Challenges and Factors affecting E-governance practises in Nepal

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***Abstract*— The increased use of Information and Communication Technology (ICT) is playing a vital role in the development of a nation. ICT has revolutionized the world and has brought profound impact on the social and economic development of a country. Implementation, practice and accessibility of ICT is viewed as an integral part of any countries' strategy today. E- Governance is strategic application of ICT by a government to create an environment which is comfortable, transparent and less costly for interacting between citizens, business and governments. Nepal started E-governance initiative in last few years only and some of the ministries and government sector are enjoying E-governance practices, but a large mass and citizens are still away from it. In this paper we have analyzed the current practices of E-governance in Nepal, based on the literature survey, visit to the ministries, government offices and by conducting a survey based on semi structured interviews for both government officials and employees. Based on the study we have then identified the challenges and factors that affect the successful implementation of E-governance in Nepal. Finally our study brings out the future demands and recommendations that need to be addressed in the E-governance model.**

Keywords— E-governance, ICT Infrastructure, e-services, policy.

I. INTRODUCTION

Nepal is a geographically diverse nation with 80% of the land covered with mountains and hills [1]. It is a land locked country at three sides by India and at one side by China. It has no prominent industry and relies basically on tourism, remittance and partial domestic products to achieve economic sustainability [1] [2] [3]. The scenario of technological development is also not so captivating, as there are very less infrastructural and technological developments [4]. Nepal is characterized by diverse and difficult terrain including highest mountain "Mount Everest" to lowest lowland Terai [3]. There is poor literacy rate and poor access of Government services by the people of remote and rural areas. People have to travel long distance in order to access information, participate in government activities and utilize facilities [5]. It is difficult for the government as well as people to reach one another due to geographical structure, poor technological infrastructure and poor literacy rate [6]. The growth of Information and Communication Technology (ICT) has led to some hopes of overcoming this problem and government of Nepal has initiated plans to implement, practice and promote ICT in governmental processes, introducing E-governance in the recent years [7].

It is seen that world has witnessed tremendous technological growth in recent years in the form of internet, mobile communication, web 2.0, WAP, remote sensing, GIS, GPS and digitization, [8] which has led towards the development of E-governance models and practices around the world [9]. E-governance has started becoming an integral and most important part of government functioning. Today it is an essential technological requirement for any nation in providing its citizens with varied services that include citizen participation, transparent government mechanisms and handling intergovernmental relationship with NGO's, INGO's, public and private sectors [9]. Countries like Korea, Japan, Singapore, America Europe and other developed nations rely heavily on E-governance practices to interact with their citizens and work efficiently [10].

The growth in the field of Information and Communication Technology (ICT) has forced Nepal government also to utilize power of ICT and implement E-governance practises in Nepal. There were many forces that supported the initiation of E-governance but it was mainly the technological advancement

and global pressure that made different ministries to respond to this urge and led to development of E-governance [11]. Nepal government created many prominent division like HLCIT, NITC and legal frameworks to support E-governance practises in its different ministries and government offices [2]. Our study explores the E-governance practises in Nepal and analyzes the challenges and factors that affect successful implementation of E-governance models and services. Our approach is based on direct qualitative survey, review of old reports and literature related to the subject area. The study attempts to fulfill the knowledge gaps in the earlier researches and builds an understanding of the future demands from the current systems. The study is organized in five important sections that include introduction, literature review, E-governance practises in Nepal (including national and international scenario), a research methodology (interviews, data collection and review) and finally conclusions and recommendations are drawn to fulfill the objective of the study.

II. Literature Review

E-governance is the application of technology to manage government functions electronically and provide easy access of government services to the citizens [9] [12]. E-governance became a relevant term after the ICT boom in different parts of the world and many governments took it as a tool to simplify their functions [9] [13]. It is a socio-technical systems that depends upon people, process, technology and resources [9]. It is defined by different authors in different ways but the basic idea is to make convenient work systems and improve activities by using modern technologies [9]. E-governance or 'electronic governance' is the application of information and communication technology to government functions and processes so as to bring about 'simple, moral, accountable, responsive and transparent' (SMART) governance [14] [15]. It is rapidly growing phenomenon that has an increasing impact on the work of government and public sector organizations.

