

**ICT APPLICATION IN SERVICE DELIVERY:
A CASE OF INLAND REVENUE
DEPARTMENT, NEPAL**

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DEDICATED TO

Late. Dhanapati Upadhyaya, the man of whom I wish I had inherited few. Miss you, BABA!!!

Pushpanjali Upadhyaya, the lady whose love I am blessed with. Love you, MUMMY!!!

Nirmal Kumar Raut, the man whose support and smiles make my life. Thank you, NIRMAL!!!

ABSTRACT

This study is an attempt to learn the effectiveness of ICT in service delivery with the special focus on Inland Revenue Department of the country. It tries to understand effectiveness of e-services, meaning that how effective e-services are in terms of improvement in service delivery by being time effective; do organizational factors influence the effectiveness of e-services; do customers' factors relate to the effectiveness of e-service. In other words, effectiveness of e-services is analyzed in terms of improved service delivery from organizational and customers' view point.

Being descriptive cum analytical research study, it has used a combination of content analysis, survey through in-depth interview and questionnaire and observation to collect data. Theoretical concepts of e-governance, governance, new public management and human capital are employed to establish the relationships between variables.

The findings show that the average response of service providers and seekers towards the effectiveness of e-services as positive. Specifically, the study reveals that organizational factors (human resources, 'ICT infrastructure, financial resources and attitude of service providers) are associated to the effectiveness of e-services, while customers' factors (customers' demand and customers' knowledge) are not found to be associated with the effectiveness of e-services. It, thus, concludes that the role of organizational factors is significant for making e-services effective and if the organizational factors are more emphasized and strengthened, then the e – services' effectiveness would be more. On other hand, the non – association of customers factors with the effectiveness of e-services shows that customers have a small role to play to make effective e-service delivery. There might be several explanations. However, some distinct features of Nepal as that of low level of internet penetration, poor right consciousness of public customers, patron – client relationship, and a sense of 'fear' with the 'revenue' department might have made customers dormant with the role they can play for making e-services effective.

In short, the study concludes that the e – services of IRD is effective, and the organizational factors (not the customers' factors) influence the e – service delivery.

Keywords: Effectiveness of e – service, organizational factors, customers' factors

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ABBREVIATIONS

CTO	Commonwealth Telecommunication Organization
DANIDA	Danish International Development Agency
DFID	Department for International Development
EDPC	Electronic Data Processing Centre
GTZ	Gesellschaft für Technische Zusammenarbeit
HLCIT	High Level Commission for Information and Technology
HRB	High Ranking Bureaucrat
ICT	Information Communication and Technology
IRD	Inland Revenue Department
IRO	Inland Revenue Office
KIPA	Korea IT Industry Promotion Agency
MoEST	Ministry of Environment, Science and Technology
NCC	National Computer Centre
NPM	New Public Management
PAN	Permanent Account Number
RAS	Revenue Administrative Support
TDS	Tax Deductable at Source
VAT	Value Added Tax

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CHAPTER 1

INTRODUCTION

1.1 Background

The advent of the internet, digital connectivity, the explosion and use of e-commerce and e-business models in the private sector are pressuring the public sector to rethink hierarchical, bureaucratic organizational models (Ndou 2004). Moreover, the increasing expectation of the citizens and the better service delivery of the private sectors are demanding the bureaucracy to be time responsive. As a result, the recent decades have experienced the paradigm shift in the role of government, where the government's role is redefined as to empower rather than serve customer, to shift from hierarchy to teamwork and participation, to be mission oriented and customer focused, and to focus on prevention rather than cure (Osborne & Gaebler 1992). As early of 1980s, the need to reform the bureaucracy was highly discussed all round the globe and as the result the governments of developed and developing countries faced the challenge of transformation and the need to modernize administrative practices and management systems (Tapscott 1996). In this regard, information communication and technology (ICT) is seen as a tool to support the work of governmental institutions and agencies with the objectives of delivering public services and information in a more convenient, citizen-centric and cost effective manner. In other words, ICT can be an effective tool to ensure increased accessibility, inclusivity and flexibility of government services, improved value for money and increased productivity.

Like other developing countries, Nepal government also has recognized the importance of ICT for making the service delivery prompt and effective and thus has introduced ICT in different public offices. As a matter of fact, country stepped in ICT world in early 1970s with the introduction of IBM computer systems to process the population census data (Kim et al 2007). Since then, various attempts have been made to modernize the public bureaucracy so as to make service delivery effective. Effective service delivery relates to the cost effective, easy and timely access to the services provided by the offices. In this regard, e-revenue administration is one of the systems introduced by the government department named Inland Revenue Department in 2006 to provide services to the public by using ICT as a major tool.

1.2 Illustration of the Problem

Gessi et al (2006) in their conference paper named *Introducing a New e-Governance Framework in the Commonwealth: From Theory to Practice*, have asserted that governments are costly, deliver poor services and are not sufficiently accountable or responsive to citizens in many developing commonwealth countries. Until quite recently, governments were plagued by a typical supply-side orientation, wherein developmental priorities were set by notions of the welfare state and centralized planning, and citizens were merely treated as passive recipients or beneficiaries of public services. These claims appear to be true with Nepal as well. Sadly, many studies have claimed that Nepalese bureaucracy to be characterized by different kinds of pathological traits such as the pathology of persistence, pathology of conservatism, pathology of growth, pathology of status, pathology of self-service, pathology of buck passing, pathology of delay, pathology of nepotism and favoritism and pathology of corruption (Upadhaya 2003). This sad picture is supported by poor ranking of the country in international studies such as Transparency International's Corruption Perception Index (146th in 2010¹) and the Fund for Peace's Failed State Index (26th in 2010²).

Nepal government has come up with different administrative reforms agenda, though few of which are implemented, so as to make the bureaucracy vibrant and customer oriented. As one of the administrative reform initiatives can be taken as the use of ICT in the government departments. In other words, Nepal government has recognized the importance of ICT in public sectors because it has the potential to transform not only the way in which public services are delivered, but also the fundamental relationship between government and citizens.

Looking at the history of ICT in Nepal, it goes back to early 1970s so the country has completed three decades of introducing ICT in governmental workings. Then after, there has been establishment of different institutional bodies like National Computer Centre in 1978, Ministry of Science and Technology in 1996, High Level Commission for Information Technology in 2003 etc. Likewise, different legal instruments namely IT Policy 2004, Electoral Transaction and

¹ See: http://www.tinepal.org/Press_release_CPI_2010.pdf accessed 21 November 2009

² See:

http://www.foreignpolicy.com/articles/2010/06/21/2010_failed_states_index_interactive_map_and_rankings accessed 16 October 2010

Digital Signature Act 2000, Copyright Act 2000, Telecommunications Policy 1999, Telecommunication Act and Regulation 1997, National Communication Policy 1992 etc are enacted for strengthening use of ICT in public offices. Despite the three decade of history with ICT attempts, Nepal ranked low regionally and internationally as supported by Networked Readiness Index³ in 2009/2010.

Table 1.1: The Networked Readiness Index 2009-2010

Country	Rank	Score	Rank within income group*	
Sweden	1	5.64	HI	1
United States	5	5.46	HI	5
China	37	4.31	LM	1
India	43	4.09	LM	3
Vietnam	54	3.87	LO	1
Sri Lanka	72	3.65	LM	9
Pakistan	87	3.44	LM	14
Bangladesh	118	3.01	LO	15
Nepal	124	2.95	LO	21

*Income groups: HI=high income; UM=upper-middle income; LM=lower-middle income; LO=low income.

Source: Global Information Technology Report 2009/10

There might be various factors affecting the use of ICT in public sectors. Nepal Telecom Authority claims that the total service (land line, mobile and others) penetration is not more than 29% of the population, likewise International Monetary Fund asserts that internet penetration to be 2.2% of the population of the country (See: <http://www.internetworldstats.com/asia/np.htm> accessed 12 February 2010). It is evident from these low data profile that the internet usage in the country is dismally low. Moreover, an organization is faced with a distinct administrative set up

³ The Networked Readiness Index (NRI) examines how prepared countries are to use ICT effectively on three dimensions: the general business, regulatory and infrastructure environment for ICT; the readiness of the three key stakeholder groups in a society – individuals, businesses and governments – to use and benefit from ICT; and the actual usage of the latest information and communication technologies available (see: <http://www.weforum.org/documents/GITR10/index.html> accessed 1 October 2010)

and limited by the quality and quantity of skilled human resources coupled with the financial constraints, all these can shape the effectiveness of ICT in the organization.

Thus, government has recognized the importance of ICT to modernize the bureaucracy while on other hand it is faced with the distinct supply (organizational) and demand (customers') set up which may affect the effectiveness of ICT in service delivery. Given the scenario, the question arises: which and how the factors are influencing the effectiveness of ICT.

1.3 Research Questions:

The research aims to address following questions:

- a. What are the organizational factors affecting the e-service delivery at IRD?
- b. What are the customers' factors affecting the e-service delivery at IRD?

1.4 Objectives

The general objective of the research is to understand the effectiveness of ICT initiatives of IRD.

The specific objectives of the research are as follows:

- a. To assess organizational factors affecting the e-service delivery at IRD.
- b. To assess customers' factors affecting the e-service delivery at IRD.

1.5 Significances of the Research

The significances of the research are as follows:

- a. E-service delivery in itself is a new phenomenon in the country, and there has been scanty attempt to explore the relation of organizational and customers' factors with e-service delivery of an organization. Thus, it would be interesting to investigate the association between the variables under study.
- b. Moreover, this association will help to identify the lubricating/hindering factors for delivery of services with the use of ICT to the public.
- c. It will be useful to academicians and future researchers.

1.6 Scope of the Research

The research area should be selected so as to fulfill the objective of the study, and for this reason the study has to be conducted on government department which has a good number of e-services to the people. Thus, as the study site, the research focused on the Inland Revenue Department (IRD)⁴ of the country. The department is providing e-services to its customers, and because of its contribution in introducing online tax payment system, on May 2, 2011, Computer Association of Nepal (CAN) in association with High Level Commission for Information Technology (HLCIT) awarded Inland Revenue Department the ICT Best User in Public Sector (See: <http://www.can.org.np/index.php?listId=207&3rd-National-ICt-Day-2011> accessed 5 May 2011).

As the study aims to learn the effectiveness of ICT in service delivery of IRD, the study populations are the service providers and service seekers of the IRD. Regarding the service providers and seekers, the research is focused on the Inland Revenue Office of Kathmandu covering area number 1 and 2. Moreover, some ICT experts are also interviewed.

There are different internet based services to the service seekers provided by IRD. They are online filing facilities such as personal e-pan, e-pan, Tax Deductable at Source (TDS), e-returns, IMS and SMS systems. Likewise the varieties of information provided by the website of IRD are also e-services provided to the concerned seekers. However, the study does not consider all the e-services provided by IRD but rather it focuses on following services:

- a. Personal e-pan
- b. E-Tax Deductable at Source (TDS)
- c. E-returns
- d. Information provided by websites

⁴ The Department is the agency responsible for the enforcement of Tax Laws and administration of the following taxes: Income Tax, Value Added Tax, Excise Duty, Vehicle Tax and certain fee and duties like Entertainment fee, Special fee etc. Likewise, it is also responsible for monitoring the non-tax revenue such as dividends, royalties etc of the government (See: http://www.ird.gov.np/ird/index/index2.php?mode=content&cat_id=5&id=2# accessed 20 December 2010)

The reason for choosing these e-services for study is because these services have a large coverage of service seekers when compared to other e-services, meaning that large numbers of service seekers are taking the above mentioned services electronically. This is supported by the data as shown in the table 1.2.

Table 1.2: Number of Service Seekers

E-services	Total verified count (till May 2, 2011)
Personal e-PAN	209506
E-PAN	10862
E-TDS	85860
E estimated (income tax) returns	21603
E>Returns (e-income tax self assessment)	176329
E-Vat Returns	NA

Source: <http://www.ird.gov.np/ird/index/index.php> accessed 2 May 2011

1.7 Limitation of the Study

The study has certain limitations and some of which are:

- a. The research is limited on few organizational aspects and it does not explore other organizational factors like legal provisions, the role of outsourced human resources, political and administrative leadership.
- b. The effectiveness of e-services is looked from only one angle i.e., improvement in service delivery and the study does not take into consideration other objectives of e-governance like ensuring transparency, reducing corruption, reducing cost and quality of services.
- c. The study is done only on one organization, and thus it might lack the general applicability to other public organizations.
- d. Even with the single organization the study concentrated only on the effectiveness of e-services in the present scenario, it did not attempt to learn ‘before – and – after’ ICT application situation.

1.8 Chapter Plan

The research study has been organized into seven chapters and each chapter is further divided into various subsections. The first chapter introduces the study. The second chapter reviews different literatures and third chapter provides theoretical framework for the study. The methodology constitutes the fourth chapter, which provides information regarding the types and sources of data used in the study. The chapter also presents the hypotheses that are to be tested and the procedure adopted to analyze data and test hypotheses. The fifth chapter provides brief outline about ICT application in Nepal with especial focus on IRD. Then the sixth chapter presents and analyzes the data. Finally, the last chapter summarizes and concludes the whole thesis.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

There are many research reports, articles and books written on understanding the use of ICT in public organizations. Some of the studies have focused from increasing internal administrative perspective while some have given more concentration on understanding the impact of ICT in service delivery. In addition, many studies are conducted to explore the challenges of adaptation and implementation of ICT in public sectors, especially in the developing countries. In this regard, it is worthwhile to review the cases with the developed and developing countries as well. Thus, an attempt is made to learn the relevant literatures in international and the national context so as to have a clear overview of the matter of concern.

2.2 International Context

According to the *Report on the Review of ICT governance in Queensland Government* prepared by Service Delivery and Performance Commission (2006), governments' investment in technology provides significant benefits to government, industry and the community at large, including:

- Increased accessibility, inclusivity and flexibility in government service delivery – the ability for more of the community to interact with government, with the flexibility of choice offered by multiple delivery channels and at more convenient times
- Improved value for money – it enables quality services to be provided through lower cost delivery options
- Improved productivity – both of public servants and the economy, and
- Stimulation of the ICT industry – through identification of opportunities for innovation and partnering with the private sector to improve government service delivery.

Research based article named *Aligning ICT for Service Delivery in Nigerian Local Government* by Mike Adeyeye and Temitope Aladesanmi had reviewed the challenges facing ICT application and opportunities accruable from it, especially in the area of service delivery. Findings from data

in the sampled local governments revealed an incredibly low level of ICT presence and application. Likewise, lack of web presence and web portals had deprived the local government of efficient delivery of basic services; more so, most councils were riddled with bureaucratic lethargy. The paper recommended the development of web based application to harvest data, catalyze data processing, develop capacity building, establish telecentres and integrate the local government councils into the national ICT strategic plan (Adeyeye & Aladesanmi 2010).

Researchers Ssweanyana & Busler (2007) from Uganda and USA respectively examined the extent of adoption and usage of ICT on one hundred and ten firms in Uganda. With respect to the contribution of ICT to the firm, the study illustrated that the majority of respondents strongly agree that ICT provides increased savings, increased efficiency, improved service delivery, low transaction costs, and improved market performance to the organization that invests in ICT. The results revealed that the adoption and usage of ICT by firms in developing countries follow the same pattern as in developed countries, and they only differ in the level of usage and adoption as because there are various factors such as high cost of hardware, software, internet and ICT professional, which inhibit governments to adopt appropriate policies to address them (Ssweanyana & Busler 2007).

A research conducted by the Commonwealth Telecommunications Organization (CTO) undertaken in Ghana, India and South Africa has gathered evidence about the demand and supply factors affecting the provision of public services through local e-content. The research report says that, expense was the main reason for respondents not using services in South Africa, while a perceived lack of demand for services was the least important. In contrast, no need for the services was cited as the main reason amongst Ghanaian and Indian respondents, with local language issues cited as the least important (CTO 2007).

