodies, an e-authentication system, government directory and mail systems, enactment of the necessary e-laws and training of civil servants.

2.2.3.1 Brief description of the governance structure

Hungary has three levels of government: Central government, 19 counties and the capital Budapest, and municipalities. Hungary is a Parliamentary Republic, and its legislative body – a unicameral parliament (National Assembly) – consists of 386 members elected for four years. Executive power is formally held by the President of the Republic, who is the Head of State. The government is headed by the Prime Minister. The President is elected by a two-thirds majority vote by the National Assembly for five years. The President has limited policy-making power, and effective executive power is exercised by the government, in which the Prime Minister plays a key role. The National Assembly elects the Prime Minister upon a proposal from the President of the Republic, on the basis of the principle of parliamentary majority, and approves the government program. The Prime Minister nominates the ministers of the government, who are formally appointed by the President after approval by the relevant committees of the National Assembly.

Public administration functions are performed by two types of institutions: Local or regional offices representing and directed by the central government, and local governments directed by locally elected bodies. According to 1989 amendments to the Constitution, the local governments are independent. Local governments have an elected representative body and an executive entity, the Mayor's Office. The Mayor's Office executes both local administrative tasks (for which it is responsible to the representative body) and state administrative tasks (for which it is responsible to the state authorities). Local governments are legal entities that have full independence in local matters including the adoption of local legislation and administration of financial resources. Their income base is generated through local taxes and central government funding of generic and specific nature. At the *local level* Hungary has 3,145 local governments operating in 19 counties and Budapest.

2.2.3.2 The strategic Approach towards e-Government

During the 16-year history of the Republic of Hungary no profound reform of the central government administration took place. In its June 2006 policy statement, the new Hungarian government announced that it will take up the challenge of extensive and profound public sector reforms. E-Government development in Hungary has primarily been driven by political priorities. Like most developed countries, Hungary has seen e-Government development as a part of a larger political and strategic view on developing an Information Society and a digital economy to enable the country to compete globally. For Hungary, the main political driver for most policy areas has been Hungary's political priority goal: Integration into the leading market economies in Europe and globally. With EU membership and the accession process as a national goal, Hungary has focused on European "quickwins" within the e-Government policy area, such as aligning policies, laws and governance structures to European Union demands.

2.2.3.3 ICT and e-Government in Hungary

Hungary has a good position of ICT intensity in OECD (Organization for Economic Co-operation and Development) countries. The number of PC's and internet penetration are

increasing rapidly in the country. In 2005, GSM penetration was 86%. UN e-readiness index of Hungary is 0.6494 in 2008.

e-Government is a tool of the modernization of public administration. In Hungary, The modernization of public administration has two centers in the Government:

- Central government: Prime Minister's Office, e-Government Centre
- Local government, regulation, standardization: Ministry of Informatics and Communication

Use of internet in the public administration is highly growing in Hungary. The infrastructure of this activity could be characterized by the following data.

Computer Infrastructure

- Central administration: 0.93 computer/employee (practically complete)
- Local administration: 0.89 computer/employee

Network Infrastructure

- Central: 500 institutes on government backbone, LAN: 98%, Internet access : 97%
- Local : Internet access: 88%, LAN: 36%

Home Pages

- Central : > 90%
- Local : < 40%

Development of e-Governance in Hungary can be classified into three phases.

1. Initial Phase

The root of e-Government development in Hungary dates back to the early 1990s. Modernization of office equipment and exchanging typewriters for PCs represented the first steps on the road from the traditional public administration to ICT-enabled government or e-Government. At the same time, the demands of civil society called for rapid progress in establishing an Information Society. e-Government is not viewed in the

same way throughout the Hungarian government. Some see e-Government primarily as the development of ICT systems within public administration. Others, however, have a more far-sighted perception of e-Government as an integrated part of the Information Society or as enabler for an efficient and effective public sector delivering high-quality services to the public and as an important tool for reducing the digital divide.

The first body responsible for ICT development in public administration was the Coordination Office for IT within the Prime Minister's Office, which served as a secretariat for the Inter-Departmental Committee for Informatics and was set up by the ministries' IT chiefs in 1991.

2. Development Phase

In 1997, the Office was transformed into the Deputy State Secretariat for IT and in June 2000, a new institution, the Office of the Government Commissioner for Information and Communication Technology (*Informatikai Kormánybiztosság – IKB*), was established in the Prime Minister's Office. Within IKB a separate organizational unit, the Division of Electronic Government, was established to co-ordinate the development of government information systems. By that time, several ministries and institutions had developed their own networks connecting their own areas of responsibility. The most important among these were the Ministry of Education, the Ministry of Interior, the Ministry of Cultural Heritage, and two offices of the Ministry of Finance: the State Tax Authority and the Hungarian Customs and Finance Guard. In the case of the latter, e-Government development was financed by the PHARE1 programme, because of the substantial transit trade that had to be controlled according to EU standards.

3. Implementation Phase

In 2002, the government split the responsibilities and tasks of IKB. As developing an Information Society in Hungary had become a political priority, a new Ministry was established – the Ministry of Informatics and Communications (Informatikai és Hírközlési Minisztérium – *IHM*). However, responsibility for e-Government remained in the Prime Minister's Office through a new Office of Government Information

Technology and Civil Relations. In mid-2003, this office became the Electronic Government Centre (Elektronikuskormányzat-központ – *EKK*). Since then, EKK has been responsible for the co-ordination of e-Government development at the central level.

Although local governments are independent bodies, the Ministry of Interior supervises the public services they provide on behalf of central government. In addition, e-Government development goals at local government level were established as a sub-strategy of the Hungarian Information Society Strategy (aselaborated by the IHM).

In November 2004, a new version of the Governmental Portal, *www.magyarorszag.hu*,was launched, and the Electronic Government Backbone (Elektronikus Kormányzati Gerinchálózat – *EKG*), a secure government-wide communication network (which had been under development since 2002) became a country-wide basic infrastructure.

Since April 2005, a transactional gateway, the Client Gate *(Ügyfélkapu)*, has allowed users to securely identify themselves on line and gain access to transactional e-Government services. Following Hungary's EU accession, the focus of the e-Government programme as been the 20 services benchmarked by the European Union. Ranking at the bottom of the countries benchmarked by EU at the time of accession, Hungary decided to invest considerable efforts to catch up with other EU member states. In July 2005, the *Act on the Freedom of Information by Electronic Means*3 was adopted; its goal is the establishment of the legal environment required to create a transparent digital state. The law defines a list of specific data of public interest that must be published on the Internet and mandates the creation of a discussion forum for citizens.

2.2.3.4 New e-Governance Services under Implementation in Hungary

E-Governance in Hungary is not fully implemented but they have lot of e-Governance application under development. Most of the services are about to implement very soon and they are trying to implement all their application to the European standard. The

services mentioned below are the e-Governance services under implementation in Hungary.

Table 2.4

New e-Governance Services under implementation in Hungary

Institution	E-services under implementation
Hungarian National Public Health and Medical Officer Service (ÁNTSZ)	Epidemic reports – 24.000 /year will be sent electronically.
Employment and Social Affairs Office (FSZH),	Declaration of staff number cutbacks over 12 employees at the same time.
Central Office for Administrative and Electronic Public Services (KEKKH)	Electronic handling of application s for new ID cards. Electronic registration in ownership changing of cars. Applications for "ethical certificate" necessary for certain jobs. Electronic "ethical certificate"
Central Statistical Office	Electronic declaration of statistical data (mandatory for businesses)
Ministry of Foreign Affairs	Electronic data transfer from the Hungarian Embassies to the Ministry, when new Passport should be issued for Hungarian citizens living abroad.
Hungarian Office for Mining and Geology (MBFH)	Electronic handling of mining permissions
Prime Minister's Office (MeH)	New all-governmental browser ("no wrong door" philosophy), statistical module collecting information about the use of different services, extension of information delivery for citizens concerning their cases.
Hungarian Patent Office MSzH)	Electronic forms for patent related queries
Ministry of Economy and Transport (NFGM)	Electronic handling of building permits Electronic data collection
National Consumer Protection Office (NFH)	Electronic handling of complaints
National Health Insurance Company (OEP)	Electronic handling of applications for public care attendance

2.3 Review from Previous Thesis

Bhatta, Guna Raj(2006), has conducted a thesis on " e-Governance System of Cottage and Small Industry Office".

The Primary objectives of the study are listed below:

- To examine the existing e-Governance System of Cottage and Small Industry Office.
- To evaluate Strengths, Weakness, Opportunities and Threats (SWOT) relating to e-Governance.
- To recommend the new e-Governance system in CSIO, Kathmandu.

The study was carried out by using following methodology:

- Data was collected mainly from primary sources. Informal interviews, Observations, questionnaires were the methods used to collect data from the primary sources. Similarly Prospectus and Catalogue of the organization were other sources of data.
- Tables and figures, system approach, data flow diagram, flow chart were used to present the data in the study. Data collected from primary sources are displayed in table format and the data have been analyzed using percentage method.

Bhatta concluded that the use of e-Governance system in organization can help to boost the efficiency and productivity of the organization. It will provide sufficient transparency to the public and will provide the service in no time. The major findings that the researcher has found are listed below:

- CSIO, Kathmandu is using its Online Governance System (OGS) as a first e-Governance system in Nepal, which can be a model fr the other government offices.
- The Online Governance System of CSIO can serve the concerned publics from any part of the world. The necessary documents can be attached and the total information can send in easy way.
- Nepali Unicode Support is necessary to fill up the form. The total front end application is designed in Nepali Language using Unicode.
- e-Governance system of CSIO is using Linux server and Firebird as a database server.

- There is no special MIS and IT department or section. The OGS system is handled by external hired staffs from Yomari Inc. The office is totally depends on to Yomari for any technical work and advice.
- There is no technical human resource for the operation of OGS. The CSIO staffs have given training for the operation of such e-Governance system.
- There is no provision of verifying the online documents attached through such system and also no provision for online payment, verifying the document and certificate of any service.
- There is no any role of e-Governance system if the service holders and need to visit the office for certificate and payment. It should implement new system providing total service via online system.

The study has some limitations as well which are listed below:

- The study is based on Cottage and Small Industry Office, Kathmandu. It may not cover all the e-Governance activities. So the study may be too narrow.
- The method of the study is not such comprehensive, No modern method is adopted.
- Because of the stored data and short term observation, the study does not cover population but only sample. Due to this data may lack accuracy and consistency.
- The study is based on the field observation and primary data. The data covers between the March-2006 to August- 2006. It does not cover all the data.

Neupane, Durga Prasad (2002), has conducted a case study on "MIS – A significant tool for effective management of an organization: A case study in RNAC".

The primary objectives of the researchers as follows:

- To examine the practice of maintaining information system in RNAC.
- To study the practical and theoretical aspect of management information system.
- To study existing decision making process management system, management process of RNAC.
- To study existing information system, flow of information in different departments, especially in personnel and general service department of RNAC.

- To find out drawbacks of existing information system and provide recommendation for the betterment, if it is needed.

The study was carried out by using following methodology:

- Data was collected from both primary and secondary sources. Observation, questionnaire, interview were the tools used to collect data from the primary sources while data of different department of RNAC, journals, Newsletters were the secondary sources of information.
- Tables and figures, system approach, data flow diagram, flow chart were used to present the data in the study. Data collected from primary sources are displayed in table format and the data have been analyzed using percentage method.

Neupane concluded that the use of computerized information system in organization can help to boost the efficiency and productivity of the organization. MIS and computer networking is an essential tool for effective management and handle day to day decision making functions of all levels of management of an organization. His other conclusions are as follows:

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

The research however is only concentrated with the external factor like hardware and software environment, user skills and seems to be deviated from its original track i.e. MIS. He has no specific recommendation for the betterment of the information system itself. He is lacking to tackle the environmental that directly affects to the dynamic business environment.

Bhattarai A.P. (2003) carried out a study on a "Performance of MIS in Kumari Bank"
The specific objectives of the study that the Bhattarai carried out are as follows:

- To identify factors affecting performance of MIS.
- To examine the existing situation of software personnel of the bank.
- To study the relation of training of end-users in the bank for improvement of the performance of MIS.
- To provide suggestions on the basis of the findings.

The methodology of the study was as follows:
Data was collected from both primary sources. Observation, direct communication and questionnaire are used to collect data. Data collected from primary sources are displayed in tabular format and the data have been analyzed using percentage method. Tables and figures, system approach, data flow diagrams, flow chart were used to present the in the study.

The researcher concluded that bank have installed the latest MIS software to manage their information needs, consolidation and streamlining in the software in taking place even years the initial purchase thus reducing the benefits to certain extent. Therefore the management of any organization should be actually aware of the various factors which affect the performance of MIS and take corrective actions as and when required. He explained that various factors like training to software personnel, training to end-users, good communication channels were identified which has a direct bearing on the performance of MIS.

Author successfully accomplished his specified objectives of the study. However the inclusion of real time screens and data input environment of information system in the research report would have been added value to his study.
The research carried out in one environment turns out to be irrelevant and impractical in certain interval of time. This research tried to eliminate most of the drawback that were found in earlier researches. This research has tried its best to avoid ambiguous data collection method and major anomalies in the research. For making the research more

specific and appropriate researcher has demonstrated the real time MIS environment that users and management encounters while carrying out MIS based operations.

2.4 Research Categories

According to the debates on the field of research there are two principal research categories; quantitative and qualitative. It should be noted that some researchers associated quantitative research with the positive stance, and qualitative research with the interpretive stance. However, qualitative and quantitative research is not synonymous for interpretive and positivist respectively. The choice of either quantitative or qualitative research depends on the researcher's assumptions. The following sections highlight some issues regarding quantitative and qualitative research and their respective associated research methods.

2.4.1 Quantitative Research

In the social sciences, quantitative research refers to the systematic empirical investigation of quantitative properties and phenomena and their relationships. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses pertaining to phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships.