Many studies have been conducted in E-governance which relate to efficiency, security, reliability, interoperability, and other similar aspects by different researchers at different times. National Science Foundation (1999) studied E-governance as a new breakthrough technology and defined it as "digital government," which focuses on the use of information and technology to support and improve public policies and government processes, as well as to engage citizens and provide timely and comprehensive services [16]. Some scholars defined E - Governance systems as information systems that depend on social and technical aspects: combining the technological applications and the human resource [17] while some elaborated it as models, that work on sharing and delivering services to citizens and businesses. They work for the purpose of reducing corruption, strengthening accountability, reducing time, cost, and increasing transparency [17][18]. E-governance enables the digitization of government processes, records, automation of tax collection, receive community feedback, information dissemination collection of data / information, conducting elections management, etc., with the use of modern information and communications technologies such as the Internet, local and global mobile network, etc., working 24 hours a day [13]. E-governance is more about improving efficiency and effectiveness of the government by ICT to citizens [19]. It is a means of providing and transferring services to the public via the internet about its various departments, agencies and services [19] [20]. According to Mukhrjee and Sahoo E-governance can smoothen the working procedure of government by providing transparency, effective working mechanisms, instant response and availability of information of government machinery to end users [5]. It is a widely used term in the current times for improving government functions, enhance organizational efficiency and citizen participation [14] which provides a way to improve government work and make easy sharing of information with the citizens and other stake holders.

A successful implementation of E-governance must address certain factors which play key role during the deployment of the system and similarly in capturing core requirements and associated components [21]. An E-governance model has three important aspect of governance that include Government to Government (G2G), Government to Business (G2B) and Government to Citizen (G2C) [9][21][22]. The G2G component must address administration, inter government control and monitor, inter communication between two governments and other mandatory aspects. The G2B component must be capable to enforce the policies, standards and accountability [21]. The government should automate functions related to tender management, contract management, and tax payments and exercise control over them [21]. The G2C model should provide citizen services and participation. It is a major need that government develops an interface to facilitate basic needs, proper education and health care and increase quality life of its citizens [22][9].

In Nepal, E-governance became vital in the year 2006 with the development of E-governance master plan initiated by HLCIT, NITC, MoEST, MoIC, MoGA and MoF which was prepared by Korea IT Industry Promotion Agency [18][21]. Many scholars studied different aspect of E-governance from that time onwards covering different issues related to it in Nepal. Kharel and Shakya discussed about the E-government implementation challenges and elaborated the existing scenario of E-governance in Nepal compared to the South East Asia. Dhami studied the development phases of E-governance in Nepal that discussed about the prospects and challenges that may occur for successful E-governance implementation. Ghimire discussed about the E-governance role in service delivery in context of Nepal. He discussed the current projects initiated by the government and highlighted the objective of E-governance in Nepal. Similarly different wprk of Bhattarai talk about various kinds of E-government action plans and current development state of E-governance in Nepal [18] [21]. Kahrel, Shakya, Dhami, Ghimire and Bhattaria have discussed a lot of aspects of E-governance in Nepal and all find a lot of challenges for implementation in the current state as well as in future. They account for many varied reasons and problems from physical infrastructure to administrative policy that stop Nepal from achieving a highly successful E-governance practice [4] [9] [18] [21].

III. E-GOVERNANCE IN NEPAL

A. E-governance developments in Nepal

E-governance process initiation started in Jan, 2005 with the publication of Final e-Government Master Plan (eGMP) consulting report published on Nov, 2006 in collaborative initiation [22] involving High Level Commission for Information Technology (HLCIT), National Information and Technology Center (NITC), Ministry of Environment Science and Technology (MoEST), Ministry of Industry and Commerce (MoIC), Ministry of General Administration (MoGA) and Ministry of Finance (MoF). eGMP was carried out by Korea IT Industry Promotion Agency (KIPA), which laid the ground work for e-Government transformation [11][18][22][23]. The project was supported and funded by Asian Development Bank.

In order to enhance the capability of E-governance, government of Nepal revised and brought new policies and regulations in practise to further strengthen the E-governance implementations in Nepal. The different regulatory policies that were developed are depicted in the table shown below.