Heeks (2001) found that the use of ICT can make a significant contribution to the achievement of good governance. Aalyzing case studies from countries such as the Philippines, Honduras, Chile and South Korea, the study outlined three key contributors of e-governance: improving government process (e-administration), connecting citizens (e-citisens and e-services), and building external interactions (e-society). Heeks also identified two major challenges that developing countries face when it comes to the successful implementation of e-government: i)

the strategic challenge of e-readiness and ii) the tactical challenge of closing design-reality gap, adopting best practice in e-governance projects in order to avoid failure and to achieve success.

In the research entitled *E-Governance and Online Public Service: The Case of a Cyber Island*, Taruna Shalini Ramessur of University of Technology of Mauritius has attempted to understand the effect of e-governance via the introduction of a specific eservice (application for learner's licence) on service delivery in the Mauritian Public Sector. The research findings indicated that e-governance has improved service delivery of that specific eservice in terms of clearer information, better quality, modernized and personalized service and speedy process. The study claims that that eservices still has certain weaknesses in terms of double processes (physical and online), wrong communication and lack of options for feedback. However, the study has been limited to investigating the Mauritian government in the fast movement of e-government and hence no real generalisable conclusions can be drawn from that specific setting (Ramessur 2009).

Schuppan (2008) in his article *E-government in developing countries: Experiences from sub-Saharan Africa* addresses the different institutional and cultural contexts which must be considered when implementing E-government in sub-Saharan Africa. With the case study of e-governance in Ghana, Tanzania and Kenya, the writer viewed that the development potential of e-government can only be realized if certain minimum preconditions exist in the country or if they are taken into consideration during implementation. Due to institutional conditions in Africa, longer preparations and project times (compared to developed countries) are to be expected when implementing e-government. The article suggested that different administrative contexts and rationalities must be taken into an account when implementing e-government projects and strategies. Thus, the writer concluded that especially for African countries, a context-oriented approach is likely to be a more promising route to the successful implementation of e-government.

Wescott (n.d) in his article '*E-government in the Asia-Pacific region*' has pointed out reasons why Asia-Pacific governments have fallen behind private businesses in adopting ICT systems. Higher costs of ICT introduction due to the scale of public organizations, the inertia of existing options and habits, paper trail required for approval processing, concerns about security, confidentiality of information, obsolete regulations and laws, lack of understanding and

computer skills, difficulties of carrying out organizational change and the nature of public sector financing and procurement practices are some of the factors which Wescott identified.

Aikins and Karne (2010) in their study *Are public officials obstacles to citizen-centered e-government? An examination of municipal administrators' motivations and actions* investigate why municipal officials have not fully taken advantage of the interactive features of the internet to bring citizens closer to their governments. Based on the data analysis from a survey of local government chief administrative officers in five Midwestern states (Iowa, Kansas, Minnesota, Missouri and Nebraska), the authors find evidence that city officials have not taken advantage of the internet to bring citizens closer to their governments because these officials strongly prefer traditional citizen participation to internet based citizen participation. In addition, deployment of resources to support online participation is restrained by the low preference for internet based citizen participation. These findings call into question the widespread assumption that public officials enthusiastically embrace the movement towards e-democracy. However, the study did not include factors accounting for municipal officials' preference for traditional citizen participation over internet-based citizen participation. In addition, the effect of citizens' perceived risks of internet-based citizen participation and their willingness to demand adequate resource deployment on city web site design and adoption of internet based citizen participation were outside the scope of the study. Moreover, this study included only Midwestern cities with functioning web sites. As a result, the beliefs of and resource deployment by officials in other cities and in those without websites in supporting internet based citizen participation are not represented.

Pathak et al (2008) in their research based article entitled *E-Governance, Corruption and Public Service Delivery: A Comparative Study of Fiji and Ethiopia* has concluded that e-governance is positively related to improved government-citizen relationships and corruption reduction. The study, using a structured questionnaire, explored the perceived role of e-governance in reducing corruption amongst 400 respondents each from Fiji and Ethiopia. The study has suggested that while e-governance initiatives can make important contributions to improving public services they can best do so by helping improve overall relationships between governments and citizens.

In another study, Pathak et al (2009) examined perceptions of public service delivery in Fiji so as to explore the potential of e-governance to cut corruption and improved governance. The results

of the study show that service delivery-oriented information technology can contribute to an effective, multi-pronged strategy to cut corruption in the Fiji public sector.

Monga (2008) has analyzed the experiences of e-governance at the local, state and federal levels of government in India. The study found that e-governance has brought about a revolution in the quality of service delivery to the citizens by improving transparency in the administrative process, saving time due to single window service provisions, simplifying procedures, reducing corruption, improving office and record management and improving attitude and behavior of civil servants.

United Nation (2008), in its publication *UN E-government Survey 2008: From e-Government to Connected Governance* has identified the key variables involved in the delivery of back office integration which are the people, process and technology required. Whilst the technology is increasingly resilient and 'fit for purposes', evidence indicates that success or failure is less a technological issue and more a people issue – in particular the ability to change public service cultures and motivate public sector workers to new ways of working, address service cultures, address trade union concerns and provide adequately skilled and competent management and leadership. The study further says that Swedish government has faced critics both internally and externally pointing out that traditional culture of decentralized agency autonomy does not lend itself easily to achieving government-wide capacities. Indeed, the Swedish government, have studied several other European country experiences, concluded that many models being developed elsewhere would not be workable in their context.

Mohamed & Jian (2008) in their article *The impact of the Organizational Culture on the Implementation of Total Quality Management (TQM) Programs* claimed that TQM programs are more likely to succeed if the prevailing organizational culture is compatible with the values and basic assumptions proposed by the total quality management discipline. Organizations looking to implement TQM practices need to have an organizational culture that considers learning fundamental for the survival of the organization. Only with the proper organizational culture and environment, can TQM initiatives be successfully implemented. Organizational culture has long been acknowledged to be important to the success of an organization. Hence, it is increasingly evident that top management must have an explicit focus on the development and maintenance of their organization's culture.

Bolgherini (2006) in her article *The Technology trap and the role of political and cultural variables: A critical analysis of the e-government policies* had claimed that technology alone does not necessarily provide more access and more participation. As massive technological intervention is not enough for reinventing government online, other variables should be taken into consideration. Factors concerning political culture, cognitive frames and mentality, administrative traditions, as well as the country-specific peculiarities play a relevant role in determining if and how e-government initiatives can succeed or fail. She, thus, argued that any opportunity and push for change and actual influence on administrations, governments, and societies, prompted by the new technologies, should endure important variables of political, social and cultural nature.

2.3 National Context

Researcher duo Dhakal and Jamil (n.d.) had undergone a research in the internal revenue offices of Kathmandu valley to understand the problems and challenges of ICT for improving service delivery in Nepal. Data revealed that the majority of the respondents viewed much improvement in terms of easier to know information in time (70%); easier to make complain (59%); and service delivery in time (52%). On the other hand, more than half of the respondents confirmed that reporting of services like ‘decreasing discrimination’ (61%) and ‘easier to report’ (50%) has been in the improvement process. The study concluded that there has been improvement in the application of ICTs; however, there is still lack of skill and technical know-how to use ICT for the better delivery of services.

An internet accessed document on *Nepal e-Government master plan: Striding decisively* (See: <http://unpan1.un.org/intradoc/groups/public/documents/un-dpadm/unpan042242.pdf> accessed on 22 February 2010) mentions about the interview conducted on twenty-four high ranking bureaucrats (HRB) comprising secretaries, joint secretaries, under secretaries and 18 ICT focal points of different ministries and commissions to map the ICT requirement analysis. The results indicated that 60% of HRB and 83% of ICT focal points acknowledged the lack of ICT professionals as the foremost obstacle for e-government transformation, which showed that a need of skilled workforce as the key to successful implementation of ICT in government offices. The respondents also viewed that the need for the recruitment of ICT-literate civil servants and the provision of basic training programs for civil servants. When interviewed 100 students,

adults, ICT experts and ICT-literate citizens, data revealed that 45% expressed the need for computerization of National ID while 13% viewed for customer services and 12% for tax services. Finally, regarding what projects were needed to realize e-government in Nepal 30% prioritized expansion of telecommunications infrastructure and 30% prioritized expansion of ICT education.

Shrestha (2009) conducted a research study to examine the status of human resources for e-governance readiness in the four municipalities (Kathmandu Metropolis City, Lalitpur Sub-Metropolis City, Kirtipur Municipality and Madhyapur – Thimi Municipality) of Kathmandu valley. The report claims that all the municipalities are positive in expressing the need of more e-services to the citizens. Some of the findings of the research report are as follows:

- Lack of trained and skilled ICT human resource in the municipalities.
- Municipalities do not have clear policy about employee training and development. Municipalities have no allocated budget for ICT training.
- Negligible amount has been allocated for employee training and development. For example, in Kathmandu Metropolis City, the allocated budget for employee training never exceeded 0.1 percent of the total budget.
- None of the municipalities had allocated budget for information and communication training, which shows ICT training is one of the most neglected area in the municipalities.
- None of the municipalities have developed intranet.
- Citizens can download various forms from municipality websites, but they could not submit it electronically.

Madan P. Pariyar (2007) in his study *e-Government Initiatives in Nepal: Challenges and opportunities* pointed out a number challenges regarding the e-government challenges by the government. Some of the challenges are: low level of political commitment, poor culture of technology and modest human resources training capacity of local institutions.

Bhattarai (2004) studied on prospects and challenges of implementation of e-governance in Nepal. One of the objectives of the study was to highlight issues involved in successful implementation of e-governance related initiatives in Nepal. The study asserted that the effective

and meaningful application of ICT call for a synergetic mix of strategies backed by appropriate institutional mechanism, conducive policy and regulatory environment, pervasive and dependable ICT infrastructure and focused initiatives aimed at influencing organizational as well as individual behavioral responses. The study further claimed that e-governance as a governance paradigm demands cultural and attitudinal changes on part of government machinery and public administration apparatus as it seeks to promote transparency, accountability and wider public participation in governance. The study concluded that the success of e-governance depends on attitudes, knowledge and skills especially within the public sector that are required to initiate, implement and sustain e-governance initiatives.

2.4 Conclusion

Thus, about a dozen literatures were reviewed to understand the performance of ICT and e-governance in different countries like China, Korea, Sub-Saharan Africa, USA, Nepal etc. All the studies do not have the same cases and have concluded their findings differently. However, strikingly common features of all the reviewed study was that that the studies have equivocally highlighted the importance of organizational, cultural, political and social variables while adopting and implementing ICT/e-governance in the country in question. This holds true to Nepal as shown by a number of studies reviewed under this section. Thus, there is a room for the researcher to look upon the effectiveness of e-services provided by the government offices; in other words, what are the factors and how the factors are affecting the e-services provided by the organization under study.

CHAPTER 3

THEORETICAL UNDERPINNINGS

3.1 Introduction

This chapter illustrates about the various theoretical concepts which are used to strengthen the arguments relating to the variables in the thesis. The chapter opens with the brief explanations of theoretical concepts, which are then followed by the analytical framework that delineates the relationship between variables under study. Finally, the operational definitions of the variables and indicators are given so as to have an idea how the variables are understood in this study.

3.2. ICT and E-governance

ICT refer to a myriad of stand-alone media, including telephone and mobile telephony, radio, television, video, tele-text, voice information systems and fax, as well as computer-mediated networks that link a personal computer to the internet. ICT is an integrated system that incorporates the technology and infrastructure required to store, manipulate, deliver and transmit information, the legal and economic institutions required to regulate ICT access and usage, and the social and inter-personal structures which allow information to be shared, facilitate access to the ICT infrastructure, and through which innovation takes place (Wangwe 2007). A high level seminar on e-governance organized by Asian Development Bank Institute also points out that the rapid advancement of ICT in recent years has provided enormous benefits to any given society that has embraced its use (Asian Development Bank Institute 2007). The advent of e-governance, thus, may be regarded as one of the end results.

The use of information communication and technology (ICT) to support the work of governmental institutions and agencies with the objectives of delivering public services and information in a more convenient, citizen-centric and cost effective manner is called e-governance. In other words, it is the use of ICT for promoting more efficient and cost-effective government, more convenient government services, greater public access to information, and more government accountability to citizens. Regarding e-government a distinction can be made between the objectives for internally focused processes (operations) and objectives for externally focused services (Backus 2001):

- a. The external objective of e-government is to fulfill the public's needs and expectations satisfactory on the front-office side, by simplifying the interaction with various online services. The use of ICT in government operations facilities speedy, transparent, accountable, efficient and effective interaction with the public, citizens, business and other agencies.
- b. In the back-office, the internal objective of e-government in government operations is to facilitate a speedy, transparent, accountable, efficient and effective process for performing government administrative activities. Significant cost savings (per transaction) in government operations can be the result.

According to the Gartner Group survey, the transition from government to e-government is characterized by four stages. First, there is the presence of government on the internet. After the presence stage, government will be able to interact with its citizens via the internet. The interaction stage will be succeeded by a transaction stage. In this stage, the communication between government and its citizen via the internet is connected with public service delivery. Finally, because of e-service delivery, government will transform its organizations and institutions. The first three stages focus on improving the form of government and establishing much of the basic e-infrastructure. The fourth stage focuses on designing a new form of government (Gartner Group 2000 cited in Zouridis & Thaens 2003).

The table 3.1 summarizes the benefits that electronic service delivery provides to the public bodies (service providers) and citizens (service seekers).

Table: 3.1 Benefits of Electronic Service Delivery to the Public and to Government

Benefit to service provider	Benefit to service seekers
Reduce need for paper forms and manual data entry Reduce number of face to face inquires Eliminates time consuming manual processes Latest technology used to streamline operations Allows agencies to give higher level of service in these times of reduced budgets.	All day access to information and services. End long lines at government offices. Eliminate need to fill out paper forms. Dealing with government entity will change from hindrance to convenience.

Adopted from: Andrade 2007.

3.3 New Public Management Theory

The theoretical underpinnings of ICT application in public services come from the new public management (NPM) which originated in the late 1970s in the United Kingdom, Australia and New Zealand. Since then, it has come to dominate thinking about the public sector reform and is hailed as a new paradigm. Different factors led to the emergence of NPM, some of which are: fiscal crises of governments, poor performance of the public sector in different arenas, imperious bureaucracy, lack of accountability, corruption, changes of people's expectations and the emergence of better alternative forms of service delivery (Common 1998 and Minogue 1998 cited in Sarker 2006). In other words, large government was poorly performing being non-accountable and irresponsible to the beneficiaries, while on the other hand there has seen a wave of competitive private sector customer oriented strategy; all this called for customer oriented, result driven and effectively enterprising government. NPM emphasized the need for 'modern' bureaucracy with no 'traditional' bureaucracy so as to 'reinvent' government and changing its role from 'rowing' to 'steering'⁵. Thus, NPM heralds the transformation of the citizen into a customer of public services, who pays for public services, and hence has choice and the exit option, and the opportunity to give feedback on public service delivery (Prakash & Singh, n.d).

As per NPM philosophy modern government should be customer oriented, competitive and result oriented, and thus ICT has a room to play for enhancing the effectiveness of government services. In short, as a strong theoretical foundation, the concept of new public management is used to strengthen the need and importance of ICT in the public sector.

3.4 Governance Theory

The concept of 'governance' is said to be as old as human civilization. Simply put governance means: the process of decision-making and the process by which decisions are implemented (or not implemented) (See:

⁵ Osborne and Gaebler (1992) suggested ten principles of NPM which are: catalytic government, community – owned government, competitive government, mission-driven government, result-oriented government, customer-driven governments, enterprising government, anticipatory government, decentralized government and market-oriented government.

<http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp> accessed 2 May 2010). Governance nowadays occupies a central stage in the development discourse but is also considered as the crucial element to be incorporated in the development strategy. Hasnat Abdul Hyde (cited on Abdellatif 2003) views governance not only about the ‘organs’ or actors but rather it is about the quality of governance, which expresses itself through elements and dimensions. He states that: ‘Just as the dancer cannot be separated from the dance, the organs or actors executing governance in their respective spheres cannot be relegated to the background’.