According to Cornford and Smithson (1996) quantitative research is research that relies on developing metrics (numbers) that can be used to describe the phenomena (objects and relationships) under study. It is a deductive process which consists of measuring and analyzing the relationships between variables. Quantitative research uses different kinds of methods such as field and laboratory experiments to investigate a research problem or question. Researchers attempt to fragment phenomena into quantifiable or common categories that can then be applied to similar situations. Quantitative data using various techniques, such as:

Surveys: It is used to collect the same data from large groups of people. The data may include demographic information, opinions or satisfaction levels. The survey can be

managed in person, by mail, over the phone or via mail or the internet. In the survey the researcher asks same questions to all participants.

Structured Interviews: where questions take the form of "when" or "how many". These interviews can be used, for example, in opinion polls or market research to gather quantitative data.

Tests and Measures: It can be applied to find out what or how people think. They take a form of written questions with Yes/No answers.

Observation: It is most commonly used in quantitative research. Observers must consider the period of time that they should spend in observation; the day of observation should also be a representative day. Observation can be used to prove or enhance information gathered through other techniques.

Analysis of the data collected in quantitative research is typically performed using statistical techniques to produce results which can then be used to prove or disprove the hypothesis underpinning the research. These researches make the research objective.

2.4.2 Qualitative Research

Qualitative research is a method of inquiry appropriated in many different academic disciplines, traditionally in the social sciences, but also in market research and further contexts. Qualitative researchers aim to gather an in-depth understanding of human behavior and the reasons that govern such behavior. The qualitative method investigates the *why* and *how* of decision making, not just *what*, *where*, *when*. Hence, smaller but focused samples are more often needed, rather than large samples.

Qualitative research is "any kind of research that produces findings not arrived at by means of statistical procedures or other means of quantification" (*Strauss & Corbin; 1990*: p.17). According to Hull (1997), the purpose of qualitative research is "to understand human experience to reveal both the processes by which people construct

meaning about their worlds and to report what those meanings are". It involves an investigation process by which the researchers gradually makes sense of a social phenomenon by constructing, comparing, replicating, categorizing and classifying the objects if study. The following is a summary of the characteristics of qualitative research.

- Qualitative research is Descriptive. The researcher is interested in process, meaning and understanding gained through the words, interviews, transactions and field notes of observation.
- The design in qualitative research is flexible, evolutionary and emergent. The interpretations are discussed with human data sources because it is the subjective realities that the researcher attempts to reconstruct.
- The findings in qualitative research are holistic and provide a rich and dense description of social phenomenon and may contain quotations from the data to illustrate and support the findings.
- The process of qualitative research is inductive (i.e. the conclusions are derived from a set of observations), in which the researchers builds abstractions and concepts, and generates theories from details.
- The sample in qualitative research is usually no-random in nature and small, whereas in quantitative research a sample tends to be taken randomly and is larger in nature.

The most popular research methods currently available and applied within qualitative research are listed and described below:

Case Study: A qualitative case study is an intensive, holistic description and analysis of a single instance, phenomenon or social unit. One weakness of case studies is the lack of guidelines in terms of building the final report or outcomes. As the findings in qualitative research should be richly descriptive, it is vital that guidelines on how to construct the final report are provided so that a comprehensive description of the social phenomenon emerges.

Action Research: In this research the researcher's aim is to contribute to the real situation of the people to gain feedback from their understanding in an immediate

problematic situation. Most of the action research definitions focus on the collaboration between researchers and participants involved in the study of the situation under investigation.

Ethnographic Research: It is used for investigating cultures by collecting and describing data that is intended to help in the development of a theory. This method is also called “ethno methodology” or "methodology of the people". An example of applied ethnographic research is the study of a particular culture and their understanding of the role of a particular disease in their cultural framework.

Grounded Theory: It was developed by two sociologists, Barney Glaser and Anselm Strauss, and was based on a need to conduct qualitative research regarding the care of dying patients in American health institutions. Grounded theory aims to generate a theory based on data collected from interviews or from observations to uncover the experiences and perspectives of participants: “ generating a theory from data means that most hypothesis and concepts not only come from the data, but are systematically worked out in relation to the data during the course of research”.

Grounded Theory is an inductive type of research, based or “grounded” in the observations or data from which it was developed; it uses a variety of data sources, including quantitative data, review of records, interviews, observation and surveys.

The aim of this research is to find out the major challenges to implement e-Governance in Nepal. To achieve this aim, the researchers need to gain the possibly differing views and perceptions of key stakeholders who are engaged in the e-Governance program in Nepal at different points in time. This research uses a combination of quantitative and qualitative research techniques for the study. The main sources of quantitative data were the government office records, Annual data records of different stakeholders, surveys of the department of ministry, interviews and various literatures related to e-Governance. I conducted the field work for this project during June-August 2009.

CHAPTER - III

RESEARCH METHODOLOGY

3.1 Selection and Justification of Research Methodology for this Research

The aim of this research is to investigate the factors and challenges that influence e-Governance implementation in Nepal over time. To achieve this aim, it is needed to gain the possibly differing views and perceptions of the key stakeholders who are engaged in the e-Governance programs in Nepal. The research is not only to identify what are the challenges to implement e-Governance in Nepal. The present research attempts to identify the challenges, what are the factors and how they changed over time from the view point of different stakeholders.

It is only by using both quantitative and qualitative research that the researcher can gain the necessary rich information and insight into the dynamic nature of these factors in Nepal. For this research it uses variety of data sources including quantitative data, review of records, interviews, observation and surveys.

3.7 Data Collection Techniques

In order to investigate the challenges that influence e-Governance implementation in Nepal, the researcher plans to gather enough data to satisfy the objectives of this research and to give the reader a full picture of the phenomenon understudy.

1. Primary Data Collection:
2. Secondary Data Collection:

3.7.1 Primary Data Collection

The data was collected directly from the different ministry offices through the number of questionnaire samples and from the different staffs related to the ICT sector. Through the four different types of questionnaire set many information was obtained and current

status of the e-Governance was known. Throughout the survey in order to gain the information related to the ICT sector of about 50 samples of staff were taken and 100 samples of citizen were taken. The data were collected through the questionnaire set which was prepared in three different types of set for the ministry staffs and a single type of question for the citizens. The questionnaire set prepared according to different levels are as follows:

The type 1 was prepared on sitting at the point with getting more information about ICT facts of the offices and this sort of question were distributed to the ICT related staff on the particular offices. The type 2 question also includes brief information about the ICT sector and it was distributed to the technical staffs of the ministry offices. The type 3 question includes only the objectives question that was distributed to the staffs of the ministries who are not completely aware of the e-Governance. The type 4 questions were distributed to the general citizens who visit those offices. The major objective of this questionnaire was to collect their opinions and views regarding the e-Governance and their expectation after implementation of it.

Similarly interview questionnaire was prepared to collect views, ideas and future plans from the high level government officials who are related to the implementation of e-Governance in Nepal. This questionnaire includes only the subjective questions. Later these data were used for qualitative and quantitative analysis.

3.2.2 Secondary Data Collection

To gain the information many papers, articles and reports related to the ICT and e-Governance sector was studied. For the data, the study focused on national as well as international reports and articles. Different national government websites were visited in order to gain the information and many international papers were read related to e-Governance and ICT. Similarly websites of many government offices were visited for data. The major sources of secondary data are Annual Reports of Nepal Telecom Authority, HLCIT, NITC, Ministry of Science and Technology and various government

agencies. Similarly the Annual Reports of NGO's and INGO's that are doing works in the field of development of ICT and e-Governance in Nepal were also the sources of data.

3.8 Sources of Data Collection

The main sources of data were the survey data collected from various ministry offices and government agencies in Kathmandu, Nepal. Similarly interview with sample questionnaire, annual reports of the major stakeholders of e-Governance in Nepal, articles, international journals and various websites are the other sources of data. Data were collected by conducting field work, using electronic mail and internet and referring a lot of literature reviews.

The following are the list of ministries and government agencies from where the data were collected.

- Ministry of Finance
- Ministry of Land and reform
- Ministry of Science and technology
- Ministry of General administration
  - HLCIT (High level commission for information and technology)
  - NITC (National information and technology centre)

3.9 Research Design

A combination of quantitative and qualitative research techniques for this study was used. The main sources of quantitative data were the government office records, government census records, and surveys of the department of ministry and government agencies. The field work was conducted for this thesis during June-August 2009. This survey data were organized in a tabular and graphical form. These data were analyzed by using the statistical tools in Microsoft Excel and the conclusions were drawn. This case study of the ministry employees and the general public helped to find the status of e-Governance in the ministry of Nepal and to know the general public expectation from the e-Governance in Nepal.

In addition to collecting quantitative data, The detailed questionnaire interviews was also conducted with the government officials involved in the e-Governance project in Nepal and the users of the e-Government services. The high level government officials including the state level government secretary of the information technology department were interviewed. This qualitative data analysis helped to derive the conclusion about the challenges and possible solutions towards the implementation of e-Governance in Nepal. The descriptive data in this interview also helped in the study to understand why the services failed to sustain and how it would be overcome.

The research purpose and research of this thesis indicate that this study's primarily explanatory and descriptive; this study is descriptive since it is author's intention to describe the area of research and try to begin to explain to explain the collected data in order to explain implementation issues and challenges of e-Governance in Nepal.

The research approach is regularly either quantitative or qualitative. Both approaches have their strength and weaknesses and neither one of the approaches can be held better than the other one. The best research method to use for a study depends on that studies research purpose and the accompanying research questions. Based on the research questions for both qualitative and quantitative analysis, the researcher gives a better understanding of the research area, so it will get detailed information to describe the understanding of the research questions. It will use the frame of reference and aim to gain a deeper understanding of this phenomenon as well as analyze the data in the form of numbers statistically. So both qualitative and quantitative approach will be author's preference.

For quantitative analysis, various statistical tools such as mean, median, average are used. The data are presented both in tabular and graphical format by using Microsoft Excel. For qualitative analysis, structured interview questionnaire was prepared and collected the opinions of experts of e-Governance, High Ranking relevant government officials and so on.

The Quantitative analysis, questionnaire was designed and divided into four types as follows.

Type I: It was prepared on sitting at the point with getting more information about ICT facts of the offices and this sort of question were distributed to the ICT related staff on the particular offices.

Type II: It includes brief information about the ICT sector and it was distributed to the technical staffs of the ministry offices.

Type III: It includes only the objectives question that was distributed to the staffs of the ministries who are not completely aware of the e-Governance.

Type IV: They were distributed to the general citizens who visit those offices. The major objective of this questionnaire was to collect their opinions and views regarding the e-Governance and their expectation after implementation of it.

Similarly for qualitative analysis, structured interview questionnaire was prepared to collect views, ideas and future plans from the high level government officials who are related to the implementation of e-Governance in Nepal. This questionnaire includes only the subjective questions.

3.10 Analytical Tools and Technology Used

3.10.1 Tables, Spreadsheets, Charts and Figures

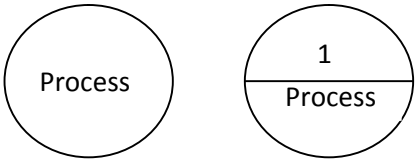
Table is a way of presenting the data in a column and a row form. It present the data and information to make the content clear. Spreadsheet is used to maintain the collected data in tabular form and converting the data into the pictorial charts and graphs. Graphical charts, graphs and tabular data made the analysis easy and it was really helped for the statistical analysis. Microsoft Excel is used for this purpose and it is also used to analyze the data. Microsoft word is used for the report preparation. Figure usually includes graphs, maps, drawings, charts and other data represented in pictorial format that is in understandable format.

3.10.2 Data Flow Diagram

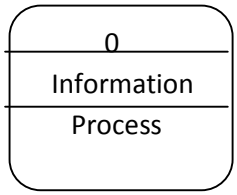
Data flow diagram illustrates how data is processed by a system in terms of inputs and outputs. It consists of data flows, processes, sources, destinations and stores – all described through the use of easily understood symbols. Data flow diagram notations.

We can use two different types of which are shown below:

Process Notations



Yourdon and Coad Process Notations

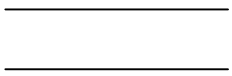


Gane and Sarson Process Notation

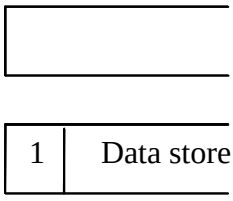
Process

A process transforms incoming data flow into outgoing data flow.

Data Store Notations



Yourdon and Coad DataStore Notations

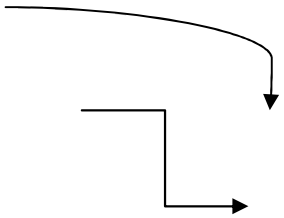


Gane and Sarson DataStore Notation

Data Store

Datastores are repositories of data in the system. They are sometimes referred to as files.

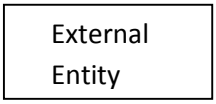
Data Flow Notations



Data Flow

Data flows are pipelines through which packets of information flow. Label the arrow with the name of the data that moves through it.

Data Flow Notations



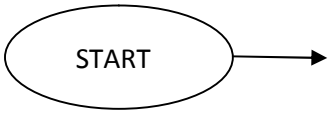
Data Flow

External entities are objects outside the system, with which the system, communicates. External entities are sources and destinations of the system's inputs and outputs.

3.10.3 Flow Chart

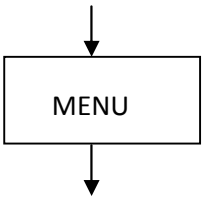
Flowchart is a visual representation of the sequence of the content of the program. It shows what comes first, second, third etc. as well as what the audience will do, if anything, and what will happen when they have done it. A complicated flowchart organizes the topics, strategies, treatments, and options into a plan from which we can work out the details of what each screen, page, frame, or shot will look like. Essentially, it is a working map of the final product.

Flow Chart Symbols:



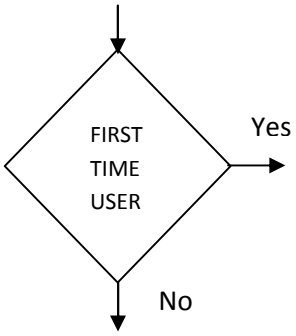
Start and End

This symbol is used to indicate both the beginning and the end of your program.



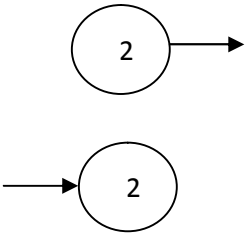
Graphic/ Text

This symbol indicates individual content for screens, pages, or frames.