Table 1: Representing IT/E-governance regulatory policy Development in Nepal. Data compiled from references [9][18][22][26][27]

1	National Communication Policy, 1992
2	Telecommunication Regulations 1997
3	Telecommunication Act, 1997
4	Copyright Act, 2059 (2000)
5	IT Policy in 2000 in Nepal.
6	Electronic Transaction & Digital Signature Act 2057 (2000)
7	Telecommunications Policy 2004
8	National Strategy Paper on ICT (National Planning Commission),2002
9	Electronic Transactions Act and Digital Signature Act 2008
10	Cyber Law in 2007
11	New IT policy in Nepal 2010

Private organizations played a vital role in the development of ICT enabled services and E-governance practices. The major initiations of private sector included introduction of tele-services including telephone and internet services, Internet Service Providers (ISPs) 21 in number, six VSATs (Very Small Aperture Terminal), eight radio paging service provider and some 35 software-developing companies [18] [22]. These technological inputs by the private organizations paved way for many small and vital activities to strengthen E-governance practises.

Currently, out of the total of 26 ministries, 22 ministries have already introduced web and email IDs [22], while only around 50 percent of the government departments have the web presence. It is further noted that only few websites keep themselves updated and a majority of them are having outdated information. The website are generally static and have very less interaction quotient in them. The information in some cases is of no importance but only depicts poor management of E-governance capabilities. Software development and computer system infrastructure development became a primary activity in all ministries and the use of specific computer software took up a major trend. Some application specific to main functional areas include:

Table 2: Representing computer applications specific to main functional areas. Data from references [9][18][22][25][27]

1	Financial Comptroller General Office (FCGO)
2	Inland Revenue Department (IRD)
3	Election Commission
4	Custom Offices
5	Department of Health – HMIS
6	Department of Land Information & Archives
7	Immigration Office at Airport
8	E--Approval application at MOGA
9	General Post Office
10	Company Registration
11	Nepal Police

Table 3: Representing applications development of existing systems. Data from references [9][18][22][23][27][26]

1	Vehicle Registration (G2C) - Name transfer, Blue Book renewal
2	Pollution checking, driving license exam and issuance
3	Registration of Cottage and Small Industries (G2B)
4	E-Approval - Document Management System (G2G)
5	E-Procurement (G2B)
6	Company Registration (G2B)
7	E-Postal service (G2C)
8	Government Accounting system -Disbursement centers (G2G)
9	Personnel Management System (Civil Service Records) (G2G)
10	E-HMIS (Ministry of Health) (G2G)
11	Revenue (G2B)

Besides the development application specific systems and software in the ministries and government offices, Nepal Telecommunication (NTC) has also played a vital role in the development of ICT based product and services. The data from NTC shows that there is 83.2% of penetration of mobiles compared to limited mobility (6.32) and fixed (3.31) types of communication services in recent times.

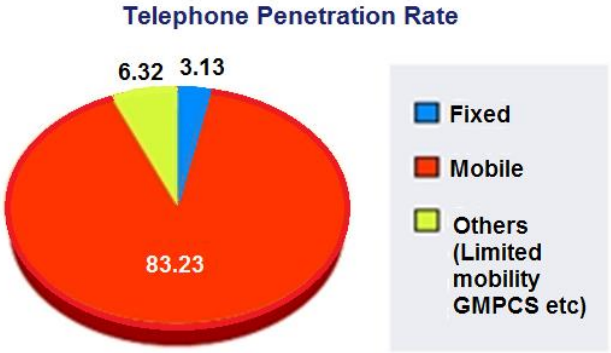

Fig 1: Telephone penetration rate in Nepal, MIS report 2013/14, Nepal Telecommunication Authority.

The data of telephone users has seen a drastic increase of 18.8 % in the fiscal year 2013/14 compared to fiscal year 2012/13. Similarly services like GSM internet, ADSL, CDMA, EVDO and dial up have gained customers with GSM internet sharing 84.38% of the share. The current trends indicate that altogether 5.0% of increase is seen in the

telecommunication services back in Nepal compared to world trend. The development of telecommunication has broadened the sphere of E-governance practises in Nepal. It can be seen that the trend looks positive and it is more inclined towards mobile phones, so the E-governance services at G2C model must focus on mobile technology to find the real application of E-governance in the coming days.