Different bilateral and multilateral aid donors subscribe their own perspective to define governance. The Asian Development Bank, for example, lists accountability, participation, predictability and transparency in its definition of governance. On the list of the UK Department for International Development (DFID), there are four interrelated elements of effective states: authority, responsiveness, accountability and legitimacy (Rahman & Robinson 2006). However, UNESCAP has come up with some eight major characteristics of good governance as participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law (See: <http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp> accessed 2 May 2010).

Failing to pursue these principles can amount to bad governance and lead to failed states, which contribute to socially and economically unsustainable societies. Bad governance often produces ineffective central government with illegitimate mandates, incoherent policies and unstable and incapacitated institutions, which ultimately result in unsustainable economies, unfair societies and public discontent. Good governance, on the other hand, helps minimize corruption, values the views of minorities and gives voice in decision making to the most vulnerable in society. An ethic of good governance helps government become more responsive to its citizens’ present and future needs (Gessi et al 2006).

The concept of governance has highlighted the need of making the bureaucracy transparent and responsive, so the use of ICT in delivering public services gets prominence in the governance theories.

3.5 Human Capital Theory

This research has taken the help of human capital theory as an explanatory tool to assess the relationship of the dependent and independent variable. In other words, theory is used to establish the relation between human resources and the effectiveness of e-governance.

In the 1960s, Theodore Schultz and Gary Becker developed Adam Smith's original notion (described in *The Wealth of Nations*) that investment in education and skill formation was as significant a factor in economic growth as investment in physical plants and equipment – the phrase human capital was born (Schuller & Field 1998). It was believed that the impact a person's investment in education and training can have on the potential for productivity in an economic system – the impact of human capital. A significant aspect of this theory is that the investment in knowledge, skills and health would not only benefit the individual; it could also increase employers' or country's human capital resource pool and potential productivity.

Human capital theory emphasizes how education increases the productivity and efficiency of workers by increasing the level of cognitive stock of economically productive human capability which is a product of innate abilities and investment in human beings (Olaniyan & Okemakinde 2008). The theory has explained the reasons for the provision of enterprise training in terms of the increase in productivity that accrues to the enterprise (Becker 1964 cited in Kabir & Baniamin 2010). According to this view, human capital is similar to “physical means of production,” e.g., factories and machines: one can invest in human capital (via education, training, medical treatment) and one's outputs depend partly on the rate of return on the human capital one owns. Thus, human capital is a means of production, into which additional investment yields additional output (Ibid).

According to Babalola (2003), the rationality behind investment in human capital is based on three arguments:

- that the new generation must be given the appropriate parts of the knowledge which has already been accumulated by previous generations

- that new generation should be taught how existing knowledge should be used to develop new products, to introduce new processes and production methods and social services, and
- that people must be encouraged to develop entirely new ideas, products, processes and methods through creative approaches.

Basically, human capital theory highlights the importance of investing in human resources from national point of view. The research uses the argument of human capital theory to establish the relationship between human resources and effectiveness of ICT based services in IRD. In other words, if an organization has investment on the capacity building of human resources then it will ensure more effectiveness of e-services.

Thus, human capital theory is used to establish the relation between human resources and the effectiveness of ICT based services in IRD.

3.6 Analytical Framework

The study focuses to learn the effectiveness of ICT application in service delivery in IRD. The need and importance of electronic services in government offices in today's Nepal is highlighted by the theory of NPM. Moreover, the governance theory also strengthens the argument for adopting ICT in making the government services customer focused. In other words, theories (NPM and governance) helped to boost the need and importance of ICT in service delivery, thus ICT in service delivery is identified as dependent variable in the study.

The study has identified a couple of variables which influence the dependent variable. The explanatory variables can be looked from supply side and demand side affecting the dependent variable. They are: on the supply side are organizational factors and on the demand side are the customers' factors.

A simple analytical framework showing the relationship between the variables is presented in the figure 3.1.

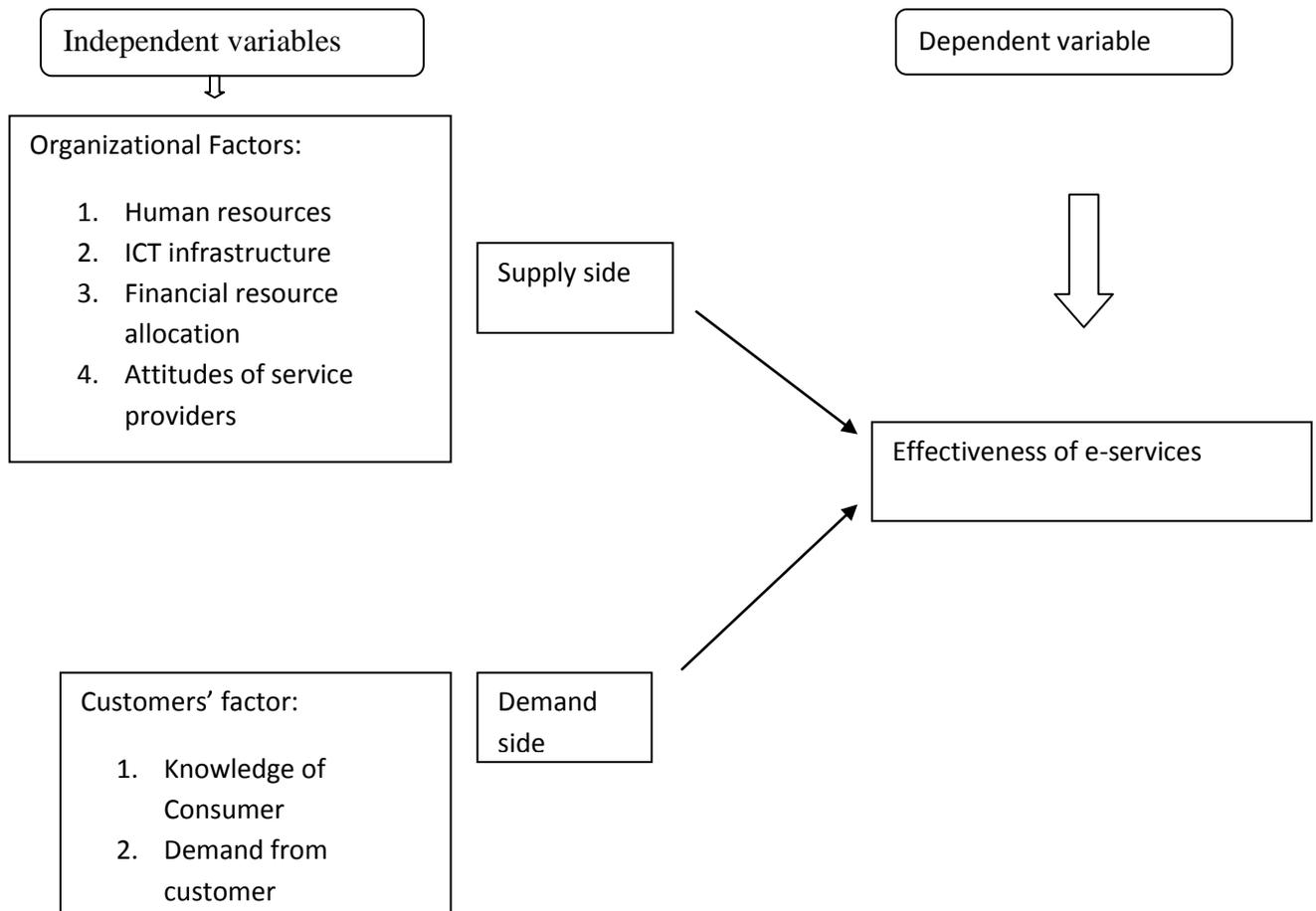


Fig 3.1: Analytical Framework

3.7 Operational Definition of Variables:

The working definitions of the variables are presented below:

3.7.1 Dependent Variable:

The study has identified effectiveness of e-services as the dependent variable.

According to the theory of goal attainment, each organization is created to realize a particular goal(s), and that the assessment of the relevant effectiveness must be based on the final achievements of the involved organization. On the other hand, theory of people's satisfaction suggests that the only effective government is one which meets the requirements of its citizens (Ates 2003). In the light of these two theories, the operational definition of effectiveness of ICT is understood in terms of achieving the goals of ICT initiatives. As ICT initiatives are undertaken to increase the administrative efficiency which thereby ensure better delivery of services to the customer, thus effectiveness of e-services is understood as improved service delivery. Improved service delivery is indicated by time factor.

3.7.2 Independent Variables:

Twin independent variables are identified which are defined as follows:

3.7.2.1 Organizational Factor

Organizational factors include different tangible and intangible resources that are required for effective e-governance. This research has limited the organizational factors in four categories, namely human resource, ICT infrastructure, financial resource allocation and attitude of the service providers.

- i. Human resource includes ICT expertise, different capacity building trainings. ICT expertise is defined as the organizational level of specialized ICT expertise in ICT to provide a reliable support and to continuously refine and adjust the organization needs.
- ii. ICT infrastructure is defined as availability of technologies in use in the organization. It includes internet facility, power supply, digital devices, and maintenance and update of e-services.
- iii. Financial resource allocation is defined as the percentage of financial resources allocated annually for the ICT sector development of the organization.
- iv. An attitude of service providers is defined as the way to understand the interface between the service providers and the seekers. In other words, how have service providers responded towards the service seekers with the provision of e-services by the office. It related to the questions like: have there been any changes in the attitude

of the service providers towards their service seekers, what is the direction of change, if any. Thus, the attitude of service providers is understood either as positive or negative towards the service seekers. Positive change (opposite is negative change) in attitude of service providers mean that the service providers have become more responsive, friendlier, accessible, prompt and efficient, and non discriminatory towards service seekers.

The questionnaire survey to the service providers and seekers helped to trace their attitudes.

3.7.2.2 Customers' factors

Customers' factors are understood by the customers' knowledge about the services and demand for better services. Customers' knowledge about the available e-services and the demand for the e-services has been tapped by questionnaire survey to service seekers.

3.8 Indicators

Based on the operational definitions of variables, indicators are identified which helped to formulate questionnaires and guide while taking interviews. The table 3.2 shows the list of measurable indicators.

Table 3.2: Indicators

Type	Indicators	
Effectiveness of e-services (Dependent variable)	Improvement in service delivery	Time factor
Organizational factors (Independent variable)	Human resources	ICT expertise, ICT related trainings
	ICT infrastructure	Internet facility, power supply Maintenance and update of e-services
	Financial resource allocation	percentage of financial resources allocated annually for the ICT sector development of the organization
	Attitudes of service providers	Positive, negative or indifferent attitudes: questionnaire survey to service providers
Customers' factors (Independent variable)	Customers' knowledge	Aware, acquaintance to e-services
	Customers' demand	Expressed demand, sufficiency of e-services

3.9 Hypotheses

With the help of the theoretical understanding and then the formulation of the analytical framework the study, thus, has hypothesized a number postulates. The hypotheses are split up in two categories. A cluster of hypothesis relates to the relationship between organizational factors and the effectiveness of e-services, while a couple of hypotheses relate to the customers' factor to the effectiveness of e-services.

3.9.1 Supply Side Hypotheses

Four hypotheses are formulated on relating dependent variable with the organizational factors.

H₁ = Trained human resources make e-services more effective.

H₂ = The stronger the ICT infrastructure, the more the effectiveness of e-services.

H₃ = Financial resources allocated for e-services may influence the effectiveness of e-services.

H₄ = Positive attitude of service provider ensures the effectiveness of e-services.

3.9.2 Demand Side Hypotheses

Two hypotheses are formulated on relating dependent variable with the customers' factor.

H₅ = Sound customer's knowledge of e-services ensures e-services effectiveness.

H₆ = High customer's demand for e-services makes e-services effectiveness.

3.10 Conclusion

The chapter gave an idea about different theoretical concepts used in the study. Moreover, operational definitions of the variables and indicators were also provided. A clear analytical framework was constructed to simply the understanding the relations between the variables under study.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

This chapter provides detailed concept of conducting the research. In other words, research methodology applied in the study is dealt in this chapter. The nature of the problem to be studied and research question to be answered are the guiding pillars to decide what approach and strategy would be employed to pursue a research. A combination of content analysis, survey through in-depth interview and questionnaire are used in the research. The purpose of using of different methods is that it minimizes the risk of biasness in the study and thus works as a reliable tool for research.

4.2 Research Design

Fred Kerlinger (1986 cited in Kumar 2005) defines a research design as a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. It includes an outline of what the investigator will do from writing the hypotheses and their operational implications of the final analysis of data. So, the choice of an appropriate of research design is essential for a scientific study. The study focused on understanding the effectiveness of e-services and had tried to explore the issue from organizational and customers' factors. For this, descriptive and analytical research designs have been used. This is because descriptive research design helps to describe the current practices and events while analytical research design enables to establish relationship between variables (Aminuzzaman 1991).

4.3 Research Method

According to Creswell, there are three approaches in conducting scientific research, i.e., qualitative, quantitative and mixed approach (Nayem 2010). Best and Kahn (2006) says research can be qualitative, if it describes events and persons scientifically without the use of numerical data while quantitative research consist of research in which data can be analyzed in terms of numbers. Mixed approach is an approach which combines both the qualitative and the quantitative methods.

The method used in the study is mixed method because it had included qualitative and quantitative approaches both. The reason behind using mixed method is that it overcomes the disadvantages/benefits the advantages of qualitative and quantitative methods. Using mixed method helped to minimize the weakness of single method and ensured the validity of gathered data. Questionnaire survey is the quantitative method while interview is the qualitative methods which were used in the data collection process.

4.4 Study Population and Sampling

Study population relates to the service seekers and service providers of IRD/IRO. The exact number of service seekers cannot be traced so the population size of service seekers is indefinite, while the population size of service providers were 120. This section further elaborates the details about sample size and method of sampling.

4.4.1 Sample Size

The size of the sample was 77. The research has to be conducted with the service seekers and providers both, so the total sample size was divided among them. Out of 77 samples, 50 were from service seekers while 27 were from service providers. The detail of the sampled service seekers and provider are presented below.

4.4.1.1 Sample Size of Service Seekers

During the data collection period, it was observed that the flow of service seekers in the office was uneven, meaning that towards the deadline of payment (returns, TDS submission), there were significant number of service seekers but in rush who were, thus, grossly reluctant to respond the researcher. On the other hand, very countable number of service seekers paid the visit to the office during the off-season period, so it was not easy to have an access to sufficient respondents. In addition, the IRO area one and two are located inside the same compound and is separated by buildings, as a result the researcher found it practically difficult to distinguish the 'scarcely' available 'willing' service seekers from which IRO area they are seeking services. Given these plights, with the consultation of the supervisor, the researcher had increased the sample population by including not only IRO area number one but also area number two. To complete data collection on time, about 5-8 respondents per day were administered with the

research questionnaire. As the questionnaire was drafted only in English, researcher translated the meaning of the questions to the respondents in Nepali, and in most of the cases instead of respondent, the researcher herself had to fill up the responses in the questionnaire.

Other distinguish feature which the researcher observed in the study field was the repetitive visit of the same respondent (service seekers) in all her data collection days. The regular service seekers who introduced themselves as ‘tax consular’ ‘tax helper’ ‘tax consultant’ where not the ‘real’ service seekers but were merely the facilitator to the real service seekers and in a common layman language were understood as ‘broker’ or ‘dalal’ in Nepali. Thus, in order to capture more number of ‘real’ service seekers, the researcher distributed the questionnaire via mail to some ‘real’ service seekers.

The table 4.1 shows the composition of sampled service seekers of the study.