Decision

This symbol indicates individual content for screens, pages, or frames.



Place Marker

This is a place marker. If you have to go to another line or page with your flow chart, this symbol is numbered and put at the end of the line or page.

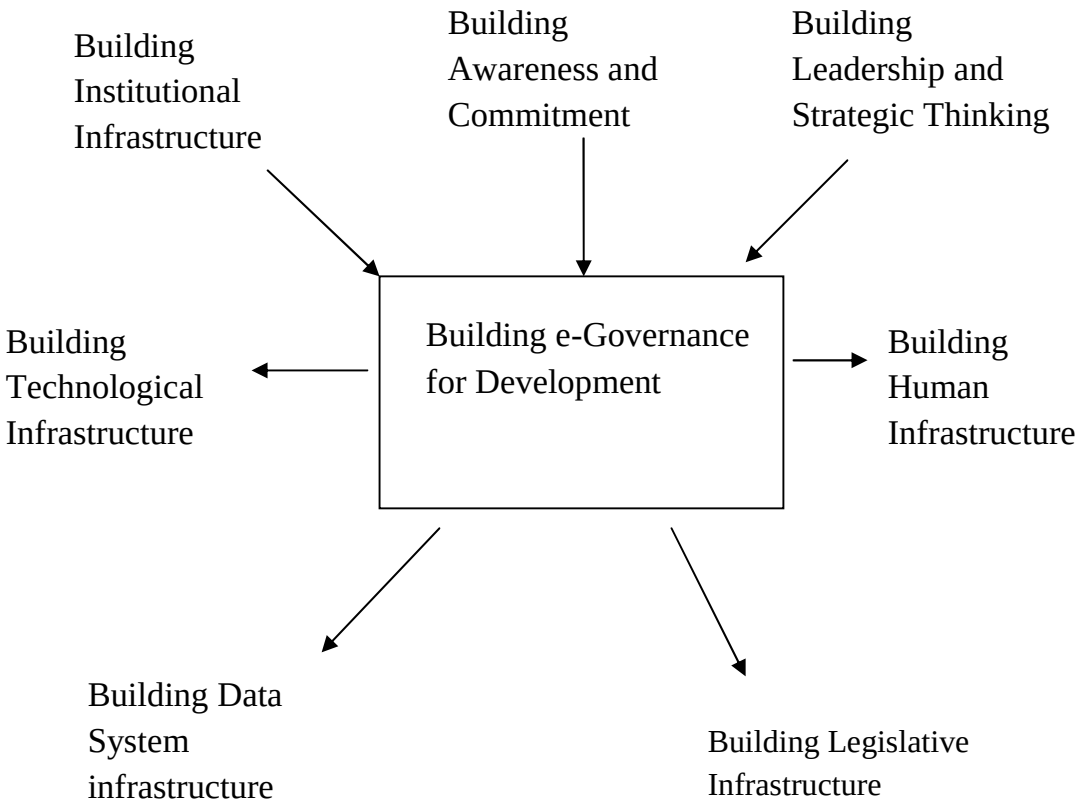
It is then used at the beginning of the next line or page with the same number so a reader of the chart can follow the path.

3.10.4 Analysis of e-Governance System

The context level diagram of general e-Governance system for development is shown in figure below.

Figure 3.1

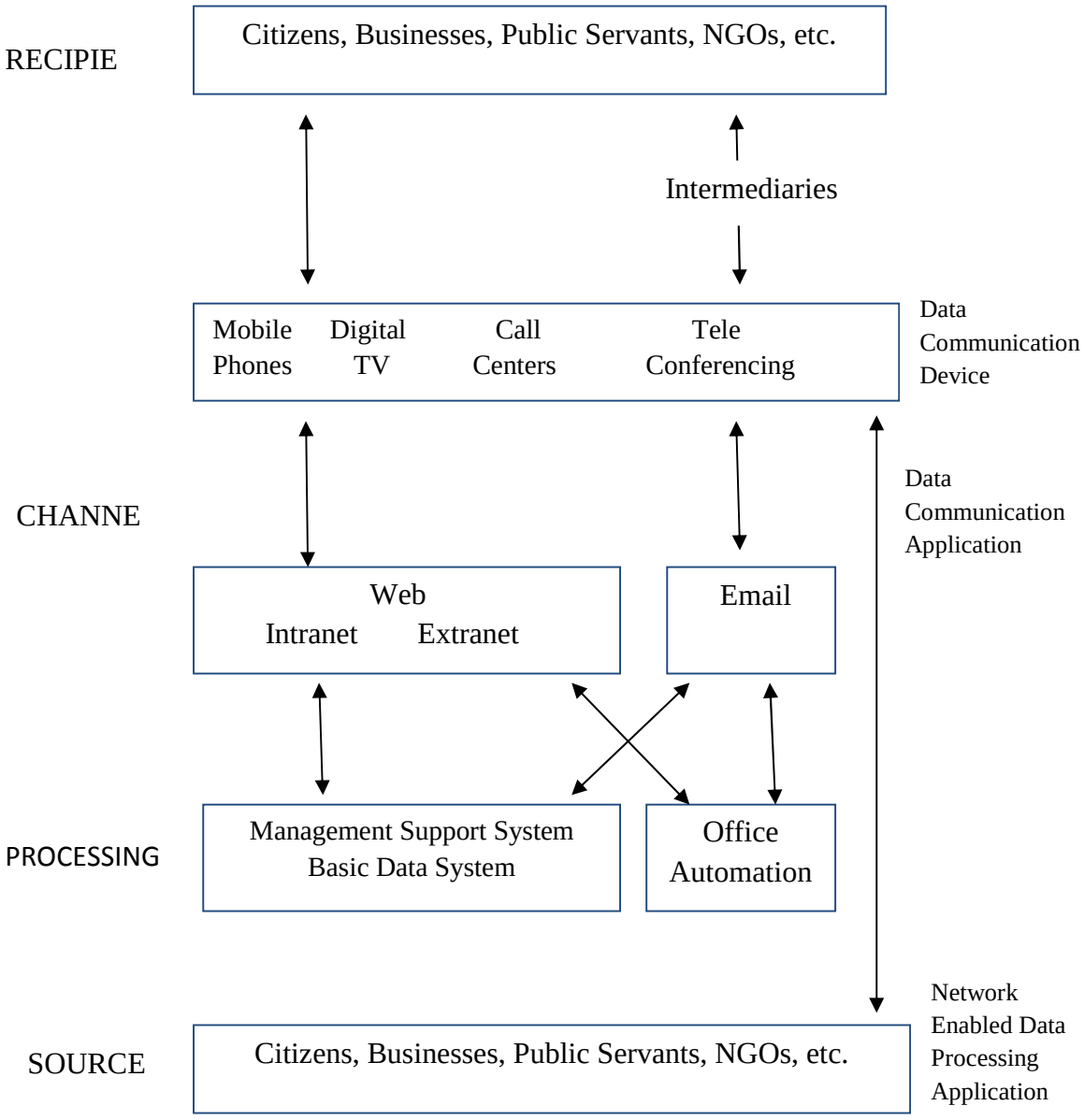
Context Level Diagram of e-Governance System for Development



Similarly, the figure below shows the general technical architecture of e-Governance. It has source and destination that consists of Citizens, Businesses, Public Servants and NGOs. The data from the source are processed first according to the requirement and transmitting via several wire and wireless channels. So e-Governance should have strong Data Communication Devices, Data Communication Application and Network Enabled Data Processing Application.

Figure 3.2

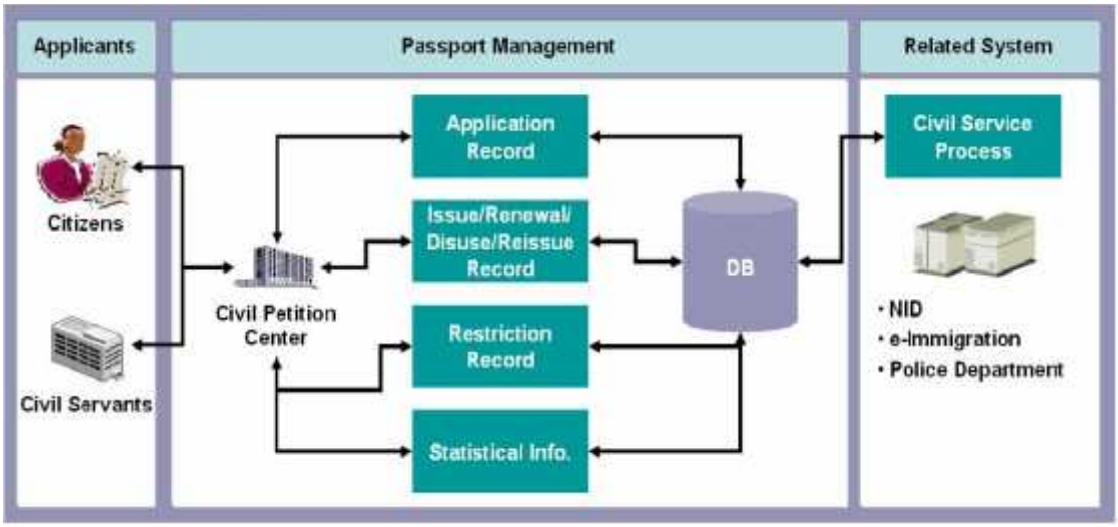
The Architecture of e-Governance



One of the examples of G2C e-Governance system is Passport Management System. The detail structure of Passport Management System is shown below.

Figure 3.3

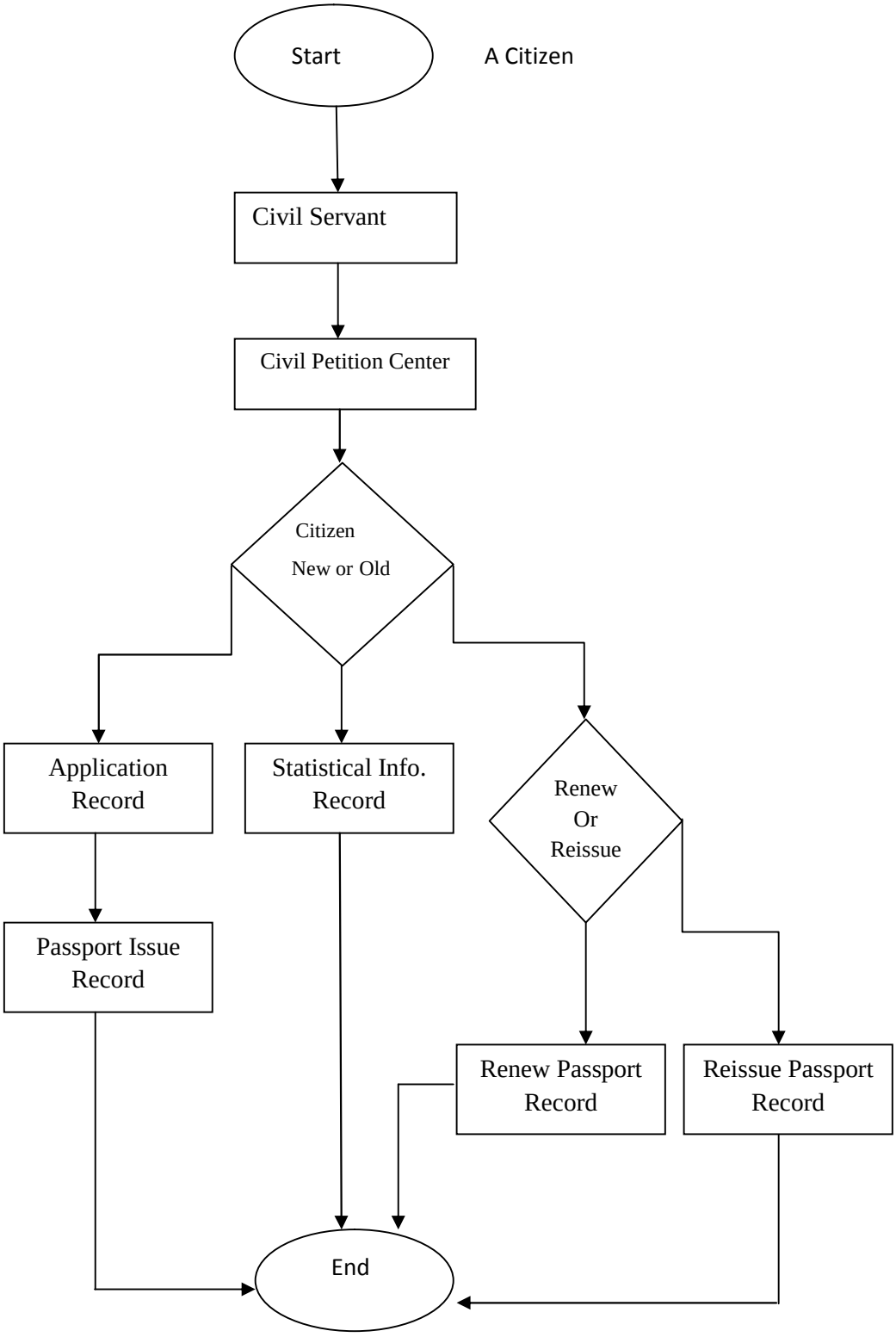
Data Flow diagram of Passport Management System



The Passport Management System seeks to provide citizens with convenient immigration process and enhance the country's international confidence by developing a passport issuance system. Issuance of fully-automatic photo-embedded passport with state-of-the-art security functions will help prevent forgery and alteration. The system has various records like application, issuing, renewing and restriction records. Similarly it has the records of all statistical information. The passport management system is directly related with the civil service processes like police department and immigration department. The flow chart of Passport Management System is shown below.

Figure 3.4

Flow Chart of Passport Management System



Functions

- Issuing photo-embedded passport with strengthened security that can be identified by passport reader of ICAO standard
- Providing information on overseas diplomatic agencies including its national economic, political status.
- Tracking the process of issuing passport real-time.