Table 4.1: Composition of Sampled Service Seekers

Sample service seeker	Total	Remark
Service seekers in IRO Area number 1and 2	40	Exact number of service seekers could not be traced, so the population could not be defined.
Service seekers via mailed questionnaire	10	
Total	50	

4.4.1.2 Sample Size of Service Provider

Service providers were selected from three different offices; they were Inland Revenue Department, Inland Revenue Office area number one, and Inland Revenue Office area number two. The purposes of selecting these three areas for drawing sample respondents were as follows:

- a. Inland Revenue Department, which is the policy making and advocating body, was chosen so as to get the views of the service provider which might not be the same as the branch offices.

- b. Inland Revenue Offices are implementing bodies and they deal directly with the customers. The problems faced by them and urgency which they might have felt might be different from the IRD, so to make the research study more applicable, it was felt to incorporate service providers from the IRO as well.
- c. As mentioned in the above section of this chapter, both IROs (area number one and two) are located in the same premise, so research could get the responses from either of service providers with the same cost and effort. However, the research had assumed that the both offices (IRO 1 and IRO 2) share many similarities and are more or less have intra-homogenous character.

Gazetted and non-gazetted service providers were asked to fill up the questionnaire. Non-gazetted service providers were not only those as classified by Civil Service Act (1993) but also those who were working on the contract basis, for example data entry supervisor and system development and support. The reason behind for incorporating non-gazetted officer is because they also directly interact the customer and more importantly to understand the performances of e-services from the point of view of hierarchically low placed civil servants. As the questionnaire was only drafted in English language, researcher had to translate and interpret the questions to the non-gazetted officer when they asked for.

The table 4.2 shows the composition of sampled service seekers of the study.

Table 4.2: Composition of Sampled Service Providers

Sample service provider		Position wise		Total
		Non- Gazetted	Gazetted	
Service providers of IRD		02 (17)	06 (37)	08 (54)
Service providers of IROs	Area no. 1	03 (12)	06 (22)	09 (34)
	Area no. 2	02 (15)	08 (17)	10 (32)
Total		07 (44)	20 (76)	27 (120)

Note: Figures in parenthesis denote the population size from which samples were drawn.

4.4.2 Sampling Method

Basically, the study used purposive sampling method so as to get the best information to achieve the objectives of the study. This method gave flexibility to the researcher to pick up only people who are likely to have the required information and be willing to share it. Moreover, the sampling method helped to ensure representation of different variation of service providers as well as service seekers. In other words, heterogeneity in the composition of sample of service seekers and providers (age, sex, senior-junior officials, education, and profession) were attempted to maintain as possible.

4.5 Sources of Data

Generally, there are two different sources of collecting data, viz., primary sources and secondary sources. The research is based on both primary and secondary sources of data.

Primary sources of data are the first hand data to be collected from study area. The study had applied two tools for collecting primary data, namely questionnaire and interview. Primary sources were the main source to validate the hypothesis by establishing the correlation between the variables under study. Rightly, it turned out to be the greatest asset of the study.

As *secondary sources* of data are in the form of publish documents. The study used numerous sources to collect secondary data, such as from different relevant publications, dissertations, books, journal articles, reports, websites etc. Secondary sources were very useful to analyze the relationship between dependent and independent variables. It helped to gather information about the status of ICT application of the organization. Moreover, the relevant information about the financial resource allocation was solicited from the secondary sources.

4.6 Data Collection Technique

For answering the research questions, employing only one method of collecting data would be unscientific. Multiple techniques for collecting data, thus, were used in this study. The major data collection techniques used in the study was questionnaire survey, interview and content analysis. This section further elaborates a detail note on those data collection techniques.

4.6.1 Questionnaire Survey

The data collection method was basically questionnaire survey method. The question pattern was close-ended where answers were provided, among which the respondents were asked to choose. In addition, open-ended questions were also asked, which provided the flexibility to the respondents to express their opinions.

4.6.1.1 Preparation of Questionnaire

As the study was designed to understand the effectiveness of e-services from supply and demand sides, two sets of questionnaire were prepared- one set for service providers and another for service seekers. Supervisor duo provided valuable suggestion which helped to frame questionnaire to meet the objectives of the study.

Different statements were placed for the respondents to know their attitude which was measured in a strongly agree to strongly disagree (1-5) five point Likert Scale Format. Opinion of respondents on different aspects of e-services were also analyzed giving scale such as sufficient, insufficient and don't know.

4.6.1.2 Pilot Testing

Two days were allocated to undergo pilot testing of the questionnaires. The pilot testing helped to get timely correction and inputs in the questionnaires. Five service providers were asked the questions from questionnaire, and on the basis of their responses some of the questions were redesigned. Likewise, a couple of service providers were consulted to answer the questionnaire and they provided valuable suggestions which were later incorporated in the final version of the questionnaire.

4.6.1.3 Filling Questionnaire

The purposively selected samples (50 service seekers and 27 service providers) were interviewed utilizing the structured questionnaire. Adequate time was taken for explaining the purpose and objectives of the study to every respondent.

4.6.2 Interview

In addition to questionnaire survey, interviewing a couple of bureaucrats were the source of primary data in the study. At first interview guide was prepared with the consultation of supervisor. Interview was carried out on the first week of May, by the time of which questionnaire survey was already finished. Thus, on the basis of the interview guide and primary result of the questionnaires findings, two in-depth interviews were carried out to understand the effectiveness of the e-services of IRD. For this, the ICT head of the Inland Revenue Department was interviewed who helped to understand organizational factors influencing the ICT application of the department. Moreover, to have clear understanding about the financial resource allocation, the account officer of the organization was also interviewed.

4.6.3 Observation

Observation is a purposeful, systematic and selective way of watching and listening to an interaction or phenomenon as it takes place (Kumar 2005). Non – participant observation was employed where the researcher remained passive observer, watching and listening to the activities of the service seekers so as to learn how friendly they related themselves with the services especially electronic services provided by the IRD/IRO.

4.6.4 Content Analysis

Content analysis, a type of secondary data analysis, is used to analyze text, including, interview transcripts, newspapers, books, manuscripts and Web sites to determine the frequency of specific words or ideas. The results of content analysis allow researchers to identify, as well as quantify, specific ideas, concepts and their associated patterns, and trends of ideas that occur within a specific group or over time (See: <http://www.hd.gov/HDdotGov/detail.jsp?ContentID=327> accessed 16 February 2010). During the study, rigorous content analysis was done by reviewing different published and unpublished books, journals, research works, articles, notes, newspapers, magazines etc.

4.7 Validation of Data

To confirm validity and reliability of the collected data, data collected from one method was cross checked with another method. For instance, data gathered from questionnaire survey were cross checked with interview and secondary data.

4.8 Data Analysis

First of all, the gathered raw data were coded and tabulated, and then the data were analyzed by using different analysis techniques. For statistical analysis, the study used Stata 9 tool. Different simple mathematical tools like tabulation, percentage, frequency were used. Cross tab were also used to analyze two variables (dependent and independent variables), to determine if there is a relationship between them.

4.9 Inferential Statistics

Chi square and t- test are preformed in the study. This section mentions about a brief about these tests.

4.9.1 Chi Square Test

One of the applications of chi-square, X^2 - tests as a test of independence, is useful to find out whether two or more attributes are associated or not. Chi square test gives the relationships between the attributes at a certain level of significance rather than its strength and direction. In order to test whether or not the attributes are associated, we need to calculate value of chi square, and then compare with the tabulated value at a certain level of significance.

- a. If the calculated value of X^2 -is less than the table value at a certain level of significance, we say that the attributes are not associated holds good. In other words, the two attributes are independent.
- b. If the calculated value of X^2 -is greater than the table value at a certain level of significance, we say that the attributes are associated. In other words, there is a significant association between the attributes.

Degree of freedom for X^2 test:

While comparing the calculated value of chi square with the tabulated value, we have to determine the degrees of freedom. This is the number of classes to which the values can be assigned arbitrarily or at will without violating the restrictions or limitations placed. The degree of freedom for X^2 is $(v) = (c-1)(r-1)$; Where, c refers to column and r refers to rows.

4.9.2 t – Test

The t – test is the most commonly used method to evaluate the differences in means between two groups. The unpaired t method tests the null hypothesis that the population means related to two independent, random samples from an approximately normal distribution are equal (See: http://www.statsdirect.com/help/parametric_methods/utt.htm accessed 6 July 2011). This study has employed t – test to learn the difference in the mean values of two groups is significant or not.

4.9 Conclusion

This chapter, thus, provided detailed concept about research methodology applied in the study. The descriptive cum analytical research study had used mixed approach to gather data. Thus, a combination of content analysis, survey through in-depth interview and questionnaire and observation were used in the research.

CHAPTER 5

ICT APPLICATION IN NEPAL

5.1 Introduction

This chapter provides an idea about e-services in Nepal. It starts with a brief introduction to the history of ICT in Nepal, and then reviews some legal provision. Finally, the chapter provides information about the e-services by some of government offices especially it focuses on ICT application of Inland Revenue Department of the country.

5.2 History of ICT in Nepal

Nepal first entered the world of ICT with the introduction of the IBM 1401 computer systems for processing Census Data in 1971. Looking at the potential of ICT, the government established an autonomous centre named the Electronic Data Processing Centre (EDPC) in 1974, later renamed the National Computer Centre (NCC) in 1978. The Ministry of Science and Technology which was established in 1996 took a lead role in promoting and facilitating the effective use of IT (Kim et al 2007).

High Level Commission for Information Technology (HLCIT) is an important institution created towards ICT sector development of the country. It was formed in 2003 to serve as an apex institution to provide support to government in formulation, implementation, monitoring and evaluation of IT policy. Moreover, it has the responsibility for the formulation and implementation of IT related national plans and programs and coordination of programs of different governmental and donor agencies. Another institution is Nepal Telecom Authority which plays important role towards ICT sector development.

In addition to these governmental entities, there are a number of private organizations which offer tele-services including telephone, and internet services. There are 22 Internet Service Providers (ISPs), six VSATs (Very Small Aperture Terminal), eight radio paging service providers, and some 15 software-developing companies have been operating their services. The government has also emphasized BOT system and permitted FDI for the development of this sector. (See: <http://www.apdip.net/projects/dig-rev/info/np/> accessed 14 September 2010).

5.3 Legal Provisions

There are several legal instruments created to develop IT sector for augmenting e-governance as IT Policy 2000, IT Policy 2004, Electronic Transaction Act 2004, Telecommunication Policy 2004, E-governance Master Plan, IT commitments in different plan periods, Electoral Transaction and Digital Signature Act 2000, Copyright Act 2000, Telecommunication Act and Regulation 1997, National Communication Policy 1992 and National Strategy Paper on ICT (Kim et al 2007). This section reviews some major IT related policies of the country.

5.3 1 IT Policy

IT Policy was first promulgated in 2000 with the vision to place Nepal on the global map of ICT within the next five years period. The policy had following objectives:

- a. To make information technology accessible to the general public and increase employment through this means
- b. To build knowledge – based society.
- c. To establish knowledge – based industries.

In 2004, new IT policy was announced with the vision to transform Nepal into a knowledge – based society by 2015 to become fully capable of harnessing ICTs gives new envisage for the application of ICT to achieve the goals for good governance, poverty reduction and social as well as economic development (IT policy 2004). This document is a legal basis to promote good governance and sustainable development through the application of ICT.

The latest IT policy of 2010 has special provisions for outsourcing and expanding the use of IT. The policy has put emphasis on information security and data protection and privacy in information technology. The new policy has identified IT sector as the knowledge – based industry and it includes the involvement of youth for employment generation as one of the major objectives. The policy suggests adopting a single window policy to attract domestic and foreign direct investment in the IT sector. The other provisions included in the policy are intellectual property rights and e- certification (IT Policy 2010).

5.3.2 Telecommunication Policy, 2004

Telecommunication Policy 2004 was promulgated to replace Telecommunication Policy of 1997. Its main objectives is to create favorable environment for making IT services reliable and accessible to all people at reasonable cost with private sector in order to support social and economic development of the country.

5.3.3 Electronic Transaction Act, 2008

This act was promulgated to make legal provisions for:

- authentication and regularization of the recognition, validity, integrity and reliability of generation, production, processing, storage, communication and transmission system of electronic records by making the transactions to be carried out by means of electronic data exchange or by any other means of electronic communications, reliable and secured.
- controlling the acts of unauthorized use of electronic records or of making alteration in such records through the illegal manner.

5.3.4 e-Governance Master Plan

The Ministry of Environment, Science and Technology (MoEST) has prepared e-governance master plan to create effective and productive e-government through the application of ICT. The government devised this master plan after it desperately failed to implement the IT policy which was introduced in 2000 with the objective of putting Nepal in the global IT map by 2005. The plan, prepared with the technical assistant of Korea IT Industry Promotion Agency (KIPA), has

Box 5.1: ICT in Nepal

The stages of development of ICT in Nepal can be summarized as follows:

- 1971 IBM 1401 computer for census
- 1974 Electronic Data Processing Center
- 1985 Distribution of Personal Computers in Nepal
- 1990 Liberalization on imports of equipment
- 1992 Computer Association of Nepal
- 1996 Ministry of Science & Technology
- 1998 Telecommunications Act and Regulation
- 1998 Nepal Telecom Authority (NTA)
- 2000 IT Policy
- 2001 National Information Technology Center
- 2003 HLCIT
- 2004 Telecommunication Policy
- 2004 Electronic Transaction Ordinance
- 2008 Electronic Transaction Act
- 2010 IT Policy

also envisaged five – year period to create a paperless bureaucracy for effective and prompt service delivery to the public (Subedi 2006 cited in Shrestha 2009).

5.4 ICT Application in Government Offices

The official website of the government has been developed as a gateway to all the government bodies and agencies, including diplomatic missions and development partners – with pertinent links. The various links are like that of Nepal government directory, development, business, travel, economy and finance, art, culture and society, and education, etc. Being a bilingual website, Nepali literate can also make use of the site.

Different governmental agencies have now constructed websites which provide the public with relevant governmental/ministerial information. Moreover, download facilities of publications, policies and plans are also available. For example, the official website of Nepal Police contains information, downloadable documents and forms about the character certificate issued by the police to the public (See: www.nepalpolice.gov.np accessed 1 May 2010). Similarly, the official website of the NA contains information, news and press releases and also information vacancies, medals and flags, ranks and welfare activities are disseminated (See: www.rna.mil.np accessed 6 May 2010). Likewise, with a view to manage the information system and maintain transparency in local bodies, Ministry of Local Development (MoLD) has launched websites, emails and internal memo system in all its departments and sections (See: <http://www.egovonline.net/news-list/239-international-news/7629-mold-launches-e-governance-in-nepal.html> accessed 15 April 2010).

The government has commenced the distribution of citizenship certificates to the public by the use of computerized systems. In addition, in a bid to provide hassle-free service to service seekers, the Department of Transport Management has introduced electronic billing system at Bagmati Transport Management Office (See: http://www.ifg.cc/index.php?option=com_content&task=view&id=28243&Itemid=1 accessed 1 May 2010).

Municipalities have introduced the concept of urban e-governance by utilizing available resources. For example, municipal website provides information on the city profile, land use, the

Local Governance Act, regulations, important decisions of the municipality, population, land records, tourist information, registration of complaints etc. The people may request for information via e-mail. E-services, thus, can be seen in local governance as well.

Inland Revenue Department has been providing a number of services electronically to its citizens. A brief the effort of ICT application in Inland Revenue Department is presented below.

5.4.1 ICT Application in Inland Revenue Department

Before 2001, Department of Taxation (responsible authority to administer direct tax including income tax) and Value Added Tax (responsible authority to administer Value Added Tax and excise duties) were separate, which were then merged to establish new authority called Inland Revenue Department (IRD). IRD is responsible for formulation and implementation of tax policy and the administration of various taxes such as income tax, value added tax, house rent tax, and interest tax and excise duty (RAS 2010). The establishment of IRD successfully reduced the number of Inland Revenue Offices to 22, which were previously 57 (17 VAT offices with the 40 existing income tax offices) (See: <http://www.danidaras.org.np/ird.htm> accessed 1 May 2011). IROs are basically concerned with the routine collection of tax. IRD and its district offices are totally running on functional line. Major functions include Taxpayer's Service, Audit and Collection (See: http://www.ird.gov.np/ird/index/index2.php?mode=content&cat_id=5&id=2# accessed 2 January 2011). The registration data of taxpayers maintained in the Department shows that the total number of taxpayers in Nepal as the mid – March 2010 was over 400 thousands. However, it is estimated that only about 60 % of them, about 240 thousands are regular filers.

The application of ICT in IRD goes back to 1997 when donor agencies were supporting IT related projects with the then Taxation and VAT departments.⁶ IRD has started providing some of its services via internet. The history of e-initiatives with IRD dates back to 1999 when Kathmandu Taxpayer Service Centre was established which registered and re-registered all Kathmandu valley taxpayers using computer systems. A year later, VAT assessment and VAT collection software was implemented in the former VAT Department and all former VAT offices throughout Nepal. Then, the next year, IRD ICT section was established being responsible for

⁶ GTZ and the Danish International Development Agency (DANIDA) supported the VAT Administration through a project since 1997 separately. Later on with new IRD, the German and Danish governments decided to merge both projects related to IT application with IRD and IROs.

ICT operations of IRD and IROs (GTZ Pro tax software). In this line, INGOs like GTZ and DANIDA established the joint “Revenue Administrative Support” (RAS) to help increase the effectiveness and transparency of the tax system by reforming administrative procedures and introducing an IT system (Witt & Muller 2007).

IRD is responsible for the implementation of the e-revenue administration which commenced in 2006 that includes e-PAN (electronic permanent account number) system, VAT (value added tax) assessment/collection; income tax assessment/collection services; RAS (revenue accounting system); e-estimated income tax return system; check point entry system; third party data including import data from customs and SMS system. Likewise the varieties of information provided by the website of IRD are also e-services provided to the concerned seekers.

5.5 Conclusion

The chapter, thus, provided a brief introduction about the ICT in Nepal whereby some legal provisions were discussed as well. Moreover, the chapter put light on electronic initiatives undertaken by different public offices with especial concentration in Inland Revenue Department of the country.

CHAPTER 6

PRESENTATION AND ANALYSIS OF DATA

6.1 Introduction

This chapter presents and analyses data which were gathered during data collection. First, the chapter primarily deals with facts and figures shown by the data. Second, it interprets the data in detail, so as to put forth the major findings of the study in line to meet the research objectives. In doing so, all the variables (dependent and independents) are explained in terms of their indicators and thus, an attempt is made to study the association between them, if any. In other words, the chapter provides detailed understanding about the e-services as perceived by the service seekers and providers.

6.2 Effectiveness of E-services

As ICT initiatives are undertaken to increase the administrative efficiency which thereby ensure better delivery of services to the customer, thus effectiveness of e-services in this study was defined in terms of better service provision. Better service provision can be shown by the administrative efficiency due to use of electronic services which can be indicated by quality of e-services. The indicators for quality of e-services are many, some of which are in terms of time effectiveness, cost effectiveness, transparency, and accessibility of the e-services. However, the study has only considered timely delivery of services as the indicator of improved service delivery.

6.2.1 Time Factor

One of the main motives of providing services electronically is to make the services more time effective, meaning that e-services should help in saving time to get the services. To see, how effective e-services are in terms of time factor, service seekers were asked to provide their opinions giving scale such as strongly agree to strongly disagree (1-5) five point Likert Scale Format.

Table 6.1: Time Effectiveness of E-services

Effectiveness of e-services – Time factor		Scale of ranking from 1 to 5 (in percentage)					Mean	Standard deviation
		Strongly agree	Agree	Uncertain	Disagree	Strongly Disagree		
Service seeker (SS) N = 50	Save time	54	34	2	6	4	1.72	1.05
	Reduce cost of getting services	30	44	8	12	6	2.2	1.17
	Visit to office reduced	22	56	4	14	4	2.22	1.07
	Fair procedure	20	56	10	12	2	2.20	0.96
	Reduce personal favor	32	40	4	20	4	2.24	1.22
Service provider (SP) N = 27	Ease work	44	56	-	-	-	1.55	0.5
	Work more	59	37	4	-	-	1.44	0.57
	Reduce customer crowd	52	41	7	-	-	1.55	0.64

Note: The figures are rounded up.

Source: Field Survey, 2011.

For the ease of analysis, if strongly agree and agree are merged, then it shows that majority of service seekers' respondents (88%) agreed that e-services have helped to save time. More than 70% of the respondents (service seekers) agreed that e-services have helped to reduce cost of getting services, decreased the visit to the office, ensured procedural fairness in the system and have helped to reduce personal favor while seeking services. Thus, according to the service seekers' respondents a positive response towards the improvement in service delivery was found.

In addition, to understand the effectiveness of e-services from service providers' point of view, they were asked to rank their preferences on time factor. For ease of analysis, if strongly agree and agree are merged, then it shows that all the respondents agreed that e-services have helped to ease their working procedures, which means that e-services is very time effective. Overwhelming majority (96%) of the respondents agreed that because of e-services they can work more, meaning that the cost of doing the work has decreased. Ninety two percent of the respondents unanimously agreed that e-services have helped to decrease the customer crowd in the office.

A striking feature can be observed when the mean value of the responses of service seekers and providers are compared, where the mean value for the service seekers' responses is 2.2 while that of service providers' responses is 1.5. It means that, though both the strata of respondents agreed on, however the degree of agreement varied, meaning that service seeker 'moderately' agreed while providers' 'strongly' agreed.

6.2.2 Rating of E-services

To understand the perception about effectiveness of e-services, service seekers and providers both were asked to rate the e-services on the scale of very effective to very ineffective (see: table 6.2). Scattered responses were found from the range of very effective to ineffective, though majority (70%) of the service seeker respondents viewed e-services to be effective.

If the very effective and effective scaling is merged, then it can be found that the entire service provider viewed e-services to be effective. However, majority (89%) viewed e-services to be effective while 11 % viewed to be very effective. Unlike service seekers, for none of the service provider e-services was ineffective.

When the mean value of the responses of service seekers and providers are compared, it is found that the mean value for the service seekers' responses around 2.32 while that of service providers' responses around 1.89. The value of t – test showed that the difference in mean value is significant. It means that, though both the strata of respondents rated e-services to be 'effective,' however the degree of rating varied, meaning that service seeker 'moderately' agreed while providers' 'strongly' agreed on the effectiveness of e-services. Thus, the responses of service providers and seekers was on the 'degree of effectiveness,' nonetheless majority agreed that e-services as 'effective.'

Table 6.2: Rating of E-services

Respondents	Scale of rating from 1 to 5 (in percentage)					Mean	Standard Deviation	t- test	Inference
	Very effective	Effective	Neutral	Ineffective	Very Ineffective				
Service seekers (N = 50)	4	70	16	10	-	2.32	0.71	t = 2.97 Degree of freedom = 75	t - test shows that the difference in mean value is significant.
Service providers (N = 27)	11	89	-	-	-	1.89	0.32	Significant level = 1%	

Note: Round up figures are presented.

Source: Field Survey, 2011.

6.2.3 Reasons for Effectiveness of E-services

As majority of respondents (both service seekers and all the service providers) viewed e-services to be effective, so they were further asked to provide reasons for the effectiveness of e-services, and for that they were given a number of options and told to rank them as per their role in making e-services effective (See: table 6.3). It was found that both strata of respondents viewed ‘web factor’ (i.e., accessible and updated website) played the major role for making e-services effective. For service providers, ‘strong infrastructure’ followed by ‘strong human resources’ and then ‘essential services are provided electronically’ occupied subsequent position. On the other hand, service seekers ranked ‘essential services provided electronically’ and then ‘strong customer knowledge’ and ‘strong customer demand’ on the order of third, fourth and fifth respectively. On the bottom of ranking, both service providers and seekers viewed ‘attitude of service provider’ meaning that ‘attitude’ as such had a negligible role to make effective e-services.

Table 6.3: Ranking on Factors Influencing Effectiveness of E-services

Factors influencing effectiveness of e-services by		Ranking from highest to lowest in the order of 1 to 5
Service provider	Service seekers	
Web factor (accessible and updated)		1
ICT infrastructure	Essential services are provided electronically	2
Human resources	Customer's knowledge	3
Essential services are provided electronically	Customers demand	4
Attitude of service provider		5

Source: Field Survey, 2011.

Some 10 percent of service seekers respondent viewed e-services was ineffective, so they were asked to identify the factors for making ineffective e-services. For this, they were give some options and asked to rank them as per their role. Dissatisfied customer for whom e-services are not effective pointed out the primary reason as because essential services are not provided electronically. They viewed unfavorable attitude of service provider as the second major reason for ineffective e-services. Inaccessible website, poor knowledge of customer, load shedding problem, not updated website and lastly poor demand from customer were the third, fourth, fifth, sixth and seventh ranking factor for ineffective e-services.

6.3 Organizational Factors

Organization factor is the independent variable of the study. Organizational factors include four components, namely human resources, ICT related infrastructure, financial resources and attitude of service providers. This section has further elaborated the data findings in all the specified headings.

6.3.1 Human Resources

There are number of factors determining human resources of any organization, however the study had defined human resources in terms of two indicators: ICT personnel and capacity building training to employees. Though, there are different kinds of training provided to employees, the study has focused only on ICT related training.

6.3.1.1 ICT personnel

IRD has Information Technology Section which is responsible for formulating departmental information technology strategies, ensuring smooth functioning of computer software at the centre and in the districts, generating monthly and annual reports, and continuing work on the development of information technology (See: <http://www.danidaras.org.np/ird.htm> accessed 1 May 2011). The number of ICT personnel with the organization is presented in the table 6.4.

Table 6.4: ICT Personnel with IRD/IRO

Sn.	Position		Number
A	IT personnel with IRD/IRO	Total	51
		Gazetted	3
		Non - gazetted	48
1		IT expert	0
2		Director (IT)	1
3		Computer officer	2
4		Computer engineer	0
5		IT officer	0
6		Data entry supervisor	48
B	Employees with IRD/IRO	Total	919
		Gazetted	255
		Non - gazetted	664

Source: Annual Report 2010.

Out of total 919 government employees with the organization, it has only 51 employees related with IT of which 3 are gazetted and 48 are non – gazetted (data entry supervisor). In percentage terms, it is not more than 6% of the total employees in the organization.

In regard with the ICT personnel with the organization, Mr. Virendra Misra, head of IT section of the organization, viewed that government employees related with IT is not sufficient to carry out the operations of the organization. He further added that the organization has, in addition to the government employees in IT section, outsourced human resources for assisting IT section of

the organization in diverse areas like database, application and system security. The number of outsourced IT personnel varies according to requirement of the organizational work; however the average is found around 28 – 30.

6.3.1.2 ICT Related Training

Many studies (Stavros 1998; Harris n.d) have laid importance on building the capacity of the employees to achieve the objective of the organization. Moreover, motivational theories put argument that training to the employees is one of the non-monetary incentives for the employees to work better in the organization. Training is thus one of the important factors for making any program effective.

The civil service act of Nepal has laid importance in the training which can be shown by the promotional criteria where mark has been allocated for the training of the employees. It can be said that civil employees are eager to have more training as that has a direct evaluation in their promotion criteria. On the other hand, government of Nepal has a policy to empower its employees by imparting relevant and necessary training to its employees.

As mentioned in the Annual Report (2010) of the organization, it is found that the organization do have provisions of the capacity building of its employees, and in regard to ICT training, they provide trainings to the staffs. In regard of capacity building of employees, some of the activities undertaken in the fiscal year 2009/10 are as follows.

- Total 420 got training under different Projects (under Danida RAS Project, 200 got training and under GTZ RAS Project, 220 got training).
- Protax training was given to 40 officers who were transferred to the Department.
- Training in analysis and use of essential statistics were imparted to 15 chief tax administrator and officer.
- 20 officers participated in tax related training and study tour in Seoul, South Korea (Ibid).

A questionnaire survey was conducted to service providers to understand their perception on trainings provided by the organization. A brief analysis on provision, usefulness, sufficiency and effectiveness of training as view by the service provider respondents are presented below.

Provision of training

To understand the extent of trainings provided to the service providers, the respondents were asked whether they do have any training related to ICT. Data revealed that 70% respondents had received training (see: table 6.5). Then, the respondents were further asked ‘who provided them training - either through the organization or by their own initiatives.’ Out of the total ICT trained respondents, 68% said that they got training by the office itself. This shows that the organization have placed high importance to the capacity building of the employees.

Table 6.5: Training Received

Training received	Frequency	Percentage
Yes	19	70
No	8	30
Total	27	100

Source: Field Survey, 2011.

Moreover, in the survey, it was found that 70% of the gazetted and non – gazetted employees had received training. This percentage distribution showed that there is no significant association between the position of the service providers and the training received, meaning that regardless of the position, the service providers had received training.

Table 6.6: Position of the Service Providers and the Training Received

Position	Training received		Total
	Frequency	Percentage	
Gazetted	14	70	20 (74%)
Non gazetted	5	70	7 (26 %)
Total	19	70	27 (100%)

Source: Field Survey, 2011.

Usefulness of training

Merely providing training is not enough; the most important thing is the usefulness of the training back to the work place of the trainee. Many studies have shown that training though provided to the government employees have little or negligible use in the office.

Given this pretext, it was considered important to understand the usefulness of training provided by the organization. Questionnaire survey revealed that 82 % of the respondents viewed that the training are useful. Moreover, the percentage distribution did point that no significant association between the usefulness of the training with the position of the employees (See: table 6.7). In other words, trainings were considered to be useful not only by the gazetted employees but also the non-gazetted employees.

Table 6.7: Usefulness of Training

Position	Training			Total
	Very useful	Useful	Don't know	
Gazetted	8 (40%)	9 (50%)	3 (10%)	20 (70%)
Non gazetted	2 (30 %)	3 (40%)	2 (30%)	7 (30%)
Total	10 (40%)	12 (42 %)	5 (18%)	27 (100%)

Source: Field Survey, 2011.

Training and effectiveness of e-services

The respondents were further asked whether the training provided by the organization is sufficient or not. In the survey, 60% viewed that the training provided by the organization is not sufficient, which means that they have felt the need that more trainings should be provided by the organization. This shows that there is demand for more training to be provided to the staffs.

Moreover, the cross tab between the effectiveness of e-services and sufficiency of training is presented (See: table 6.8) to see the association between sufficiency of training with the effectiveness of e-services. Among the respondents who viewed training to be insufficient, data revealed that 94% viewed e-services to be 'effective,' on the other hand, 60% of the respondents viewing training to be sufficient expressed that e-services are 'effective.' This cross tab points that there is an association of 'sufficiency' of training with the effectiveness of e-service.

Table 6.8: Training and Effectiveness of E-services

E-services	Training			Total
	Sufficient	Insufficient	Don't know	
Very Effective	2 (40%)	1(6%)	0 (0%)	3 (11%)
Effective	3 (60%)	15 (94%)	6 (100%)	24 (89%)
Total	5 (100%)	16 (100%)	6 (100%)	27 (100%)

Source: Field Survey, 2011.

Interpretation

Human resources, in terms of ICT personnel with the organization, as the percentage of total government employees are found to be not more than 6 %, which means that government employees are not in good numbers with the organization. But given the fact that the organization has outsourced ICT personnel which can be increased or decreased as per the requirement of the day, it can be said that ICT personnel with the organization is sufficient.

Next, in terms of capacity building training, data showed that some 70 % of the respondents received training, 82% considered training to be useful in the official workings; however, some 60% considered training to be insufficient and out of which 94% viewed e – services as ‘effective.’ Hence, with all these responses, it can be said that the organization has laid emphasis on the capacity building of the employees, both gazetted and non gazetted, by providing useful ICT related trainings, though the trainings provided by the organization are not sufficient. It can be inferred association between training with the effectiveness of e-services. This is supported by service providers’ ranking, where they had ranked ‘human resource’ factor as the third important factor for making e-services effective. This analysis supports the hypothesis that “trained human resources make e-services effective.”