Hardware and Software Specification

Server: 2 CPU * 2GB MM * 2 NT Server (for Web Server) + 4 CPU * 4GB MM * 1 NT Server (for Civil Petition, Civil Servants Server)

Storage: 16GB (for Web Server) + 128GB (for Civil Petition Server)+ 64GB(for Civil Servants Server) = 208GB (RAID 5)

Software: DBMS (2EA), Web Application Server (2EA), Search Engine

Network: Routers and Switches

Expected Effects

- Reduced time for consular operation with shared passport data
- Convenient issuance of passport with less visits to public office
- Reduced passport issuance fee using electronic forms

3.11 Research Gap

The purpose of this research has been to study the current status of e-Governance in Nepal and investigate the factors and challenges that influence e-Governance implementation in Nepal. This research is not only to identify what are the challenges to implement e-Governance in Nepal but also recommend suitable strategies towards its solutions. The present research attempts to identify the challenges, what are the factors and how they changed over time from the view point of different stakeholders. The previous related research were cover only small area of e-Governance system but this research covers the detail analysis of e-Governance system in the context of Nepal, Current status and major implementation challenges of it in Nepal. This research also

found some conclusions regarding the solutions of e-Governance implementation challenges in Nepal.

The challenges were derived through quantitative and qualitative data analysis. For this research it uses variety of data sources including quantitative data, review of records, interviews, observation and surveys. . Ministry of Finance, Ministry of Land and reform, Ministry of Science and technology, Ministry of General administration, HLCIT (High level commission for information and technology), NITC (National information and technology centre) are the sources of primary data. Similarly, variety of international journals, Articles of experts, annual report of NGO's and INGO's and various government websites are the sources of secondary data.

In this research more attention was paid to the social, economical and political aspect of e-Governance implementation rather than to technological ones that may be the limitation of this research.

CHAPTER - IV
DATA PRESENTATION AND ANALYSIS

This chapter focuses the analysis of data collected from primary and secondary sources. This chapter also presents the data in pictorial format such as graphs and charts. Statistical tools such as mean and intuition were used for the quantitative data analysis. Similarly, many conclusions were drawn from the qualitative analysis.

Microsoft Excel is used to maintain the collected data in tabular form and converting the data into the pictorial charts and graphs. Graphical charts, graphs and tabular data made the analysis easy and it was really helped for the statistical analysis. It is also used to analyze the data. Microsoft word is used for the report preparation.

4.1 Qualitative Data Analysis

In order to identify the scope of e-Governance in Nepal, Governments initiation towards its implementation, bottlenecks and further steps to be followed, qualitative analysis has been done. For this questionnaire interview to the high level government officials related to e-Governance in Nepal were conducted, various interviews in newspaper of key persons of major stakeholder and their research papers were analyzed.

In Nepal High level Commission for Information Technology (HLCIT) is the major stakeholder of e-Governance implementation of Nepal. It was established in 2003; under the chairmanship of Prime minister to provide crucial strategic direction and helping formulate appropriate policy responses for the development of ICT sector and to promote the facility to automate the government activities. The views and ideas related to implementation of e-Governance of some of the key persons of HLCIT and experts were collected.

Manohar K. Bhattarai Vice Chairman, HLCIT emphasis that In the context of Nepal, the goal of e-Governance should be Better service delivery to citizens, improved services for

business, transparency and anticorruption, empowerment through information, efficient government purchasing (such as e-Procurement). He again said that e-Governance is an important element of administrative reform and state modernization such as offering online services to the public, cost savings, faster processing through electronic support and so on.

He also think that frequent changing of high level officials, unstable politics, lack of qualified human resources and insufficient fund and slow legislative and administrative processes are the major roadblocks of e-Governance implementation of Nepal. He further stated that strong means of public participation and collaboration is also the challenge in Nepal.

Sunil Maskey, who is one of the very few e-Governance experts in Nepal, is currently working as an IT consultant in National Information Technology Center (NITC). According to Maskey (2006): e-Government as an opportunity to manage effective government affairs, where government operates system that provides transparent and automated cost effective administrative procedure to empower constituent for fair competition, improve service delivery to promote participation of citizen and political leader's commitment on priority based national agenda by the maximum utilization of ICT."

According to him,
e-Government structure consists of two main parts: back office and front office. Back office includes system and infrastructure where services and information are prepared to present in front office. Front office includes access channels through which stakeholders such as citizens, business, government department, employees etc. receive government service.

He further stated that
The balance between the back office and front office leads to the effective and success e-Government. Similarly, Establish good coordination between organizations to make

seriously committed environment to help implement e-Gov application successfully. A comprehensive laws and regulations must be in place prior to the implementation of e-Government initiative.

Computer Engineer Surab Amatya, an engineer of High Level Commission for Information Technology (HLCIT), who has a several year experience in ICT field in Nepal he is currently responsible for the implementation of e-Governance in Nepal. He said that:

The government should give high priority to implement e-governance in Nepal in public service delivery sector and socio economical growth sector.
In his opinion, the major factors that influence the implementation of e-Governance in Nepal are:

- The world is transforming into ICT sector
- People are expecting fast delivery mechanism from government Sector
- People as well as state want to feel the term of good governance through the tool of ICT.
- The country and the state was also influenced by the neighbor country
- Developed country in e-Governance sector like Korea ,Japan and America

Similarly he mentioned some of the major obstacles to implement e-Governance in Nepal which are:

- Lack of awareness in ICT sector
- Low rate of e-Readiness
- Lack of resources
- Lack of capable human power and infrastructure
- Lack of commitment and vision of top leader and top ranking bureaucratic person

Another computer engineer Deepak Kaji Gopaju of High Level Commission for IT said that the major existing obstacles in implementing e-Governance in Nepal are:

- Political Factor – Politics in Nepal are not stable so due to the frequently change in top level political personnel in implementing bodies, implement e-Governance may affect.
- IT Literacy – IT literacy is very low (Both Citizens and Government employees) due to which switching from manual to IT will be very tough job.
- Commitment by political Leaders – High Priority commitment will be require implementing e-Governance to make it compulsion but there is no such IT literate political leader.
- Load Shading – To implement e-Governance electricity will play major role.

Former Member Secretary, High Level Commission for Information Technology Government of Nepal Singhadurbar, Kathmandu, Nepal Dr. Madan P. Pariyar stated that e-Readiness Related Challenges are the major challenges to implement e-Governance in Nepal such as low level of political commitment to the change process and the deeper utilization of ICTs in government, poor culture of technology, communications between Ministries by paper, correspondence with email regarded as having only an informal role, e-Literacy in government is also modest and at a broader level modest human resources training capacity of local institutions

With the discussion of key persons of different ministries and collecting data from their reports, It is found that most database systems are running on small-to-medium-sized server systems manufactured by IBM, Dell or HP, which provide 24/7 operation. As the main operating systems, UNIX, Linux, Windows 2000, and Windows XP are widely used. Various application programs have been used for the database operation: Oracle, Microsoft Fox Pro, Access, Excel, etc. MOGA's PIS (Personal Information System) is used by many governmental agencies. From the aspect of security, some agencies using server systems are well protected by hardware firewalls, but most of governmental offices which use their PCs for documentation, printing, e-mail and Internet surfing are protected only by anti-virus software.

Table 4.1

Current Application Program used in the Government

Ministry	DB	Program	Server	Server OS
MOF	BMIS	Oracle	Dell	Win 2003 server
MOGA	PIS,PPSS	Oracle	HP	Linux
HLCIT	ppp(e-Procurement), DMS, GAS	Java	Dell	Linux
MOLF	Not provided	Not provided	Intel	Windows xp

Source: Field Survey

After this analysis it is concluded that the government's employees are highly worried about e-Governance implementation in Nepal. Nepal is facing the almost same problems like other least developed countries. With the limited resources and commitment they agreed that it is very difficult to implement such a large project. Political instability, Public literacy to ICT and their participation are the major issues and the experts are very much hopeful to improve them in near future.

4.2 Quantitative Data Analysis

In order to identify the required model that is requested by the government and the people based on the current e-Government status, the public citizen's requirements for the e-Government were investigated. As one method to perform such investigation, surveys were conducted on 100 unspecified citizens, students, experts, people in agricultural and commercial sectors, office workers, and people in services industry. It was a face-to-face survey, in the Kathmandu region, such as different ministry offices in the SinghaDurbar, Kathmandu. Survey was largely composed of questions on current ICT environment, questions on how to improve the national administrative service and some general questions. Some of the question was objective type and some was like the subjective which was to be answered according to their opinions and views that they feel. The question was of the three types that are categorized as the Top level, middle level and lower level. The sample size taken in the entire ministry was of about 50 sample of the questionnaire in the ministry offices. The conclusions here are made on the basis of standard mean from the obtained information.

Statistic data collected from the survey for the quantitative data analysis are tabulated below. The further analyses with graphical charts are included in subsequent sections.

4.2.1 Analysis of Ministries Employee Survey

The static data collected from the employees of the ministries mentioned before using the questionnaire samples are represented in the tabular form below:

Table 4.2

Results Obtained from the Ministry Staffs

Questions	Option a	Option b	Option c	Option d
IT training courses	Professional training (61%)	Hardware and networking courses (30%)	How to use pc (9%)	
IT infrastructure capabilities	Networked computers (90%)	Stand alone computers (10%)		
Internet Access Methods	Ethernet (90%)	Ethernet and wireless (10%)		
Operating System in Use	Windows XP (60%)	Linux (25%)	Ubuntu (5%)	Others (10%)

Source: Field Survey

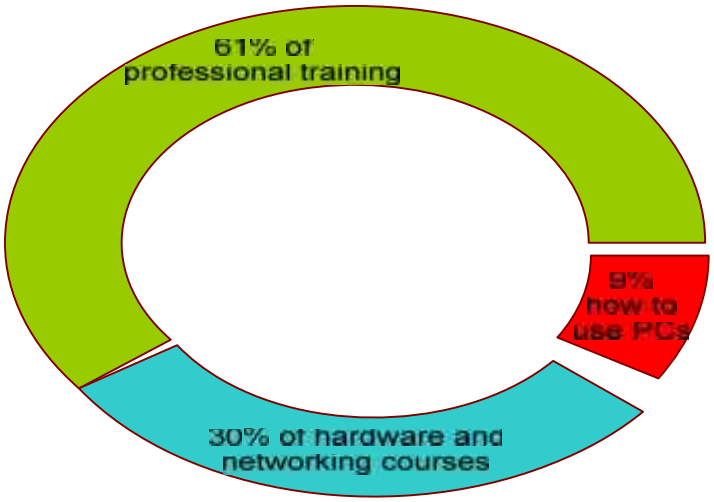
a) IT Training Courses the Company Needs

To the question that asked what kind of IT education is needed, courses on how to use PCs accounted for 9%. They were followed by the hardware & networking course, which was 30% of answers and the response towards professional training courses (e.g. Database, PHP, etc) was 61%.

This shows that Nepal needs IT training programs designed for various steps. Besides basic course of computer, majority of people are looking for specific training courses on computer hardware and networking skills and programming skills. The survey on graphical format is shown below:

Figure 4. 11

IT Training Courses that Company Needs

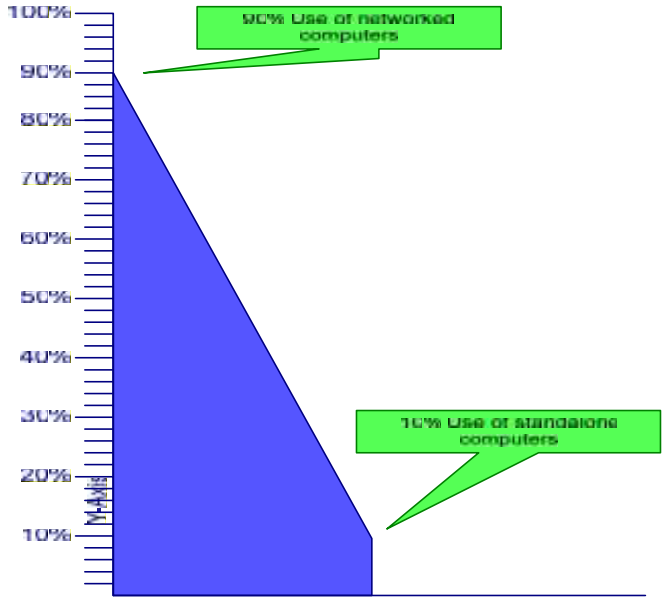


b) Categorization of the IT infrastructure capabilities

IT infrastructure capability in the ministries is very poor. 90% of the employee showed their response towards the use of networked computers for the use of internet, email, accessing central server and communicating among the departments and ministries. Only 10% of them responded towards standalone computers. The graphical format is shown below:

Figure 4. 12

Categorization of IT Infrastructure Capabilities



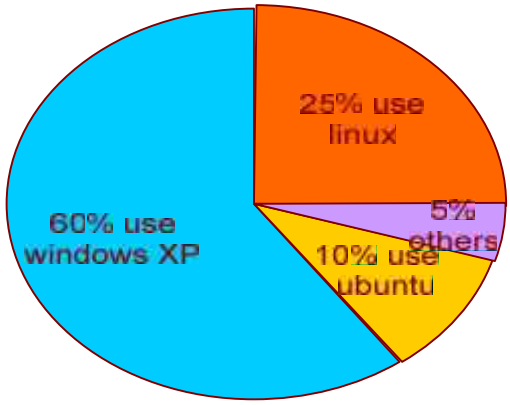
The above statistics shows that the ICT infrastructure in the ministries is not good and most of the employees emphasis on the development of internal networks in the ministry as soon as possible.

c) Operating system and application software in use

According to the survey, the operating systems in use in the different ministry offices are windows XP (60%), Linux (25%), Ubuntu (5%). They have commonly used the applications like Library management system, Promotion management system, Budget management and information system, MS-office, Adobe pacemaker, My SQL, PHP and so on for their daily use. The graphical format is shown below:

Figure 4. 13

Operating System and Application Software in Use



d) Budget Allocation

The data of budget allocation of some of the ministries shown below are collected. The aim of this is to know the annual budget allocated to development of ICT in each ministry and how the budget is further utilized to develop ICT. The budget allocation of different ministries in the fiscal year 2008/ 2009 is shown in the table below:

Table 4.3

Budget Allocation in ICT for Different Ministries

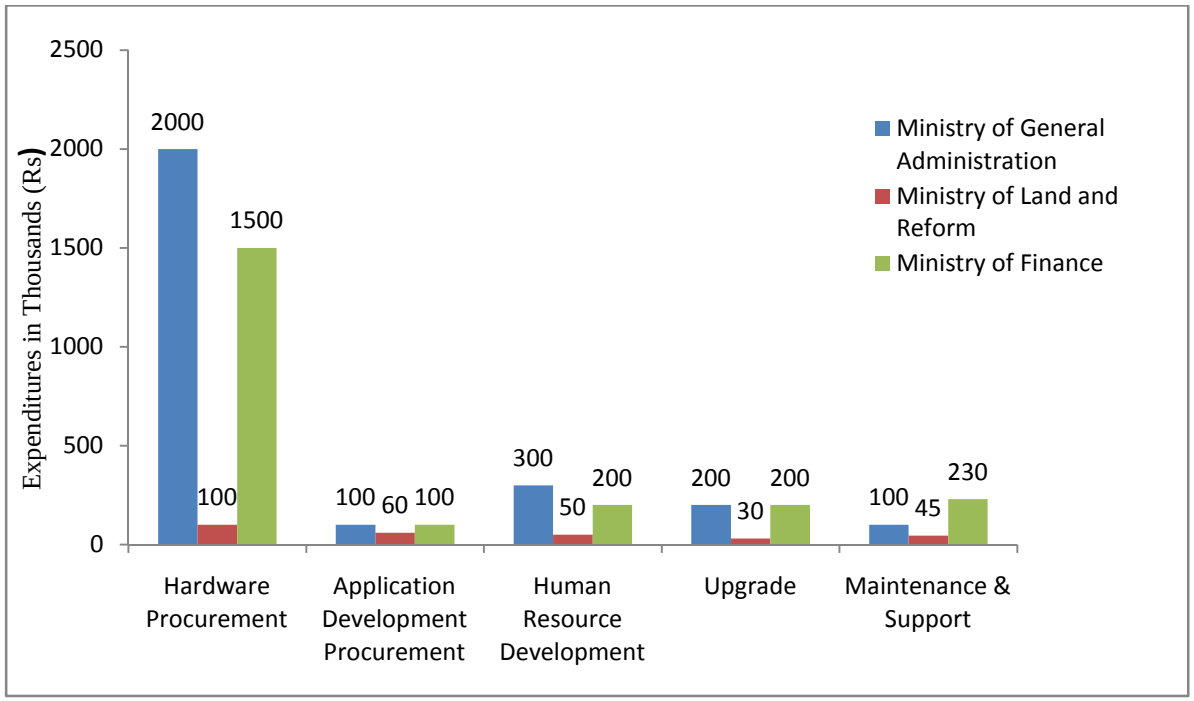
Year 2008/2009	Total Allocated budget	Expenditure (in Rs. thousands)							
		Total	Hardware procurement	Application Development Procurement	Human Resource Development	Upgrade	Maintenance & Support	Security	Others
Ministry of General Administration	2,700	2,700	2,000	100	300	200	100	-	-
Ministry of Land & Reform	300	300	100	60	50	30	45	15	-
Ministry of Finance	2030	2230	1500	100	200	200	230	-	-

Source: Field Survey

The pictorial representation of budget allocation of different ministries for ICT is shown in below:

Figure 4. 14

Budget Allocation of Different Ministries for ICT in the Year 2008/2009



After analyzing the budget allocation of above mentioned ministries, it is observed that the budget allocation in ICT is very poor. Very less budget is allocated to human resource development and buying application software. This is why technical human resource in the ministries is very poor. Although the budget allocation in hardware procurement is very high, it is poorly utilized in the ministry due to lack of skilled technical human resource and proper maintenance and support in the ministry.

4.2.2 Analysis of Citizens Survey

The survey was conducted among the 100 samples of general citizens to know their satisfaction with existing administration services and how they respond the implementation of e-Governance. The survey data in tabular form is shown in below:

Table 4.4

Results Obtained from the Citizens

Questions	Option a	Option b	Option c	Option d	Option e
Satisfaction on administrative services	Normal or below (91%)	Good or very good (9%)			
Steps to improve administrative services	Interdepartmental work (45%)	Departments internal work (26%)	Transparency (16%)	Trust (13%)	
Ways to get administrative services	Visit government offices (47%)	Query through telephone lines (27%)	Uses internet (18%)	Postal services (8%)	Fax (0%)
Administrative services to be computerized	National ID services (44%)	Customers service (20%)	Tax service (16%)	Real Estate (10%)	License service (10%)
e-Governance project goals	Improving civil services (35%)	Administrative efficiency (27%)	Transparency (21%)	economic development (17%)	
Obstacles	low literacy rate(50%)	Lack of ICT professionals (20%)	Lack of budget allocation (20%)	Lack of proper management (10%)	

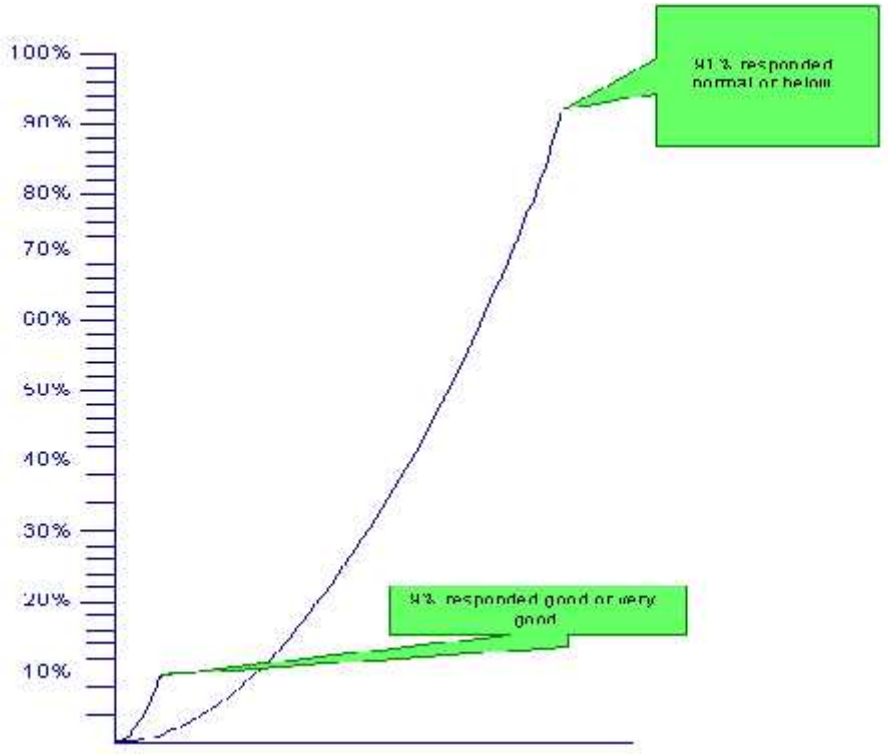
Source: Field Survey

a) Satisfaction on Administrative Services Offered by the Government

To the question that asked about their satisfaction on the government's administrative services, 91% of respondents answered normal or below. Only 9% answered that the services are good or very good**.** Also, the analysis on satisfaction level by occupation showed that professional, office work and agricultural sectors have lower satisfaction than the commercial sector.

Figure 4. 15

Satisfaction of Administrative Services

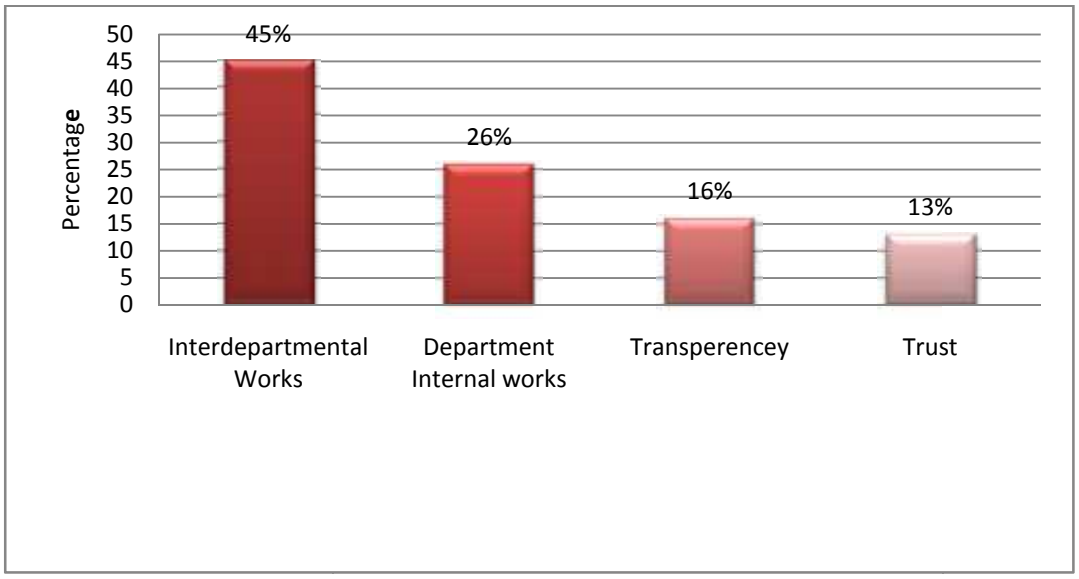


b) Steps to improve Administrative Services

In order to improve administrative services, 45% of respondents said that interdepartmental work needs to be improved and 26% said that department's internal work needs to be improved.16% thinks transparency is most and 13% trust between citizens and government should be maintained. It means that the government's work process should be more efficient.

Figure 4. 16

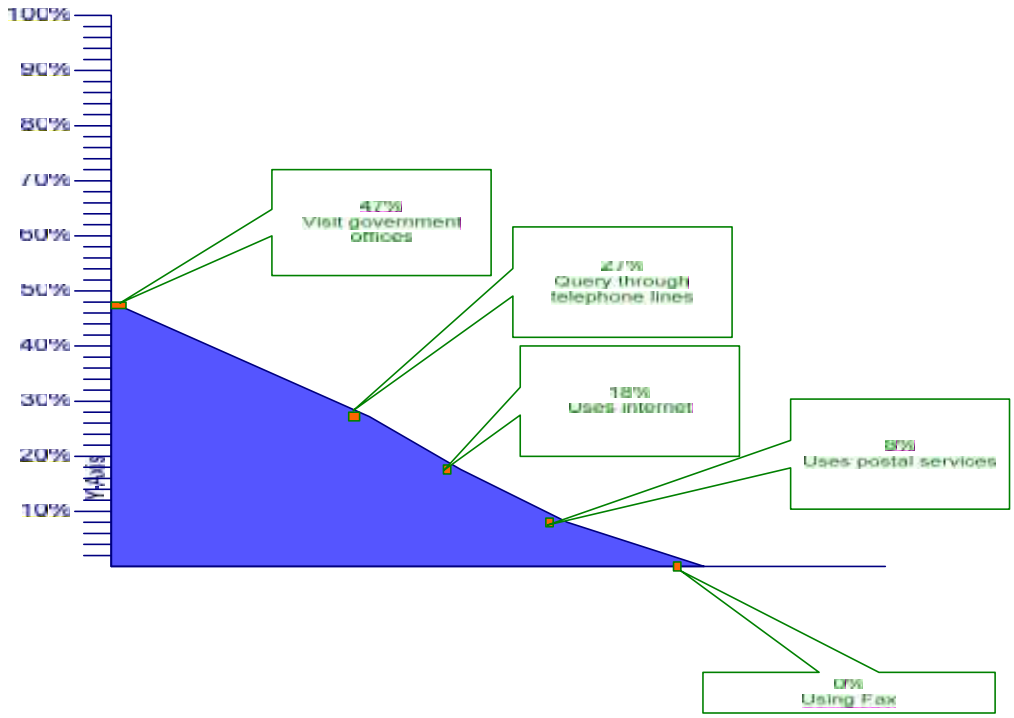
Most Important Things to be done to Improve Administrative Services



c) Ways to Get Administrative Services

As for the way to get administrative services, just like the general public, most of companies (47%) getting government services by sending their employees. Next most common way was through the telephone at 27%. Compared to the fact that only 18% of citizens used the Internet to get administrative services, 8% uses the medium of postal services and 0% uses fax at all. It shows that companies have higher Internet utilization rate and that the Internet is used more actively among companies.

Figure 4. 17
Ways to Get Administrative Services

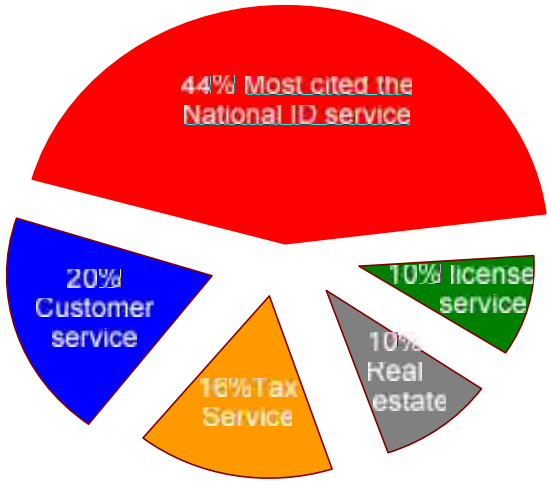


d) Administrative Service That Needs Computerization Most Urgently

To the question that asked which administrative service needs to be computerized first, 44% majority of them think that National ID Service should be computerized first. It is followed by customer service at 20%, Tax Service at 16%, Real Estate at 10%, and Vehicle License Service at 10%.