6.3.2 ICT Infrastructure

ICT infrastructure, as defined in the study, was measured by three indicators, namely online facility, the provision of uninterrupted power supply and maintenance of infrastructure of the organization.

6.3.2.1 Online Facility

Through the questionnaire survey, it was found that 89 % of the respondents had online facility. However, the online facility among the employees was not found to be even. It was found that 5 % of the gazette officer did not have online facilities unlike the non-gazetted staffs where 29% had no online facilities. It can thus be said that there is an association between the positions of respondents with the online facilities they are getting (see: table 6.9). In other words, it means that gazetted staffs have more access to internet than the non-gazetted staffs of the offices.

Table 6.9: Online Facility

Position	Online facility		Total
	Yes	No	
Gazetted	19 (95%)	1 (5%)	20
Non gazetted	5 (71%)	2 (29%)	7
Total	24 (89 %)	3 (11 %)	27

Source: Field Survey, 2011.

6.3.2.2 Power Supply

Respondents were asked whether the regular ICT operations are affected by load shedding and 59% of the respondents viewed it is affected by load shedding. On the contrary, however, in the study site visit it was found that the organization has continuous power supply mechanism via generator, battery and uninterrupted power supply (UPS).

6.3.2.3 Infrastructure Maintenance

Public offices are usually alleged for mishandling, under utilizing and not utilizing the available infrastructure. To understand the maintenance status of infrastructure of the organization, a number of questions were asked to the service providers.

First, respondents were asked whether ICT infrastructures like digital devices, internet facilities are regularly maintained or not. Overwhelming majority of 92 % of the respondent viewed infrastructures to be regularly maintained.

Second, the respondents were asked to rank the ICT infrastructure on the category of either ‘strong’ or ‘fair’ or ‘poor’. Sixty three percent respondents viewed infrastructure to be ‘fair’ while only 33% viewed it as strong.

Table 6.10: Infrastructure Ranking

Infrastructure (on the scale of 1 to 5)	Frequency	Percentage	Mean	Standard Deviation
Strong	9	33	1.70	0.54
Fair	17	63		
Poor	1	4		
Total	27	100		

Source: Field Survey, 2011.

The respondents, then, were asked to point out the major problem for having ‘fair’ ICT infrastructure with the organization. The major infrastructure problem facing the organization, as expressed by service provider respondents, was technical in nature (see: table 6.11).

Table 6.11: Infrastructure Problem

Infrastructure problem	Frequency	Percent
Financial	5	29
Technical	10	59
Both (a and b)	2	12
Total	17	100

Source: Field Survey, 2011.

Interpretation

With regard to ICT infrastructure, it was revealed that 89 % of the respondents had online facilities; however the facilities were more to gazette employees rather than non-gazetted one. The reason might be the gazette employees mainly deal with e-services and some of the non-gazetted employees in the low hierarchy having low level of education and computer literary might not need computers and internet facility in their regular official workings.

The organization had uninterrupted power supply mechanism via generator and UPS, but contradictory, some 59% of the respondents viewed that the regular ICT operations are affected by load shedding. It means that albeit the organization had 24 hours supply of electricity, the service providers are still feeling difficulty in their daily working. It might be because even the generator and UPS cannot function very efficiently if used for 6 - 8 hours continuously. So, this means that load shedding has definitely affected the operation of the organization.

About the maintenance and update of infrastructure, 92% respondent viewed it to be well maintained and updated. From the interview with the head of ICT section of the organization, it was found that the job of maintenance and update of infrastructure had been ‘outsourced’ to private companies, and this had helped to timely upgrade and maintain infrastructure. However, the overall response towards infrastructure ranking was found to be ‘fair’ meaning that there are some problems, and the respondents pointed out the problems to be ‘technical’ rather than ‘financial’ in nature. It means that ICT personnel, governmental and outsourced both, are not very well and efficiently performing and so giving rise to technical issues, time and again.

The Table 6.12 shows the cross tab of infrastructure ranking and effectiveness of e-services. Among the respondent who viewed infrastructure to be ‘fair,’ 94 % expressed e-services as ‘effective.’ On the other hand, among the respondents who viewed infrastructure to be ‘strong,’ 78% viewed infrastructure to be ‘very effective.’

Table 6.12: ICT infrastructure and Effectiveness of E-services

E-services	Infrastructure ranking (in percentage)			Total
	Strong	Fair	Poor	
Very effective	2 (22%)	1 (4%)	0	3 (11%)
effective	7 (78%)	16 (94%)	1 (100%)	24 (89%)
Total	9 (100%)	17 (100%)	1 (100%)	27 (100%)

Source: Field Survey, 2011.

In short, the overall ICT infrastructure of the organization was found to be ‘fair’ in the sense that about the organization had good online facility, the provision of uninterrupted power supply with the help of different devices as generator and UPS, and maintained and updated infrastructures. Moreover the service providers’ themselves had ranked ‘infrastructure’ factor as the second important factor for making e-services effective. It can be thus said that if the infrastructure are made ‘strong,’ then that will definitely add more to the effectiveness of e-services. The hypothesis, “Strong ICT infrastructure ensures effectiveness of e-services” holds true.

6.3.3 Financial Resources

The total budget of IRD was Rs. 294.4 million and Rs 332.1 million in fiscal year 2008/09 and 2009/10 respectively (Annual Report 2010). According to the Account Section of the organization, the amount of financial resources allocated for ICT development was same for both the fiscal years (Rs. 15 millions in FYs 2008/09 and 2009/10). However, this allocation for ICT development does not include the regular salary of the government employees with the IT section of the department. This shows that the percent allocation of financial resources for ICT development as that of total budget resources of the organization is not more than 5%. Provided these data, it seemed that financial allocation for ICT sector development of the organization is very weak.

Virendra Misra, the head of IT section of the organization also admitted the same; however he added that the financial (and also technical) support from development partners is supplementing

the needs of the organization. Since 1997, GTZ and DANIDA are providing financial (and also technical) support via different projects for ICT sector development of the organization. Data revealed that the support of GTZ under Revenue Administration Support (Follow up) Project Status Report of 2009 and 2010 showed Rs. 162.5 millions and Rs. 34.5 millions which if converted as percentage of total budget of IRD would be 55% and 10 % respectively (Ibid).

Table 6.13: Financial Allocation for ICT Sector Development

(Rs in million)

Year	Financial allocation for ICT sector development by IRD*	Total budget of IRD	Percent of total budget	Financial allocation under Revenue Administration Support Project (IRD-GTZ)
2008/09	15	294.4	5%	162.5
2009/10	15	332.1	4.5%	34.5

*Interview with the Account Officer of the IRD

Source: Annual Report 2010.

With this analysis, it logically follows though the organization has not significant allocation of financial resources for the ICT sector development; however, because of contribution by development partners the financial resources for the ICT sector development seemed to be sufficient. Thus, on the basis of the analysis of the gathered information, it can be said the hypothesis “Financial resources allocated for e-services influence the effectiveness of e-services” is supported.

6.3.4 Attitude of Service Providers

An attitude of service providers was defined as the way to understand the interface between the service providers and the seekers. In other words, how have service providers responded towards the service seekers with the provision of e-services by the office. Thus, the attitude of service providers is understood either as positive or negative towards the service seekers. Positive change (opposite is negative change) in attitude of service providers meant that the service providers have become more responsive, friendlier, accessible, prompt and efficient, and non discriminatory towards service seekers.

6.3.4.1 Response on 'Attitude of Service Provider'

Service providers were asked to provide their opinion on their attitude towards service seekers. Majority of service provider respondents agreed that they are prompt and efficient, responsive, friendlier, accessible and non – discriminatory towards customers, however a few of them remained neutral in their responses.

To cross check the responses of service providers regarding their 'attitude towards service seekers,' service seeker respondents were made to answer the same questions as well, and this helped to tap the observations of service seekers towards the attitude of providers. Unlike the responses of service provider, service seeker respondents gave a diverse responses varying from 'strongly agree' to 'strongly disagree.' Nonetheless majority of them agreed service providers to be responsive, friendlier, accessible and prompt and efficient. However, 48% of the respondents (service seekers) disagreed that service providers are non – discriminatory towards customers.

To learn the difference between mean is significant or not, t – test was performed. All the t – values are at 1% level of significance with 75 degrees of freedom. The t – values showed that the difference between mean is significant. This can be, thus, interpreted as, though both the strata of respondents agreed on, however the degree of agreement varied, meaning that service seeker 'moderately' agreed while providers' 'strongly' agreed.

Table 6.14: Attitude of Service Provider

Service providers as	Response by	Scale of ranking from 1to5 (in percentage)					Mean	Standard deviation	t test (Degrees of freedom=75; significant level= 1%)
		SA	A	N	D	SD			
Prompt and efficient.	SP	26	63	11	-		1.8	0.6	t = -2.6252
	SS	10	64	4	18	4	2.4	1.03	
Customers responsive.	SP	26	71	4			1.7	0.5	t = -4.0016
	SS	4	60	14	18	4	2.5	0.97	
Friendlier to customers.	SP	30	63	7			1.7	0.57	t= -4.4211
	SS	6	48	8	26	4	2.7	1.04	
Easily accessible to customers.	SP	26	71	4			1.7	0.5	t = -3.2353
	SS	16	48	6	22	8	2.5	1.23	
Non - discriminatory towards customers.	SP	44	52	4			1.5	0.57	t = -6.7341
	SS	6	32	8	48	6	3.1	1.13	

Note: Figures are rounded up.

SP = Service Provider; SS = Service Seekers; SA = Strongly Agree; A = Agree; N = Neutral; D = Disagree; SD = Strongly Disagree; N for SP = 27; N for SS = 50

Source: Field Survey, 2011.

To sum, the overall attitude of service provider towards the customers as perceived by two different strata of respondents was found to be different. For service providers, the 'attitude' was found to be 'positive' meaning that service providers are responsive, friendlier, accessible, non-discriminatory and prompt and efficient in their dealings with customers. On the other hand, for service seekers, as they moderately agreed with different aspects of attitude, it can be said that 'attitude' was not negative, though not strongly positive also.

6.3.4.2 Attitude of Service Providers and Effectiveness of E-services

Now the important question arises, has the attitude of service provider associated with the effectiveness of e-services as such? To get the answer, respondents (seekers and providers both) were asked to provide reasons for the effectiveness of e-services, and for that they were given a number of options and among them one was the 'attitude of service provider.' It was found that both strata of respondents viewed that 'attitude of service provider' had a negligible role to make effective e-services.

But on the contrary, a minority of respondents who had a view that e-services are ineffective put forth their choice on 'unfavorable attitude of service provider' as the second important cause for it. This analysis tells that 'attitude of service provider' is not the most important factor for the effectiveness of e-services; however, for any ineffectiveness of e-services, it is one of the prime factors.

Interpretation

The overall attitude of service provider towards the customers (attitude factor) as perceived by two different strata of respondents was found to be different as shown by significant differences in the mean values (as shown by t – test; see table 6.13). Thus, it can be said that for service providers, the 'attitude' was found to be 'positive' meaning that service providers are responsive, friendlier, accessible, non-discriminatory and prompt and efficient in their dealings with customers. On the other hand, for service seekers, as they moderately agreed with different aspects of attitude, it can be said that 'attitude' was not negative, though not strongly positive also.

Interestingly the association of the attitude of service provider with the effectiveness of e-services was found to be dual, as for 'effectiveness' of e-services it was not deemed to be an important factor but for the 'ineffectiveness' of e-services it was deemed to be one of the major factor. It means that the 'satisfied' customers do not think that it is because of 'attitude' factor for which e-services is performing well but for 'dissatisfied' customers, it is the unavoidable one.

With this analysis, it can be said that the hypothesis "Positive attitude of e-services ensures effectiveness of e-services" holds true.

6.4 Customers' Factor

The second independent variable of the study is customers' factor shown by customers' knowledge and demand for e-services. This section has further elaborated the data findings in the above mentioned two categories.

6.4.1 Customers' Knowledge

Customers' knowledge about e-services was understood in terms of their awareness about e-services, their reaction towards the publicity of e-services and their acquaintance with e-services.

6.4.1.1 Customers' Awareness

As the respondents (service seekers) were purposively chosen to meet the objectives of the study, it was necessary to have respondents knowing about the presence of e-services facilities, and thus all the respondents (service seekers) of this study told that they are aware that the organization is providing services electronically to the customer.

6.4.1.2 Publicity of E-services

Given the fact that all the respondents were aware about the presence of e-services, it is necessary to understand their response towards the advertisement made by the organization about the e-services provided. Thus, respondents were asked to provide their opinion about how well e-services are publicized, and data revealed that 54% responded agreed that e-services are well publicized. It should be noted that 44%, which is in minority but of significant percent of respondent, viewed that e-services are not well publicized.

Table 6.15: Publicity of E-services

Publicity (on the scale of 1 to 5)	Frequency	Percentage	Mean
Strongly agree	4	8	2.84
Agree	23	46	
Neutral	1	2	
Disagree	21	42	
Strongly disagree	1	2	
Total	50	100	

Source: Field Survey, 2011.

Then, to the sample of ‘aware’ respondents, it was asked about the accessibility of the e-services. 66% of the respondents agreed that e-services to be accessible. The chi square test was performed to learn whether any association exists between accessibility of e-services and the effectiveness of e-services. The chi square value suggests that an association between the variables, meaning that if e-services were accessible then that can be associated with the effectiveness of e-services.

Table 6.16: Accessibility and Effectiveness of E-services

E-services	Accessible e-services		Total
	Agree	Disagree	
Effective	29	8	37
Ineffective	5	8	14
Total	34	16	50

Pearson $\chi^2(4) = 9.717$ Pr = 0.002

Source: Field Survey, 2011.

6.4.1.3 Customers’ Acquaintance

To understand how well customers’ are acquaintance with the e-services, respondents were asked to define their acquaintance with the e-services. It was found that only 46% of the respondents have good acquaintance (very high as 16% and high as 26%) with the e-services while 50 % have only moderate acquaintance and 4 % have low acquaintance with e-services (See: table 6.17). This shows that though customers are aware about the fact that the organization is providing services electronically, majority of them are not well acquainted using the e-services.

6.4.1.4 E-service Acquaintance and Effectiveness of E-services

Chi square test was applied to see the association between effectiveness of e-services with the acquaintance with e-services by the customer (see: table 6.17). Chi square value suggest no association between the variables under study which means that effectiveness (or ineffectiveness) of e-services has nothing to do with the fact that whether customers are well acquainted with e-services or not.

Table 6.17: Acquaintance with E-services

E-services	Acquaintance with e-services (customer)		Total
	High	Low	
Effective	15	22	37
Ineffective	6	7	13
Total	21	29	50

Pearson $\chi^2(4) = 0.1244$ Pr = 0.724

(Note: For the ease of data presentation, under acquaintance with e-services category ‘very high’ and ‘high’ are merged to ‘high’, and ‘moderate’ ‘low’ and ‘uncertain’ are merged to ‘low.’ Likewise, under effectiveness of e-services category, ‘very effective’ and ‘effective’ are merged to ‘effective’, and ‘ineffective,’ ‘very ineffective’ and ‘neutral’ are merged to ‘ineffective’).

Source: Field Survey, 2011.

Interpretation

Though all the respondents were aware about the presence of e-services, it was found that e-services as publicized (54%), accessible (66%). However, it cannot be said to be quite satisfactory response. Actually there are some services of the organization which have to be mandatorily taken electronically, for instance the vat submission. And thus, it might be one of the reasons that publicity of e-services was deemed to be fine, as majority agreed on it. On the other hand, the publicity of e-services is inadequate when it relates to educate the small tax payers and the people in general. Moreover, the poor responses towards acquaintance (54%) with the e-services of the customer also support the fact that the publicity and accessibility of e-services has to be increased. Publicity should not merely focus on the advertizing the provisions of e-services with the IRD/IRO, rather it should more concentrated on educating the customer how to use it, so that they can do their work themselves without the help of ‘tax consular’ or ‘helper’ or ‘consultant.’ As most of the respondents viewed, the organization should publicize by advertizing more in print media, TV, FM, radio, and with intense campaign like miking, phamplating, bill boards.

As, the Chi square test between effectiveness of e-services and the acquaintance with e-services by the customer suggest no association between the variables under study, it means that

effectiveness (or ineffectiveness) of e-services has nothing to do with the fact that whether customers are well acquainted with e-services or not.

With this analysis, it can be said, customers have superficial awareness of e-services (as the acquaintance to e-services is not high), publicity has to be made more rigorous so as to educate and make e-services more effective. The customers' had ranked 'knowledge' factor as the third important factor for making e-services effective. But however, the poor Chi square value says that the present effectiveness of e-services has such no association with the knowledge (acquaintance) of e-services, and thus this doesn't hold true the hypothesis, "Sound customers' knowledge of e-services ensure e-services effective."

6.4.2 Customers' Demand

Customers' demand about e-services was understood in terms of two factors namely, sufficiency of e-services and need expression by service seekers.

6.4.2.1 Sufficiency of E-services

To understand customers' perception about the sufficiency of e-services, they were asked to rank e-services either as 'fully' or 'partly' or 'not at all' sufficient. None of the customers viewed present e-services as fully sufficient. Thirty percent viewed e-services as 'partly' sufficient while remaining 70% viewed e-services as 'not at all' sufficient. The survey indicates that customers want the organization to provide more e-services. In other words, this shows that there is a demand for providing more services electronically from service seekers. On the other hand, all the service providers' respondents viewed the need of expanding the present e-services they are providing, meaning that service providers also want to provide more services electronically.

6.4.2.2 Need Expression

As it was found that customers were not satisfied with the number of e-services provided, the respondents were further asked whether they have expressed demand to provide more e-service. It was found that 56 % of the respondents (service seekers) had never expressed the need for providing more services electronically (See: Table 6.18), while 44 % of respondents had expressed their demand by either communicating to tax officer, or help desk and very few via mail.

Table 6.18: Need Expression by Customers

Expressed the need for more e-services	Frequency	Percentage
Yes	22	44
No	28	56
Total	50	100

Source: Field Survey, 2011.

6.4.2.3 Need Expression and Effectiveness of E-services

Chi square test was applied to see the association between effectiveness of e-services with the expression of demand for more e-services by the customer (See: table 6.19). Chi square value suggest no association between the variables under study, it means that effectiveness (or ineffectiveness) of e-services has nothing to do with the fact that whether customers have expressed their demand for more services or not.

Table 6.19: Need Expression and Effectiveness of E-services

E-services	Expression of demand for more e-services (customers)		Total
	Yes	No	
Effective	15	22	37
Ineffective	7	6	13
Total	22	28	50

Pearson $\chi^2(2) = 0.6912$ Pr = 0.406

(Note: For the ease of data presentation, under effectiveness of e-services category, ‘very effective’ and ‘effective’ are merged to ‘effective’; and ‘ineffective,’ ‘very ineffective’ and ‘neutral’ are merged to ‘ineffective’).

Source: Field Survey, 2011.

Interpretation

Even though 70% of the customers viewed that e-services are ‘not at all’ sufficient, it was found that 56 % of the respondents had never expressed the demand. This shows that customers, no doubt, want to have more e-services but they are not expressing their demand. There might be several reasons for it; however, during the study site observation and interacting with the service

seekers, this researcher could sense the indifferent attitude of customer who expressed that their voice will not be heard, and so it is of vain of expressing their demand by any of the means.

On the other hand, like the customers, service providers also do feel that present e-services are not sufficient and need to be expanded. Interestingly, both the strata of respondents, viewed the need of providing services like payment, tax clearance certificate, access to personal account and seeking more information electronically. During the in – depth interview, it was found the organization was found positive and moving towards providing more services electronically in near coming days.

With this analysis, it can be said that the same preferences of service seekers and providers regarding future e-services do clarify that service providers are aware of the demand of customers, no matter majority of customers have not expressed as such. Even the customers' themselves had ranked 'demand' factor as the fourth important factor for making e-services effective. And this is supported by the poor Chi square value says that the present effectiveness of e-services has no association with the customers' demand of e-services, and thus this doesn't hold valid the hypothesis, "High customer's demand for e-services makes e-services effectiveness."

6.5 Rank of Effectiveness of Selected E-services

There are different internet based services to the service seekers provided by IRD. They are online filing facilities such as personal e-pan, e-pan, TDS, e-returns, IMS and SMS systems. Likewise the varieties of information provided by the website of IRD are also e-services provided to the concerned seekers. However, the study did not consider all the e-services provided by IRD but rather it focused on following services:

- e. Personal e-pan
- f. E-TDS
- g. E-returns
- h. Information provided by websites

To understand the responses on the above mentioned e-services, both service seekers and providers were asked to rank effectiveness of e-services namely personal e-pan, e-td, e-returns

and information provided by website, on the scale of 1 to 5 (whereby 1=high to 5 =low). The ranking of the different strata of respondent was different. According to service seeker's, e-returns occupied the first rank followed by e-tds, and in the third position were the personal e-pan and web information. However, on the other hand, the ranking of e-services in terms of their effectiveness was different from service providers' survey. As expressed in the questionnaire survey of 27 service seekers where 3 did make no response, the first ranking was found for personal e-pan, the second for e-returns, the third was e-tds and the last ranking was for web information.

Table 6.20: Ranking of Selected E-services

E-services	Ranking on the scale of 1 to 4 whereby 1 = highest and 4 = lowest	
	Service seekers (N = 50)	Service providers (N = 27)
Personal e-pan	3	1
E-tds	2	3
e-returns	1	2
Web information	4	4

Source: Field Survey, 2011.

It was not practically possible to assess the effectiveness of individual e-services namely personal e-pan, e-tds, e-returns, as because the customers of these services are scattered, and it was difficult to get the customer who is using all the e-services simultaneously during the short period of data collection time. So, an attempt was only made to learn how effective the website of IRD is.

6.5.1 Effectiveness of website

To understand the effectiveness of website, service seekers were asked to provide their opinion on the three aspects of website, namely, usefulness, log – in easiness and maintenance and updated.

The website was found to be useful, as 88% of the respondents agreed about its usefulness.

On the other hand, a different response was collected for the log-in easiness with the website. Only 24% of the respondents agreed that there is no log-in problem with the website, while 56% of the respondents opined that the website has log in problem (See: Table 6.21). Moreover, the respondents viewed that the log in problem with the IRD website goes unthinkably high during the peak time of the fiscal year.

Table 6.21: Opinion of Service Seekers towards Website

Website	Ranking on the scale of 1 to 5 (in percentage)					No response	Mean	Standard deviation
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree			
Useful	36	52	6	2	0	4	1.66	0.74
No Log in problem	6	18	16	50	6	4	3.2	1.22

Source: Field Survey, 2011.

About update and maintenance of the website, both service seekers and providers were asked, and it was found that majority of the respondents (service seekers and providers both) agreed that website is maintained and updated (See: Table 6.22). The difference between mean values of the responses from both the samples was not found to be significantly different, as shown by the t-value.

Table 6.22: Update and Maintenance of Website

Website update and maintenance (on the scale of 1 to 5)	Response (in percentage)	
	Service seekers (N=50)	Service provider (N=27)
Strongly agree	18	18
Agree	36	52
Neutral	20	19
Disagree	22	11
No response	4	-
Mean	2.38	2.22
Standard deviation	1.14	0.89
t - test	t = 0.6226 (Degree of freedom = 75; Level of significance = 53.54)	

Source: Field Survey, 2011.

Thus, data showed that website of the organization to be useful and well updated and maintained; however the log in problem with the website was high.

As from the responses of service seekers and providers, the web factor was found to be one of the most important reasons for the effectiveness of e-services. Response to the update and maintenance of website by both the group of respondents was found to be positive. The organization has outsourced the responsibility of timely update and maintenance of website, and this might be the reason for the good performance of website. However, the log in problem was perceived to be high by service seekers. In the interview with Mr. Virendra Misra, head of IT section of the organization, he strongly pointed the reason towards non – organizational factors saying that the organization has outsourced capable human power to maintain it and 24 hours supply of electricity to support the system. According to him, it might be because of several non - organizational problems, like down server of ISP, the nature of the service seekers to use the e-services more during the deadlines which increases the traffic, which thereby creates log in problem.

6.5 Conclusion

The chapter has analyzed the effectiveness of e-services in terms of improved service delivery. The improvement in service delivery was observed as respondents agreed that e-services are time effective. Further, organizational and customers' factors were discussed to find the association with the effectiveness of e-services, if any.

The survey revealed that all the components of organizational factor are associated to the effectiveness of e-services, while the components of customers' factor were not found to be associated with the effectiveness of e-services. On the basis of data analysis, the supply side hypotheses are accepted while the demand side hypotheses are rejected.

Table 6.23: Acceptance and Rejection of Hypothesis

Sn	Hypothesis		Supported/ Rejected	Conclusion
1	Supply side	H1 = Trained human resources make e-services more effective.	Supported	Organizational factors influenced the effectiveness of e-services
2		H2 = The stronger the ICT infrastructure, the more the effectiveness of e-services.	Supported	
3		H3 = Financial resources allocated for e-services influence the effectiveness of e-services.	Supported	
4		H4 = Positive attitude of service provider ensures the effectiveness of e-services.	Supported	
5	Demand side	H5 = Sound customer's knowledge of e-services ensures e-services effectiveness.	Rejected	Customers' factors did not influence the effectiveness of e-services
6		H6 = High customer's demand for e-services makes e-services effectiveness.	Rejected	

The table 6.23 presents the list of hypotheses which are accepted and rejected by the study. With these findings, it can be said that e-services effectiveness is found to be influenced by organizational factors but not by customers' factors.

CHAPTER 7

SUMMARY AND CONCLUSION

7.1 Introduction

This is the last chapter of the study. It summarizes the whole study, and then concludes the thesis. In addition, the areas for future research are also pointed out.

7.2 Summary

This section summarizes the whole study. Worldwide, as early of 1980s, the need to reform the bureaucracy was highly discussed and as the result the governments of developed and developing countries faced the challenge of transformation and the need to modernize administrative practices and management systems (Tapscott 1996). In this regard, information communication and technology (ICT) is seen as a tool to support the work of governmental institutions and agencies with the objectives of delivering public services and information in a more convenient, citizen-centric and cost effective manner. In Nepal, the government has recognized the importance of ICT for making the service delivery prompt and effective and thus has introduced ICT in different public offices. As a matter of fact, country stepped in ICT world in early 1970s with the introduction of IBM computer systems to process the population census data (Kim et al 2007). Since then, various attempts have been made to modernize the public bureaucracy so as to make service delivery effective.

On the other hand, any organization, however, is faced with distinct supply (organizational) and demands (customers) set up which may affect the effectiveness of ICT in service delivery. Given the scenario, the study attempted to address the crucial question: which and how the factors are influencing the effectiveness of ICT. The study, thus, was devoted to understand the factors influencing effectiveness of e-services of public organization. In other words, the main objective of the study was to explore the factors influencing e-service delivery of an organization.

Effectiveness of e-services was understood in terms of improvement in service delivery which is measured with the time effectiveness in service delivery. The independent variables were organizational factors and customers' factors. Organizational factors were measure through

human resources, ICT infrastructure, financial resource allocation and attitude of service seekers whereas customers' factors were measured with knowledge and demand from customers.

The underlying assumption of the study was that organizational and customers' factors influence the effectiveness of e-services. Theory of e-governance, good governance and human capital theory were used to support the assumption. The study, thus, tried to understand effectiveness of e-services, meaning that how effective e-services are in terms of improvement in service delivery by being time effective; do organizational factors influence the effectiveness of e-services; do customers' factors relate to the effectiveness of e-service.

As the study site, Inland Revenue Department was chosen, which is the government department providing a good number of services electronically to service seekers. The study was basically descriptive cum analytical research study, and had used a combination of content analysis, survey through in-depth interview and questionnaire and observation to collect data. Interview was carried out to two ICT personnel of IRD and 77 respondents were questionnaire surveyed. Findings from the primary and secondary data were presented and analyzed using different statistical and mathematical tools like chi square, tabulation, percentage and frequency.

The findings from the data analysis can be summarized as follows.

- a. Human resources, in terms of ICT personnel with the organization, as the percentage of total government employees are found to be not more than 6 %, which means that government employees are not in good numbers with the organization. But given the fact that the organization has outsourced ICT personnel which can be increased or decreased as per the requirement of the day, it can be said that ICT personnel with the organization is sufficient.

Next, in terms of capacity building training, data related to ICT training revealed that the organization has laid emphasis on the capacity building of the employees, both gazetted and non gazetted, by providing useful ICT related trainings, though the trainings provided by the organization are not sufficient. The service provider ranked 'human resource' as the third important factor for making e-services effective.

- b. The overall ICT infrastructure of the organization was found to be 'fair' in the sense that about the organization had good online facility, the provision of uninterrupted power

supply with the help of different devices as generator and UPS, and maintained and updated infrastructures. Moreover the service providers' themselves had ranked 'infrastructure' factor as the second important factor for making e-services effective.

- c. It was found that the organization has not significant allocation of financial resources for the ICT sector development; however, because of contribution by development partners the financial resources for the ICT sector development seemed to be 'somewhat' sufficient.
- d. The overall attitude of service provider towards the customers (attitude factor) as perceived by two different strata of respondents was found to be different. As for service providers, the 'attitude' was found to be 'positive' meaning that service providers are responsive, friendlier, accessible, non-discriminatory and prompt and efficient in their dealings with customers. On the other hand, for service seekers, as they moderately agreed with different aspects of attitude, it can be said that 'attitude' was not negative, though not strongly positive also. However, interestingly the association of the attitude of service provider with the effectiveness of e-services was found to be dual, as for 'effectiveness' of e-services it was not deemed to be an important factor but for the 'ineffectiveness' of e-services it was deemed to be one of the major factor. It means that the 'satisfied' customers do not think that it is because of 'attitude' factor for which e-services is performing well but for 'dissatisfied' customers, it is the unavoidable one.
- e. Customers are found to have superficial awareness of e-services (as the acquaintance to e-services is not high), publicity has to be made more rigorous so as to educate and make e-services more effective. The customers' had ranked 'knowledge' factor as the third important factor for making e-services effective. But however, the poor Chi square value says that the present effectiveness of e-services as such no association with the knowledge (acquaintance) of e-services.
- f. Even though 70% of the customers viewed that e-services are 'not at all' sufficient, it was found that 56 % of the respondents had never expressed the demand. This shows that customers, no doubt, want to have more e-services but they are not expressing their demand. On the other hand, like the customers, service providers also do feel that present e-services are not sufficient and need to be expanded. Interestingly, both the strata of respondents, viewed the need of providing services like payment, tax clearance

certificate, access to personal account and seeking more information electronically. Nonetheless, the customers' themselves had ranked 'demand' factor as the fourth important factor for making e-services effective, alternatively, it means that 'customers' demand' is less important factor to make e-services effective.

- g. Finally, as from the responses of service seekers and providers, the web factor was found to be one of the most important reasons for the effectiveness of e-services. Response to the update and maintenance of website by both the group of respondents was found to be positive. The organization has outsourced the responsibility of timely update and maintenance of website, and this might be the reason for the good performance of website. However, the log in problem was perceived to be high by service seekers; the reason for it seems more out of organizational factors because of the presence of outsourced human power to maintain it and 24 hours supply of electricity to support the system. It then seems that might be because of several non - organizational problems, like down server of ISP, the nature of the service seekers to use the e-services more during the deadlines which increases the traffic, and thereby creating log in problem.