Figure 4. 18

Administrative Services that Need to be Computerized Most

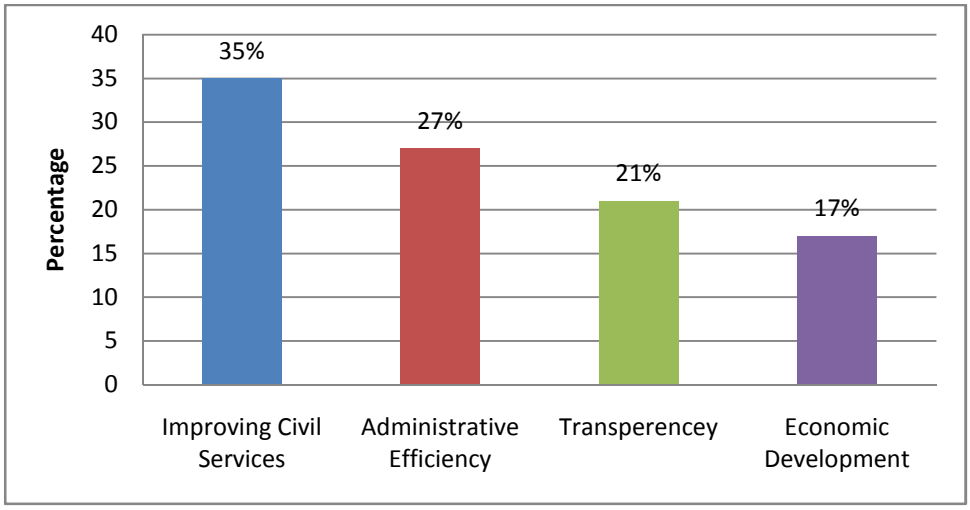


e) Goal of the e-Governance Project

35%f respondents think that goal of the e-Governance should be the improvement of civil services, and it was followed by administrative efficiency at 27%, transparency of the government at 21% and economic development at 17%. It indicates that the goal of the e-Governance is not limited to one subject.

Figure 4. 19

Goal of the e-Government Project

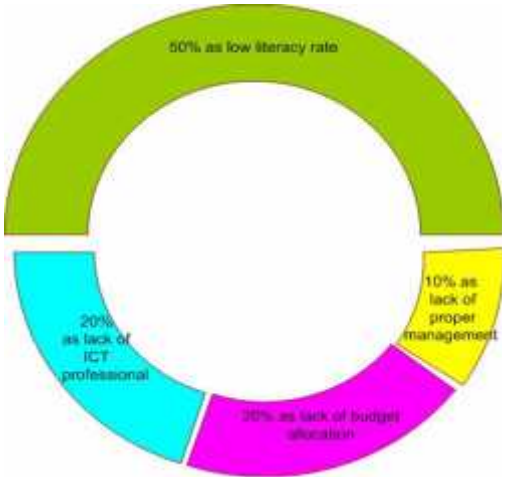


f) Obstacles to success the e-Governance project

The obstacles the country is facing to build the e-Government can be categorized as followed 50% as low literacy rate, 20% as lack of ICT professionals, 20% as lack of budget allocation and 10% as lack of proper management.

Figure 4. 20

Obstacles to Success e-Governance Project



4.3 Current Status of e-Governance Development in Nepal

In an international arena, the current status of ICT and e-Governance development in Nepal is ranked low. However, there has been a significant progress and achievement in some sector.

4.3.1 Brief History of ICT in Nepal

There is not a long history of using computers in Nepal. The first computer IBM 1401 was used in Nepal on rent for the purpose of keeping population census during 1972. Since then the country has been moving ahead in the field of ICT and its development. The progress of ICT development and its usage in country's overall development is not satisfactory in Nepal. Much more work required to be done to keep the pace with the time. A chronology of ICT development initiatives is presented below:

1972: Introduction of computer for census (IBM1401)
1974: Establishment of Electronic Data Processing Center
1982: First Private Overseas Investment in software development by establishing company for export, Data Systems International (p) LTD
1985: Distribution of Personal Computers
1990: Liberalization on imports of equipment
1992: Establishment of Computer Association of Nepal
1996: Establishment of the Ministry of Science & Technology
2000: Announcement of the first IT policy, "IT Policy 2000"
2001: Establishment of National Information Technology Center
2003: Establishment of High Level Commission for Information Technology
2007: Enactment of Electronics Transaction Act

4.3.2 Development of ICT Infrastructure and Networks

ICT infrastructure and Networks are the backbone to implement e-Governance. Nepal Telecom Company (NTC), the state-owned incumbent operator, has been the major builder and operator of the national telecom network. Nepal telecom along with United Telecom Limited and Spice Nepal Private Limited provides telecommunication services

in the country. They provide the services of Land line phone, GSM mobile, C-phone, Sky phone, Sky data, internet, V-SAT and ADSL. Comparing with other sector, the telecommunication facilities have been improved remarkably in recent years. As per the report of Nepal Telecom Authority, Service penetration can be seen in table 4.5 below.

Table 4.5

Service Penetration

Services	Penetration (in %)
Fixed	2.97
Mobile	22.86
Others (Limited Mobility, GMPCS etc)	0.87
Internet (subscriber only)	2.55

Source : Nepal Telecom Authority MIS Report (2010)

Although the progress of telecommunication facilities in Nepal is good enough but still the rate of use of internet is very low. Currently More than 30 ISP's are providing services and total international internet bandwidth used is in the ratio of 1:2.25 with 52 Mbps and 116 Mbps for uplink and downlink. More than 8% rural village development committees (VDC) do not have telephone facility at all. Most of the facilities are centered in urban areas of the country.

Optical fiber network has been the main source of transmission backbone. East-West (900 km) Optical fiber network is almost completed and will be connected to India via several connecting points. Fiber optic project (115-kilometre Arniko Highway) linking Kathmandu to Khasa, which borders China on the north, is set to complete the project. Apart from this satellite network (Regional Satellite Trunk (RSAT) and Very Small Aperture Terminal (VSAT) are using to connect geographically difficult terrain and remote areas in Nepal. Similarly Wireless Fidelity (Wi-Fi) networks are using to connect different rural villages in Nepal.

4.3.3 Development of ICT Education

Skilled human resources are one of the major problems in developing countries to implement e-Governance to the acceptable level. Four Universities (Tribhuwan University, Kathmandu University, Pokhara University and Prubanchal University) and their affiliated colleges provide IT education in Nepal. Beside these, a lot of Private IT institutions provide specific trainings and IT education to fulfill the requirement of IT professionals in the country. The 'National ICT Workforce Survey 2005', carried out by Computer Association of Nepal (CAN), shows that of the total ICT workforce, only 22.49 percent of the work force is engaged in real ICT activities such as programming software and hardware development, networking and animation compared to around 71.28 percent in professions such as teaching, training, secretarial jobs and other ICT related activities. Although the production of ICT human resources in Nepal seems to be positive but the high percentage of them are migrated to different countries due to many reasons.

4.3.4 Government Initiatives, Opportunities and Achievements

The ICT and e-Governance in Nepal has not grown as expected. Government is gaining some unsatisfactory progress by initiating some programs and even some of the e-Governance programs were failed. The government's initiation towards ICT development and the implementation of e-Governance was formally started on the year 2000 when first IT policy was announced in the same year as "IT policy 2000". In 2002, National Information Technology Center (NITC) was established under the ministry of science and technology. It has the main objective to build knowledge based society by supporting knowledge based institutions and industries as well as promote and develop ICT by making it accessible to the general public. In 2003, High Level Commission for Information Technology (HLCIT) was established under the chairmanship of Prime minister to provide crucial strategic direction and helping formulate appropriate policy responses for the development of ICT sector and to promote the facility to automate the government activities. This commission produced the revised version of IT policy as 'IT Policy 2004' by considering new vision of ICT and continuous socio economic change.

In the case of Nepal, a lot of work has been done for e-Government system. The Government of Nepal, with the support of Korea IT Industry Promotion Agency (KIPA), prepared an e-Government Master Plan (EGMP) in November 2006. The master plan basically (i) establishes the vision, strategy and framework for Nepal's e-Governance (ii) suggests major e-Governance projects and road map of e-Governance (iii) defines direction of the executing organization and restructuring legal framework. According to EGMP, E-Government mission statement is: "Improve the quality of people's life without any discrimination, transcending regional and racial differences, and realize socio-economic development by building a transparent government and providing value added quality services through ICT".

In order to establish the foundation for the investment phase of the Master Plan, the Asian Development Bank (ADB) provided a project preparatory technical assistance (PPTA) to the Government of Nepal. The PPTA has identified 23 program components, defined responsible executing/implementing agencies, assessed risks, allotted priorities, and categorized the applications types. The ADB's fact finding missions and Appraisal mission visited Nepal in 2007 and it proposed ADB's grant of $25 million, the Government of Republic of Korea Economic Development Cooperation Fund (EDCF) loan of $30 Million, and the Government of Nepal finance of $9.0 million.

With the financial and technical support of Korea International Cooperation Agency (KOICA), the establishment of Government Integrated Data Center (GIDC) has completed. It is considered as a backbone infrastructure for implementing the e-Governance and e-Services delivery. The aim of the data center is to build up an integrated operational environment for e-Government portals, e-Administration and e-Government. But till now, it is not used properly and not a single government organization is connected to this data center.

Enterprise Architecture is the framework for the e-Governance project. It is based on open standards supporting interoperability for developing application solutions as well as quality assurance and testing. The framework would help during integration,

interoperation of different e-Governance applications and systems. High Level Commission for Information Technology (HLCIT) has already floated tender for this and hopefully very soon work will start. Many Government agencies are developing ICT applications separately and some of them have operated the applications for their administration and public services. The following are some examples government agencies with applications.

- Online registration of Permanent Account Number (PAN) number by Inland Revenue Department (IRD).
- Personal Record system by Election Commission of Nepal
- Datacenter by Supreme Court of Nepal
- Online Gate pass System By National Information Technology Center (NITC)
- Online Tender system by Department of Road
- Computerize Citizenship in some district like Kavre, Nepal.
- Website, e-mail and Internal Memo Management System in Ministry of Local Development

Apart from government, there are some private initiatives as NGO's which has done very good effort in implementing ICT in remote villages in Nepal. Among them E-Networking Research and Development (ENRD) has done a lot of works on wireless network in rural and remote western part of Nepal. They have started the Nepal Wireless Networking Project as a pilot project starting from very remote area of Nepal and implemented in western Nepal. Now, the villages are wirelessly networked and connected to an ISP in one of the cities, known as Pokhara, which is 35 Km away from relay station. They have continued to extend their services to other remote village areas by establishing wireless network using Wireless Fidelity (Wi-Fi) technology. Mainly they have successfully used these networks to the application of Telemedicine, VOIP, e-Governance, e-Agriculture, e-Education and Computer training in remote mountain villages. In recent days, High Level Commission for Information Technology (HLCIT) is also following the same path and starting to install wireless networks in remote areas of western part of Nepal.

In last decade, rural Telecenters are being promoted as powerful means to narrow down the digital divide and benefit the rural communities through enhancing their access to information and communication services. In Nepal, High Level Commission for Information Technology (HLCIT), National Information Technology Center (NITC) and Postal department are three distributors of Telecenters. There are altogether about 500 Telecenters are established all over the country. Most of them are not working properly due to sustainable problem. However, to some extent, they have achieved their objectives.

Even though the various financial and technical supports from other countries and organizations to develop and implement the e-Governance in Nepal, the result is not up to the acceptable level. Government is gaining some unsatisfactory progress in its implementation. What could be the reason behind it and what would be the steps to be carried out by government to achieve their objectives are the major questions at this time.

4.4 Findings from the Study

4.4.1 Introduction

The purpose of this research has been to study the current status of e-Governance in Nepal and investigate the factors and challenges that influence e-Governance implementation in Nepal. The challenges were derived through quantitative and qualitative data analysis as described in previous section. The main categories which were derived from the analysis that affect the implementation of e-Governance in Nepal is shown in table 4.6 below.

It is worthwhile to mention that some of the identified concepts are derived from the analysis of the data collected from secondary sources (such as reports, articles, research papers and so on) while others were derived from citizens and employee data.

Table 4.6
Factors Identified that Influence the Challenges of Implementation of e-Governance in Nepal

Technical Factor:	) Internet Infrastructure and Bandwidth) Privacy and Security Concerns) Digital Divide) E-readiness) Supply of Electricity
Education and Citizens Concerns:	) Insufficient Education and Low ICT Literacy) Citizens Expectations prior to e-Governance
Cultural Factors	) Employee Resistance to Change) Corruption
Political Factors	) Regulations and Legislation) Lack of Government's will and stand due to Political Instability) Government's priority) Frequent Changing of Ministries and high level officials
Institutional Factors	) Limited Information Sharing and Transparency) Public Sector Weaknesses) Lack of training and awareness programs
Human Resource Factor	) Insufficient Education) Lack of e-Governance Awareness) Inadequate skilled human resource Capacity
Financial Factor	) Funding Issues) Sustainability

4.4.2 Challenges of e-Governance

While it is evident that e-Governance and ICT are powerful drivers of country's development and economic growth, there remain many challenges which hamper the exploitation of its opportunities. In spite of above mentioned many initiatives of government and supports from different countries and organizations, Nepal like other least developed countries is still facing a lot of challenges to implement the e-Governance

master plan smoothly. For Nepalese case, the following are the main identified challenges for e-Governance development and implementation.

4.4.2.1 Technical Factor

The adoption of e-Governance in the public sector can lead to widespread improvement in ICT architecture and improve skills for employment. This empirical study reflects this motivation in terms of interest to utilize ICT and to learn new skills in dealing with this technology. Governments face the challenge of promoting the development of e-Governance while there is still great uncertainty regarding fast moving technological change, and it is difficult to anticipate future policy impacts in detail. By analyzing the survey data, annual reports and technical index, It is concluded that the following are the technical challenges that need to be addressed.

Internet Infrastructure and Bandwidth

ICT infrastructure and its access is the backbone of any e-Governance system. Although the telecommunication facilities have been improved remarkably in recent years, its current status is not enough to fully implement the e-Governance in Nepal. Most of the facilities are centralized to capital and few cities. Internet penetration is very low with 2.55% and its accessibility still remains restricted to city area. Still some of the rural districts do not have telephone facility at all. This figure is not enough to run the e-Governance system smoothly. So, robustness & reliability bandwidth and security of the Internet continue to be major concerns for the growth of e-Governance.

Most ministries have a largely inadequate number of working computers. Very few government offices have their own Local Area Network (LAN) and their computers connected to the Internet. However, it is also true that some government offices have computers that remain almost unused due to lack of planning.

E-readiness

E-Readiness is the ability to use Information and Communication Technologies (ICT) to develop one's economy and to foster one's welfare. It is a measure of the quality of a

country's ICT infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit. When a country uses ICT to conduct more of its activities, the economy can become more transparent and efficient.

E-readiness of Nepal is very poor which can be shown in the table below. The status of e-readiness index is degrading year by year. In 2005, Nepal is on 126th position of e-readiness index out of 191 countries. But In 2008, the position is reduced to 150 out of 192 countries. It is one of the challenges to improve the e-readiness index for the success of e-Governance in Nepal.

Table 4.7

E-Government Readiness Index for Southern Asia

Country	2010 Index	2008 Index	2010 Ranking	2008 Ranking
Maldives	0.4392	0.4491	92	95
Sri Lanka	0.3995	0.4244	111	101
India	0.3567	0.3814	119	113
Pakistan	0.2755	0.3160	134	131
Bhutan	0.2598	0.3074	146	134
Bangladesh	0.3028	0.2936	152	142
Nepal	0.2568	0.2725	153	150
Afghanistan	0.2098	0.2048	168	167
Region	0.3248	0.3395		
World	0.4406	0.4514		

Source: United Nation e-Government Survey 2010

Nepal – 150th position out of 192 Countries in 2008

Nepal – 153rd position in 2010

Digital Divide

Digital divide commonly refers to the gap between those with access to ICT and those without. It is an important barrier to e-Governance in that people who do not have access to the Internet will be unable to benefit from online services. In developing countries, a growing number of people have access to the Internet, but there are still large numbers of

people who do not. Such disadvantaged groups are often the targets of government interventions and higher level of ongoing interaction with government.

The digital divide is a particular challenge in least developed countries like Nepal and ICT is still out of reach of many groups due to technical education, cost, language, lack of infrastructure for ICT.

Privacy and Security Concerns

Citizens are unlikely to use e-Governance services without a guarantee of privacy and security. Governments also have a strong interest in maintaining citizens' trust. The challenge facing e-Governance coordinators and implementers is to respect accepted privacy principles while allowing the benefits of the Internet and other technologies to flow to citizens.

Government has a responsibility to provide leadership in developing a culture of privacy protection and security. It should provide this leadership through its roles in the development of public policy, as owner and operator of systems and networks, and as a user of such systems and networks.

Similarly Military departments and some key ministries (such as defense ministry) are more concerns about their data security. They do not like to put their data on to one server due to their unwillingness to disclose their personal information to all members. This hampers the implementation of some integrated e-Governance services, of which the security departments are part.

Supply of Electricity

Energy demand of Nepal is increasing by more than 10% every year. According to annual report-2008/09 of Nepal Electricity Authority, Out of the total energy demand only about 80% of the energy is being served with daily load shedding. Supply of electricity is not enough so it is becoming a challenge to develop and implement e-Governance in Nepal.

4.4.2.2 Education and Citizens Concerns

This category represents the education condition and citizen's perspectives in terms of e-Governance in Nepal. After the analysis of survey data and interviews, the following issues should be addressed to implement e-Governance successfully**.**

Insufficient Education and Low ICT Literacy

The literacy rate in least developed country is one of the big problems to implement e-governance services. The literacy rate in Nepal is about 57% and there is huge imbalance between men and women literacy. ICT literacy rate is very low below 10% but this rate is growing rapidly in these days. Similarly English language literacy rate is also very low. Most of the e-governance system is being developed in English language so it is uncomfortable to most of the Nepalese people. Localization/Local language computing might be the solution but it will take time and finance to develop.

Citizens Expectations prior to e-Governance

Most of the people agreed in the importance of improving their lives and their income levels before considering any technological initiative. From the citizen's point of view, improving infrastructure of cities and villages should be the government's priority. Unemployment and Poverty are the biggest challenges facing Nepal. Citizens confirmed that the handling of such problems is more important than anything else. It can be concluded from this research that citizens are demanding that the modernization and the development of infrastructure of their villages and cities takes precedence over e-Governance and so the government gives less priority to e-Governance in Nepal.

4.4.2.3 Cultural Factors

Nepal is rich in social attachment and culture which are reflected in different aspects of social life. In addition, cultural issues manifest clearly in the workplace and in the street. As a result, it can be said that the government takes cognizance of these facts in providing services to the citizens. For example; the adoption of new technology enables more Nepalese to work and enhance their access to government services.

This category addresses the cultural concepts that impede the implementation process of e-Governance in Nepal such as behaviors of employees in the government departments that can be seen as reactions to the implementation.

Employee Resistance to Change

Employee resistance to change is still the biggest barrier to implement e-Governance. There are number of reasons why they resist the use of ICT. Some of the primary reasons are mentioned: (i) they fear that ICT would replace them so cause job losses; (ii) They do not want to any kind of change in their familiar environment because they fear to learn new methods of working; (iii) Resistance to change from public staff is one of the major problems encountered in this endeavor. For example, revenue department staffs are those who caused most problems because they fear to lose the extra income receive from bribes.

Corruption

Administrative corruption is one of the fundamental problems in Nepal. For e-Governance, corruption is a major barrier to implementation, especially in the field of tenders, some of which are granted on the basis of who has the greatest influence with the national leaders and whose bribe level is higher. For instance, technological hardware and equipments have frequently been below acceptable levels because of corruption during the tendering process. Administrative corruption is great barrier that must be overcome to implement e-Governance in Nepal.

4.4.2.4 Political Factors

e-Governance requires strong political participation and support from government and political parties to enable and speed up the changing of law, the elimination of any concerns about data security and the prioritizing of the project on the government agenda. These factors are described in detail below:

Regulations and Legislation

The e-Governance and any subsequent e-transaction between public sector departments and other sector require a different regulatory framework from the current one. E-

payments gateway needed for e-Commerce, the legal use of electronic signatures, and the legal enforcement of data protection between governmental departments and citizens are some of the examples. In Nepal, The policy, legal and regulatory frameworks of telecommunications, IT and broadcasting are still segregated. Current legislation in Nepal is not enough to implement e-Governance. Government must play an important role in amending the IT laws and policies. Similarly monitoring and controlling the progress of e-Governance before and after implementation is also important.

Lack of Government's will and stand due to Political Instability

Political stability in Nepal is very poor. Due to the various political conflicts, no government was strong and stable in the past. So due to instable government all the administrative heads are influenced by political parties. So the political activities like changing the decision made by previous government, replacing the high level government officials by new faces are common in the country. In this situation, there is a probability of being ICT projects in less priority. Unfortunately, there is a lack of government's strong will and stand to develop ICT and e-Governance. This type of unpredictable culture of government step back the development of e-Governance in Nepal.

Government's priority

Nepal is one of the least developed countries. The governments of least developed countries are poor and they have many things to cover with limited budgets. They have a lot of works to be done in the field of education, health, transportation, electricity, drinking water facility and so on. Among these works, e-Governance always comes at the end. So, the government always gives less priority to implement e-Governance in Nepal.

Frequent Changing of Ministers and high level Officials

Continuous changing of ministers and high level official is also the challenge of e-Governance implementation. e-Governance in particular needs directors and ministers implementing lone term plan. Unstable politics is the main cause of changing the ministers and directors.

4.4.2.5 Institutional Factors

This category is related to the problems within the government departments in Nepal. It includes barrier such as the communication and coordination process among government departments and how this process acts as an obstacle, the complication in procedures within government structures that lead to delays in the implementation process, weaknesses in the public sector and legacy system that have been used in the sector.

Limited Information Sharing and Transparency

In Nepal, several e-Governance initiatives have been running in government agencies. Some of them are implementing for the service and some of them are still under development. Lack of information sharing, transparency and linkage among them is a challenge which may lead to the bottleneck in good governance and their integration to IT system of other government systems.

Public Sector Weaknesses

The majority of the citizens, even the public sector employees, confirmed the importance of overall restructuring of the public sector in Nepal. Most of the departments are influenced by the politics so their directors and secretary cannot make decisions that are important. Movement of various trade unions affiliated to different political parties of Nepal weakens the strength public sector in Nepal. A lack of administrative experts who are able to improve the public sector constitutes to a barrier to the implementation of e-Governance in Nepal. Most of the public sector directors and secretary are older and in many cases they do not have any recent administrative or managerial qualifications. Their lack of knowledge and skill hinder the implementation of transforming the public sector into an e-Governance format.

Lack of training and Awareness Programs

Many e-Governance or computerization projects suffer gravely from lack of adequate training programs. Training is of vital necessity in familiarizing users with computers and breaking their fears. Due to lack of training they are not convinced about how ICT will benefit to their works and how it will increase their efficiency.

Although there is much hype about ICT among the younger generation, there is not enough awareness among the general public about how ICTs may be useful to their lives. So ICT awareness and motivating people to use the e-Governance system is big challenge. Not only the general people, high ranking old government officers also have very little awareness and motivation so they have not understood benefits the country will get after the implementation of e-Governance. Due to this, the long term strategy of e-Governance implementation in Nepal seems to be weak.

4.4.2.6 Human Resource Factors

Based on the analysis of survey data and the interviewees' perspective, human capabilities, in terms of their understanding of the concept of e-Governance and of the skills that they need for such a project, have been recognized as challenge to implementing e-Governance with in government departments, as described below.

Insufficient Education

The literacy rate in least developed country is one of the big problems to implement e-governance services. The literacy rate in Nepal is about 57% and there is huge imbalance between men and women literacy. ICT literacy rate is very low below 10% but this rate is growing rapidly in these days. Similarly English language literacy rate is also very low. Most of the e-Governance system is being developed in English language so it is uncomfortable to most of the Nepalese people.

Lack of e-Governance Awareness

Although there is much hype about ICT among the younger generation, there is not enough awareness among the general public about how ICTs may be useful to their lives. So ICT awareness and motivating people to use the e-Governance system is big challenge. Not only the general people, the part of public sector employees and some of the high ranking old government officers also have very little awareness and motivation so they have not understood benefits the country will get after the implementation of e-Governance. This lack of understanding of e-Governance has negative effect on government departments and ministries when implementing of e-Governance program.

Due to this, the long term strategy of e-Governance implementation in Nepal seems to be weak.

Inadequate Skilled Human Resource Capacity

The lack of experts in governmental departments is seen as a major barrier to the implementation of e-Governance. For a country of more than 29 million people, the number of IT-trained people in the country is very low. The graduates from four Universities and trained people from IT institutes in the country are not enough to implement and sustain e-Governance in Nepal. On top of that, most of the well-trained IT graduates of the country leave every year since there is little scope for them in Nepal in terms of professional development. So brain drain is becoming a major challenge of Nepal like other least developed countries.

4.4.2.7 Financial Factors

This is one of the crucial challenge in e-Governance implementation in Nepal is related to financial issues. The available financial resources to fund the project are insufficient, and that without financial external assistance the project will not be fully implemented. The low salaries in the public sector also make the utilization of e-Governance services very difficult.

Funding Issues

e-Governance project is a big project and the government like Nepal does not have the ability to implement such scheme, as it requires a huge amount of funding. Most of the citizens and employee asserted that external funding represents the most appropriate solution for implementing e-Governance in Nepal. Similarly the enhanced relationship with private sector is useful to transfer knowledge regarding the implementation of large project like e-Governance.

Sustainability

One of the major problems of e-Governance in Nepal is its sustainability. Many e-Governance applications in the country have failed due to poor strategy, financial problem, technical human resource problem, and poor public participation and so on. In Nepal, most of the e-Governance projects are funded through external sources, primarily foreign funds. This will lead to a very vulnerable situation with regards to the sustainability of these projects.

CHAPTER - V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

All the countries around the world are strategically pursuing the e-Governance project with the same fundamental goals such as citizen-oriented service, efficient and transparent government and socio-economic development. However, according to their respective conditions, such as its population, language, land, industry, etc., different strategies are adopted. This means to pursue the project in the most suitable and efficient method according to the country's characteristics and to achieve the predefined goals of the e-Governance. In order to implement the e-Governance project that suits the current conditions of Nepal and execute it most effectively, key success factors as following were identified, based on the analysis of ICT status of Nepal. Lessons learned from the cases of developed countries that have already established the e-Governance and are further developing it were taken into consideration as well. Key Success Factors Needed to Realize the e-Governance.

This chapter recommends some methods and strategies by which the Nepalese government could seek to minimize the effect of some existing barriers and therefore achieve more effective implementation. The research found that some of the factors that affect e-Governance implementation in Nepal are common to other least developed countries whereas others are based specifically on the Nepalese context.

5.2 Conclusion

Nepal is still at an early stage of e-Governance development and its implementation. In these days Nepal has shown some progress in ICT sector but it is insufficient to implement e-Governance throughout the country. The popularity of ICT and e-Governance is increasing day by day in the country. However, Nepal is not yet ready for advanced e-Governance services but it is ready for basic services. The Government is keen and committed to promote e-Government. There are several challenges and also

opportunities. For the implementations of e-Governance it is still required to improve basic foundations like literacy rate, ICT infrastructure, awareness, funding, and commitment and so on. Beside this cooperation from government officials and leadership commitment will contribute to a smother progress.

In this research more attention was paid to the social, economical and political aspect of e-Governance implementation rather than to technological ones. The following list provides suggestions regarding these aspects for future research, which will help implementing e-Governance more effectively.

- Conducting further cycles of investigating in Nepal could be interesting future research, as new factors and challenges may emerge and/or some existing factor may disappear.
- Further research is required on the application of stage models to e-Governance. For example, it will be interesting to look and see if the government can apply all the stages in every single department, or whether government has to stop a half way.
- From the literature it appears that no existing research has examined the success of other ICT projects in Nepal. It might be advantage to ascertain if such projects could be transferable to the implementation of e-Governance.
- Research has shown the importance of employees' and citizens' satisfaction before ICT initiatives such as e-Governance. It would therefore be useful to conduct further research to examine stakeholders' needs prior to implementing such initiatives. Addressing peoples' needs would lead to more effective implementation.

5.3 Recommendations

The following subsections discuss in turn each of the principle recommendations and possible strategies towards addressing the challenges of e-Governance implementation in Nepal. These recommendations emerged from the data analysis and subsequent findings of this research.