In short, the study has analyzed the effectiveness of e-services in terms of improved service delivery. The improvement in service delivery was observed as respondents agreed that e-services are time effective. The survey revealed that all the components of organizational factor are associated to the effectiveness of e-services, while the components of customers' factor were not found to be associated with the effectiveness of e-services. With these findings, it can be said that e-services effectiveness is found to be influenced by organizational factors but not by customers' factors.

7.3 Conclusion

The study has analyzed the effectiveness of e-services in terms of improved service delivery from organizational and customers' point of view. Data analysis revealed that organizational factors (human resources, 'ICT infrastructure, financial resources and attitude of service providers) found to be associated to the effectiveness of e-services, while customers' factors (customers' demand and customers' knowledge) were not found to be associated with the effectiveness of e-services. The findings of the study conclude the following points:

- a. The non – association of customers factors with the effectiveness of e-services shows that customers have a small role to play to make effective e-service delivery. There might be several explanations. However, some distinct features of Nepal as that of low level of internet penetration, poor right consciousness of public customers, patron – client relationship, and a sense of ‘fear’ with the ‘revenue’ department might have made customers dormant with the role they can play for making e-services effective. Though the theory of governance and New Public Management focus on vibrant participation of customers in public affairs, it seems that in a country like Nepal which has poor literacy and rampant poverty, it is a challenge to transform customers in real active agent.
- b. This study supported that capable human resources influence the effectiveness of e – services, and this finding goes well with the Human Capital theory which advocates the role of trained and capable human resources for the better national productivity.
- c. As the study came with the finding that the organizational factor influence the effectiveness of e-services, so it sounds logical to assert that the role of organizational factors is significant for making e-services effective and if the organizational factors are more emphasized and strengthened, then the e-services’ effectiveness would be more.
- d. The study pointed out that the average response of service providers and seekers towards the e-services as positive, nevertheless the degree of assertiveness differed, whereby unlike service providers, seekers viewed ‘effectiveness’ in moderate manner. During the interaction and questionnaire survey with service seekers, the study had identified major area of their grievance.

They were, for example:

- i. There is lack of advertisement/ campaign to educate the customers about the proper and effective use of e-services provided by the organization,
- ii. Services like payment, tax clearance certificate and access to personal account are still not provided electronically. Had these services, for example, were provided electronically then the customers visit to the IRD would have reduced largely and customers would have more benefited.
- iii. The information provided electronically is not sufficient. It means that the organizational website does not provide all the necessary information, for

instance, when the organization started using e-services, how is it progressing, how to use it.

- iv. E-services still could not be customer friendly, and because of that customers need to be dependent on 'tax consultant' so as to soothe their workings in the organization.

The major areas of grievance of customers have to be properly handled so as to ensure improved service delivery electronically. Of course, there has been increasing demand from customer for getting more e-services. The challenge is, thus, towards organization to meet the increasing demand of customers and effectively deliver services electronically.

- e. Different organization is set with distinct organizational set up. What is true for one organization might not go well with other organization. The findings of the study i.e., effective e-services and strong organizational aspect might not be the case of other governmental organization. One study conducted on Municipalities of Kathmandu Valley pointed that those organizations have poor human resources and financial allocation for ICT (Shrestha 2009). On the other hand, this study has shown rosy picture of organizational set up. Given this case, it seems tha with those organizations

7.4 Implication for Further Research

The areas which the study could not unfold might have some future implication for further research. They are:

First, the research came up with the finding that customers' factors have not influenced the effectiveness of e-services with the organization. It would be interesting if future researches are devoted to assess the customers' role in effective e-service delivery.

Second, the research mainly focused on few organizational aspects, so it would be more interesting if future researches are carried out taking in consideration other organizational factors such as legal provisions, the role of outsourced human resources, political and administrative leadership.

Third, the effectiveness of e-services in the study was looked from improvement in service delivery which was again measured by time effectiveness of the e-services. However, other

major objectives of e-governance like ensuring transparency, reducing corruption, reducing cost and quality of services, if studied in future research, then it would add more value to the effectiveness of e-services.

Fourth, the study concentrated only on the effectiveness of e-services in the present scenario, it did not attempt to learn ‘before – and – after’ ICT application situation, thus, it would be challenging to explore the comparative analysis of services.

Last, different organization has a distinct organizational set up and what is true for one organization might not go same with other organization. For instance, one study conducted on Municipalities of Kathmandu Valley pointed that those organizations have poor human resources and financial allocation for ICT (Shrestha 2009); while this study has shown comparatively rosy picture of organizational set up. Given these contrast example, it seems logical to assume that the findings of the study might not be true with other governmental organization. As the study was conducted only on one organization; it would be advantageous if other governmental organizations are studied, which will provide different perspective and situational analysis to the subject of concern.

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APPENDIX

Questionnaire to Service Providers

Objective of questionnaire to service providers: This study attempts to understand the effectiveness of e-services provided by the department. The study has hypothesized that the human resources, ICT infrastructure, financial resource allocation and the attitude of service providers are organizational factors which determine the effectiveness of the e-services. This questionnaire survey to the service providers is, thus, an attempt to understand the effectiveness of the e-services as seen and perceived through the organizational lenses.

Part A: General Information

1. Name:
2. Education:
3. Position :
4. Work experience:
5. Work Place:
 - a. Inland Revenue Department _____
 - b. Inland Revenue Office ____ Area No: ____

Part B: Specific Information

1. Have you got ICT training?
Yes ___ No ___
2. If yes, who provided the ICT training?
 - a. Office _____
 - b. Self initiative _____
3. When did you get the recent ICT training?

4. What type of ICT trainings you have participated so far?

5. Do you think the ICT training provided by the organization is sufficient?
Yes ___ No ___ Don't know _____
6. How do you rate the usefulness of your ICT trainings in the daily working procedures at your organization?
Very useful ___ Useful ___ Don't know ___ Not useful ___ Useless _____
7. How frequently do you visit your organizational website?
Frequent _____ As and when needed _____ Seldom _____ Never _____

8. Do you have online facility in your desk?
Yes ___ No ___
9. Do you think your regular ICT operations are affected by load shedding?
Yes ___ No ___
10. If no, what are the alternatives for uninterrupted power supply at your office?

11. Are the ICT infrastructures (digital devices, internet facility) regularly maintained?
Yes _____ No _____
12. To what extent, do you agree that the website is well maintained and updated?
Strongly agree _____ Agree _____ Neutral _____ Disagree _____ Strongly disagree _____
13. How do you rank the ICT infrastructure of the organization?
Strong _____ Fair _____ Poor _____
14. If poor (or fair), what ICT infrastructure is lacking with your organization? Name any three, in terms of priority.
- a. _____
 - b. _____
 - c. _____
15. If poor (or fair), what do you think is the major problem for not having strong ICT infrastructure in the organization?
- a. Financial problem _____
 - b. Technical problem _____
 - c. Other, if any, please specify _____
16. To what extent, do you think the financial resources allocated for ICT sector development in your organization is sufficient?
Very Sufficient ___ Sufficient ___ Neutral ___ Insufficient___ Very insufficient ___

17. Please express your opinion in the following statements. Please tick mark (√) the box.

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
e-services have eased your working procedure					
Can work more due to e-services					
Customer crowd in the office has decreased.					

18. Please provide your opinion on the following statements. Please tick mark (√) the box.

Service providers are	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Prompt and efficient.					
Customers responsive.					
Friendlier to customers.					
Easily accessible to customers.					
Non - discriminatory towards customers.					

19. Do you think the present e-services provided by IRD/IRO need to be expanded?

Yes ___ No ___ Don't know ___

20. If yes, please rate on a scale from 1 to 5 (whereby 1 = high to 5 = Low) the following e-services which you would like to provide.

- a. E-payment
- b. E-based tax clearance certificates
- c. E- based access to personal account
- d. Seeking information
- e. Other, if any, please specify _____

21. How do you rate the present e-services?

Very effective ___ Effective ___ Neutral ___ Ineffective ___ Very ineffective ___

22. If it is effective, then please rank on the scale of 1 to 7 (whereby 1= high to 7= low) the options below as per their role for effective e-services.
- a. Updated website
 - b. Accessible website
 - c. Essential services are provided electronically
 - d. Sound human resources
 - e. Strong ICT infrastructure
 - f. Positive attitude of service providers
 - g. Other, if any, please specify _____
23. If it is ineffective, then please rank on the scale of 1 to 8 (whereby 1=high to 8 = low) the options below as per their role for ineffective e-services.
- a. Website is not updated
 - b. Website is not accessible
 - c. Load shedding problem
 - d. Essential services are not provided electronically
 - e. Poor human resources
 - f. Poor ICT infrastructure
 - g. Unsupportive attitude of service providers
 - h. Other, if any, please specify _____
24. Among the following e-services, please rank on the scale of 1 to 5 (where 1=high to 5 = low) according to their effectiveness.
- a. Personal e-pan
 - b. E-TDS
 - c. E-returns
 - d. Information provided by websites
 - e. Other, if any, please specify _____
25. What are your suggestions to make e-services more effective? Please specify three major suggestions.
- a. _____
 - b. _____
 - c. _____

Questionnaire to service seekers

Objective of questionnaire to service seekers: This study attempts to understand the effectiveness of e-services provided by the department. The study has hypothesized that the knowledge and the demand for the e-services from the customer is one of the determining factor for understanding the effectiveness of the e-services. This questionnaire survey to the service seekers is, thus, an attempt to understand the effectiveness of the e-services as seen and perceived through the lenses of customers.

Part A: General information

1. Age:
2. Gender:
3. Place of residence:
4. Occupation:
 - a. Self employed___
 - b. Employed ___
 - c. Student ___
 - d. Others _____
5. Education
 - a. Illiterate ___
 - b. Below secondary Level ___
 - c. Secondary Level – Bachelor degree ___
 - d. Higher Secondary Level ___
 - e. Bachelor Degree or higher___

Part B: Specific Information

1. What is your purpose for visit at the office?

2. Are you aware about the electronic services provided by the organization?
Yes _____ No _____
3. If yes, how did you get the information about the e-services?
 - a. Family and friends _____
 - b. Internet _____
 - c. TV, radio, FM _____
 - d. Print media _____
 - e. In Land Revenue Department/Office staff _____
 - f. Other, if any, please specify_____
4. To what extent, do you think you are acquainted with the e-services provided by the organization?
Very High _8_ High 13____ Uncertain ___2_ Moderate 25____ Low 2____

5. To what extent, do you agree that there has been well publicity of e-services?
 Strongly agree ___ Agree ___ Neutral ___ Disagree ___ Strongly disagree ___
6. How can e-services be better advertized?
 a. TV, radio, FM ____
 b. Print media ____
 c. Internet ____
 d. Campaign ____
 e. Other, if any, please specify ____

7. Please read the statements, and provide your opinions. Please tick mark (√) the box.

Statements	Strongly agree	Agree	Uncertain	Disagree	Strongly disagree
E-services have helped to save time from bureaucratic proceedings					
E-services have helped to reduce the cost of getting services.					
E-services have helped to ensure procedural fairness in the system.					
E-services have helped to reduce personal favor while seeking services.					
The physical visits to the IRD/IRO have decreased due to e-services.					
E-services are easily accessible.					

8. Please provide your opinion on the following statements with tick mark (√) in the box.

Service providers are	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Prompt and efficient.					
Customers responsive.					
Friendlier to customers.					
Easily accessible to customers.					
Non - discriminatory towards customers.					

9. What are the e-services you are using?

- a. Personal e-PAN ____
- b. E-TDS ____
- c. E- Returns ____
- d. Information provided by website ____
- e. Other, if any, please specify ____

10. Please rank on the scale of 1 to 5 (whereby 1 = highest and 5 = lowest) the following e-services in terms of their effectiveness.

- a. Personal e-PAN ____
- b. E-TDS ____
- c. E- Returns ____
- d. Information provided by website ____
- e. Other, if any, please specify ____

11. Have you visited the organization's website?

Yes ____ No ____ Don't know ____

12. How often do you visit the website?

Very Frequently ____ Frequently ____ Normally ____ Sometimes ____ Never ____

13. What is the purpose of visiting the website of the organization?

- a. e-Filing ____
- b. To get the relevant documents (Act/Rules/Regulations/Reports) ____
- c. Update with notices ____
- d. Other, if any, please specify ____

14. Please express your opinion on the following statements with the tick mark (√) in the box.

Statements	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
Website is useful.					
Website is regularly maintained and updated.					
No log-in problem while browsing the website					

15. To what extent do you think the present e-services are sufficient?

Fully ___ Partly ___ Not at all ___

16. What are the services which you would like to demand to have electronically? Please rank the following on the scale of 1 to 5 whereby 1 = high to 5 = low.

- a. E-Payment
- b. E-based tax clearance certificates
- c. E- based access to personal accounts
- d. Seeking information
- e. Other, if any, please specify

17. Have you ever expressed the need for more e-services to the IRD/IRO?

Yes ___ No ___

18. If yes, how did you express your concern about the need for more e-services to the IRD/IRO?

- a. By orally communicating to the help desk
- b. By orally communicating to the tax officer
- c. By dropping a letter in the suggestion box
- d. Email
- e. Telephone
- f. Others

19. How do you rate the present e-services?

Very effective ___ Effective ___ Neutral ___ Ineffective ___ Very ineffective ___

20. If it is effective, then please rank on the scale of 1 to 8 (whereby 1= high to 8 = low) the options below as per their role in the effectiveness of the e-services.

- h. Updated website
- i. Accessible website
- j. Essential services are provided electronically
- k. Strong knowledge of customers'

- l. High demand from customers'
 - m. Helpful attitude of service providers
 - n. Other, if any, please specify
21. If it is ineffective, then please rank on the scale of 1 to 8 (whereby 1 = high to 8 = low) the options below as per their role in the ineffectiveness of the e-services.
- i. Website is not updated
 - j. Website is not accessible
 - k. Load shedding problem
 - l. Essential services are not provided electronically
 - m. Poor customers' knowledge
 - n. Poor customers' demand
 - o. Unfavorable attitude of service providers
 - p. Other, if any, please specify
22. What are your suggestions for making effective e-services? Please specify any three suggestions.
- a. _____
 - b. _____
 - c. _____

Interview Guide

Organizational factors: Human resources, ICT infrastructure, Financial resources, Attitude of the service providers

1. Do you think the organization have sufficient human resources (trained and skilled ICT human resources) to effectively carry e-services?
2. Do the organizations have specific provision for providing training (especially ICT) to the staffs?
3. Do the organizations have clear policy about employee trainings?
4. Do the organizations have allocated sufficient financial resources for ICT training, under training heads?
5. If yes, what is the allocation of budget and what is really spent (for training)?
6. What are the priorities of the organization while analyzing training need?
7. Do you think the present human resources with the organization are sufficient in providing/handling e-services?
8. Regarding human resource development for e-governance purposes, what should be the organizational priorities?
9. What is your opinion about the existing ICT infrastructure of the organization? Strong/ Poor?
10. What do you think are the reasons for poor ICT infrastructure?
11. Do you have any future provisions for providing those infrastructures?
12. Are the ICT infrastructures regularly maintained?
13. What is the mechanism of maintaining and updating e-services?
14. Is the financial resources allocated for ICT development of the organization sufficient?
15. What percentage of annual financial resources is allocated for ICT sector development of the organization?
16. Is the total budget allocated entirely spent? If no, then why?
17. Is the allocated budget sufficient?
18. What sort of employee's attitude have you found in your organization after adopting e-services? Positive/Negative?
19. Is there any demand from staffs for providing more services electronically?
20. How have you perceived the service seekers' reaction towards e-services in the organization?
21. What are the major areas of service seekers' grievances, if any?
22. Is there any measures undertaken to provide more e-services?
23. What do you have to say about the overall performance of e-services?
24. What are the strength and weaknesses of e-services provided by the organizations?