Government should change their focus of Attention

The current focus of attention of the Nepalese government is wrong. To modernize the country, the citizen's ICT skills are more important. It should be clear that more ICT literate they are, the more capable citizens will be of using e-Governance services. The Nepalese government is seeking to improve ICT skills, but it provides no e-Governance services for them to use at present. To address this issue, the government needs to consider how it can be enable ordinary people to acquire computers and gain internet access by such methods as purse subsidies, selling recycled desktop PC's under fair trade conditions, offering leasing plans to the poor people.

Evaluate E-Governance Master Plan and Develop New Vision/Strategies/ Leadership for e-Governance

E-Governance Master Plan is a long term vision and strategy to implement e-Governance in Nepal. E-Governance master plan needs to be evaluated and try to find out where we are; where is the destination; How to go there. The pilot projects undertaken should be evaluated and classified as success or failure. Bottleneck and causes of failure should be identified and documented. With this evaluation, new vision and strategies should be developed and implement. The most important factor when meeting the challenge of e-Governance implementation is to develop a strategy that is realistic, particularly in terms of the scope and size of the programs. One size does not fit all for e-Governance projects.

Leadership is very important entity which gives the vision and drives the society. So it is needed to raise the awareness among the leaders about the importance of e-Governance; for that one to one counseling of key leaders needed. Leaders should be committed and give high priority to e-Governance system. Right persons should be appointed at the right place which will enhance the commitment to the implementation of e-Governance.

Advancing ICT Infrastructure

Like other underdeveloped countries, Nepal also has poor ICT infrastructure. There is poor electricity supply, telecommunication and internet access throughout the country. So Investment should be made on building ICT infrastructure throughout the country,

keeping in mind that the returns from such investment will be long-term. Since Nepal is a country of difficult terrain, the more emphasis has to be given to develop wireless networks in the country. Wireless networks would be very much useful to connect remote villages of country with urban areas. The Government Integrated Data Center (GIDC) has to be implemented immediately to its optimum level. Internet penetration should be improved. The quality and capacity of ICT connectivity needs to be improved. Government should take immediate steps to the direction of developing Local Area Networks (LAN) in all government offices and then inter-connected with other offices through Wide Area Networks (WAN).

Government Process Reengineering

Government Process Reengineering (GPR) is the process of rethinking and radical redesign of government processes to achieve improvement in government processes and key supporting processes. This will examine the health of each department and analyzing its ability to accept change towards e-Governance and efficiencies of the existing processes in order to determine improvement priorities. The decisions on priorities in a GPR should be based on feasibility, opportunity and importance. It is also important to get employee and customer feedback to understand what is the real requirement of the system; and its greatest priority. If the produced output after reengineering is not better than previous one then there is no need to do reengineering.

Create and Retain Adequate Skilled IT Human Resource

Well planned program is needed to create a greater number of skilled IT human resources to implement e-Governance in Nepal. IT education is necessary for high level officers to the village level operators. It is essential to carryout ICT education in rural areas. For this strong tie up between university, industry and government should be developed. Steps need to be taken to monitor the quality of training institutes and university affiliated colleges. Fostering domestic ICT workforce by expanding participation of domestic ICT companies in the e-Government project and securing foundations to promote ICT companies and continue the promotion.

Retaining the massive skilled IT human resources is another big challenge. To stop this brain drain, a necessary steps needs to be taken like motivating them by giving suitable employment and revising salary regularly. In the mean time, deployment of skilled trained personnel throughout the country is also important to run e-Governance projects smoothly.

Increasing Training to Improve IT literacy to Government Officials

There should be timely and planned ICT training programs to government officials to develop awareness about the potential of ICT. Conduct the training programs for project leader, supervisor and managers on using information and manage the development process. Without adequate and timely training programs, e-Governance projects are likely to fail no matter how much the investment. Regular training will definitely minimize the employee resistance to change attitude, motivate them to work which is a major factor of success of any e-Governance projects.

Organize Public Awareness Programs on ICT

The e-Governance system is ultimately for the people. So public must be aware about the e-Governance system, its benefits and mechanism of its operation. People of different discipline are involved in e-Governance system, so government should hold frequent public awareness programs to make people aware of the benefits of e-Governance and ICT. Since Nepal has very low literacy rate and culture of technology, frequent training programs would be very much effective in a very short period of time.

Develop a Mechanism to Quick Monitor and Track the Progress of the Project

Monitoring and assessing progresses and managing performance by checking progresses regularly and step by step, confirming that the e-Governance project is going in the right direction. Each Ministry should develop IT department to monitor and track the progress of the e-Governance projects. This department will play the bridge between other ministry that makes better coordination for information sharing and accessing. It should make the relationship with IT industry and University for their requirement and future planning.

Ensure Reliability, Privacy and Security

Nepal is one of the least developed country having poor literacy rate and poor culture of technology. Reliability of the system, Privacy and Security of the citizens is a major issue. It is the prerequisites for the effective e-Governance system. So the reliability of the system must be ensured by convincing the people with regular awareness programs. While accessing the government services, the citizens should be ensured that the information flow would pass through reliable network so nobody can misuse their personal information. Similarly secured ways of transactions for the government services should develop. Authentication mechanism should be developed for the identity of citizen verification before requesting the e-governance services.

Implementing Government Web Portals efficiently and Monitor the functions of Telecenter

The use of ICT has increased productivity, flexibility, effectiveness and transparency. But in Nepal, most of ICT enabled service delivery systems focused on publishing information and links. To increase the service consumption and public participation, the government Web Portals and internet based applications should be increased which will provide actual transactional service. In the same time government should make plan to address the needs of target people and attract both the citizen of rural and urban areas.

In Nepal, large numbers of Telecenters are operated in rural areas. The Telecenters should provide access to telephones and faxes, access to e-mail and internet, documentation, scanning and printing, video conference call and other development support services like access to online information services for weather, market prices, news, banking, medical advice, business advice and many more which will help to meet basic needs of the rural areas. So effective monitoring of Telecenter is highly required to reach the targeted objectives. It is an effective way of providing ICT and e-Governance facilities in rural areas to the people of under-privileged society of Nepal. The trust between Telecenter and intermediary should be developed which affects the way e-Governance services are delivered through Telecenters.

Prioritize the Issues of Enterprise Architecture and Interoperability

Another important issue for consideration is developing a common government Enterprise Architecture based on open standards supporting interoperability in building IT systems so that they can be integrated with IT systems in other government offices. Interoperability is the capability to communicate and transfer data from one system to other system by using same architecture. It provides the features of sharing information and services in e-governance system. So prioritize the development of Enterprise Architecture to address the issue of interoperability to implement the full phase of e-governance system.

Assistance from Donor Community by Raising Awareness

Technical and financial assistance from donor community has been a critical factor for the progress of e-Governance initiatives. The e-governance projects need to be funded either through the government or through the private sector. Awareness-raising programs like seminars, individual meetings, workshops, web-based documentation should be arranged among the donor community. Government should conduct the fund raising activities.

Develop Sustainable Models for e-Governance

Most of the e-governance projects in least developing countries fail to sustain for a long period of time. This is due to the financial factor, technological factor, political factor and social & environmental factor. So it is important to develop sustainable e-Governance projects. Government funding after stopping the external funds, Consistent evaluation and monitoring of e-governance projects, involvement of all stakeholders, public leadership commitment are the key steps to build sustainable models for e-governance.

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APPENDICES

1. Sample Questionnaire

The question samples of the different types that were used in the analysis of the current state of the e-Governance are as follows**:-**

Type 1

Organization Name: _____

Name of Contact Person_____ Designation _____

Official Address_____

Telephone Number_____ Mobile No._____

1. What kind of IT education is needed?

a. Professional trainings b. Hardware and networking courses

c. How to use PCs

2. How do you categorize your IT infrastructure capabilities (Please tick the applicable single choice)?

a. No computers b. Standalone computers used for word processing

c. Networked computers

3. If you have any network infrastructure for connecting center-field offices,

3.1. What is the usage pattern (tick the appropriate one***)?***

a. Internet b. Intranet

3.2. What is the bandwidth? _____ Kbps

4. If you have Internet connectivity in the department, what is the major technology you are implementing (choose one)**?**

a. Satellite: VSAT b. Ethernet: (UTP, Coaxial, Fibre Optics, etc.)

c. Wireless d. ADSL

e. Mobile f. CDMA (PSDN Sky data)

g. Dialup h. Others_____

5. What is the list of operating systems in use? *(*Examples: Microsoft XP, Windows 2000, 2003, Vista, MAC OS, UNIX AIX, HP-UX, Solaris, Linux, etc.)

a._____ b._____

c. _____ d._____

e. specify if others

6. What is the list of the application software in use? (Examples: Off the shelf – Microsoft Office, Adobe PageMaker, AutoCAD, etc. Customized software – Human Resource Management Information System, MIS, Customer Management Information System, etc.)

a._____ b._____ c._____

d._____ e._____ f._____

7. Which technologies have been implemented for IT security and disaster recovery? (Tick the technologies implemented, multiple choices is possible)

a. Antivirus b. Firewall (Hardware) c. Firewall (Software)

d. Access Authorization e. Encryption

8. What are existing roadblocks in implementing IT/ E-Governance initiatives? *(*examples: lack of adequate manpower, government policies/acts, inter-departmental dependencies, corruption, accounting, budgetary allocation, funds, infrastructure, delivery channels, demand / supply mismatch, etc.).

a._____

b._____

c._____

9. What are the IT budget allocations in Thousand of Rupees?

Year	Total Allocated budget	Expenditure							
		Total	Hardware procurement	Application Development Procurement	Human Resource Development	Upgrade	Maintenance & Support	Security	Others
2064/65									
2063/64									

10. How many IT trained staff (in numbers) are there in the Department under the following categories?

a) Only Basic Computer Email / Word Users _____
b) Advanced Computer Software Users _____
c) c) IT Project Managers _____
d) d) Database Administrators _____
e) e) Software/ Application Developers _____
f) f) Network/system Administrators _____
g) g) Helpdesk/ Desktop Management _____
h) h) Website Management _____

11. If e-governance is implemented do you have thought about the backup for the storage of old documents?

a) Yes b) No

12. If yes what kind of back up do you use?

a) CD, DVD b) do not store c) again paper works

d) If others specify……

Type 2

Organization Name: _____

Name of Contact Person_____ Designation_____

Official Address_____

Telephone Number_____ Mobile No._____

1. How do you categorize your IT infrastructure capabilities (Please tick the applicable single choice)?

a. No computers b. Standalone computers used for word processing

c. Networked computers

2. What is list of OS in use?

a. Microsoft b. Windows 2000 c. Window XP d. Vista

e. If others specify_____

3. What is the list of application software in use?

(Examples: Off the shelf – Microsoft Office, Adobe PageMaker, AutoCAD, etc. Customized software – Human Resource Management Information System, MIS, Customer Management Information System, etc.)

a._____ b._____ c._____

d._____ e._____ f._____

4. What do you think its effect will be on its implementation?

a. Reduce cost for saving documents

b. Rapid and efficient processing

c. Effective way of communication

d. All of above

5. Is the number of ICT staff sufficient for implementation of this kind of system?

a. Yes b. No

6. Why do you think the different e-governance project fails? Give your opinion

Type 3

Organization Name: _____

Name of Contact Person_____ Designation_____

Official Address_____

Telephone Number_____ Mobile No._____

1. Do you know what e-governance really means?

a. Yes b. No

2. How many IT trained staff are there in the department with different knowledge?

3. Is the number of IT staff in the department is the satisfied number?

a. Yes b. No

4. Do you have the capability to trace the benefits of change?

a. Yes b. No

5. Do you think this kind of systems should be implemented?

a. Yes b. No

6. How efficient do you find this system implementation?

a. Time consuming

i. Yes ii. No

b. Reliability

i. Yes ii. No

7. What kind of training campaign should be launched?

a. How to use internet b. How to use pc

c. Professional training courses (e.g. database, PHP)

8. What do you think the problems you will face while using this kind of system? (Specify if any)

Type 4

Name of Contact Person_____

Telephone Number_____ Mobile No._____

Occupation_____

1. Are you satisfied with the current administrative services?

a. Good b. Very good c. Norma**l**

2. Do you know about the e-governance?

a. Yes b. No

3. What should be the goal of e-governance?

Improving civil services

Administrative efficiency

Transparency of e-governance

Economic development

Implementing advance administration

4. Do you think this kind of implementation is effective on the basis of time?

a. Yes b. No

5. Do you think this kind of implementation is effective way of communication?

a. Yes b. No

6. Do you think this kind of implementation is effective on the basis of reduced cost?

a. Yes b. No

7. Do you think this kind of implementation is transparency?

a. Yes b. No

8. Do you think this kind of implementation is reliable or not?

a. Yes b. No

9. What do you think the obstacles to build the e-Government in Nepal?

a. Lack of ICT professionals

b. Illiteracy rate

c. Lack of budget

d. Lack of management

10. What kind of system should be launched by government to implement this program? (Give your opinion)

11. Most important thing to be done to improve administrative services?

a. Interdepartmental work

b. Internal work of department

c. Transparency

d. Trust between citizen and government

12. Ways to get the administrative services?

a. Visit the government offices

b. Telephone

c. Internet

d. Postal Services

e. Fax

13. Administrative services that need to be computerized most urgently?

a. National ID service

b. Customer service

c. Tax service

d. Real estate

e. Car license service

2. Interview- Questionnaire

Name:

Organization:

Position:

1. What role do you play in the Organization/Ministry?
2. How do you rate the status of e-Governance in Nepal?
3. What advantages and benefits can you see coming from the e-Governance project?
4. What do you think the major barriers are? Whether and why the barriers have increased or decreased.
5. Why do you think Nepal is interested in e-Governance?
6. What are the risks and disadvantages of the e-Governance?
7. In which sector the government should give high priority to implement e-governance in Nepal.
8. What do think about technical infrastructure and e-readiness of Nepal? Is it enough to implement e-governance in Nepal?
9. Do you think that the e-Governance project has been successful to date? What criteria do you base this assessment on?
10. How will you promote the services that will be introduced by e-Governance?
11. Do you think that e-Governance will change the behavior and practices of users within government offices? If so How?
12. How would you envision the program affecting the future of employment in the public sector?