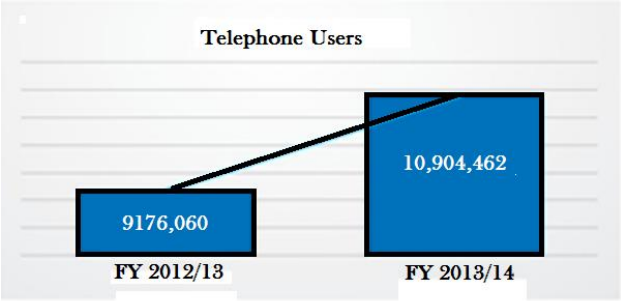

Fig 2: Growth of telephone user for two fiscal years. MIS survey report 2013/14, Nepal Telecommunication Authority.

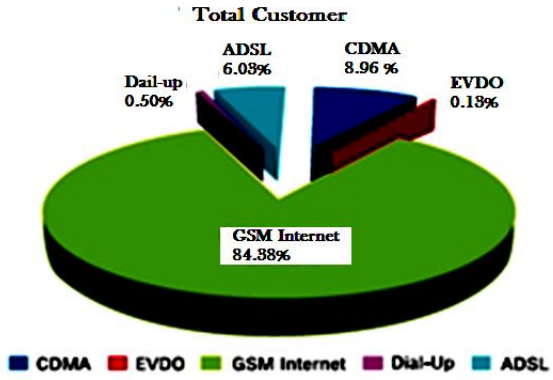

Fig 3: Different services subscribed by the customers for the fiscal year 2013/14. MIS survey report 2013/14, Nepal Telecommunication Authority.

The growth of mobile technology also indicate that this technology became popular due to geographical structure of Nepal. Nepal is geographically diverse and technologies that can overcome these hindrances will only be popular or multiply in use in the coming years. Government should seriously plan and devise strategies around these technologies so that E-governance becomes popular as a governance model in days to come.

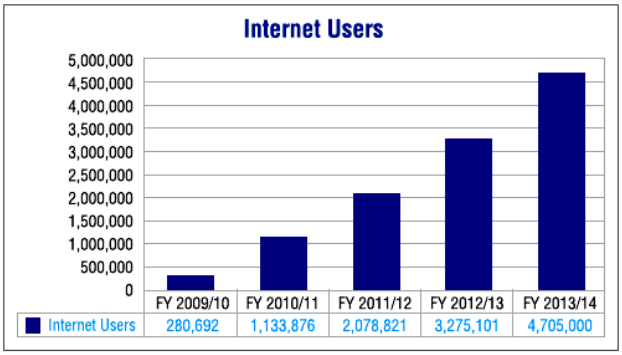

Fig 4: Comparision of growth Internet user in Nepal. MIS survey report 2013/14, Nepal Telecommunication Authority.

In a nutshell it can be seen that though Nepal has started late in the practice of E-governance model it is still on the positive side. Many initiations have shown a good growth and despite the critical political scenario and energy crisis, it is still growing every year.

Table 4: The global growth trend of Telecommunication and data services and Nepal's position. Source, Annual report 2013/4, Nepal Doorsanchar Company Ltd.

Global Growth Trend (%)

	Actual		Projections	
	2012	2013	2014	2015
World Output	3.4	3.3	3.3	3.8
Advanced Economies	1.2	1.4	1.8	2.3
Emerging Market and Developing Economies	5.1	4.7	4.4	5.0
China	7.7	7.7	7.4	7.1
India	4.7	5.0	5.6	6.4
Nepal	4.8	3.9	5.5	5.0

B. Global situation E-governance in Nepal

E-governance situation of Nepal is not so impressive in the global picture. E-Government Development Index that represents the state of E-Government Development of the countries is not so appealing. In the world ranking Nepal is in 165 position compared to 153rd position in 2010. In the comparison of SAARC regions Nepal is in 7th position in 2010 and 2014 survey.

Table 5: E-governance development index. Source: UN, E-government, Survey 2014/15

E-Government Development Index by region—ASIA

Rank	*Country*	*Sub-region*	*EGDI*	*Online Service Component*	*Telecomm. Infrastructure Component*	*Human Capital Component*
52	Malaysia	South-Eastern Asia	0.6115	0.6772	0.4455	0.7119
94	Maldives	Southern Asia	0.4813	0.3622	0.3952	0.6865
65	Mongolia	Eastern Asia	0.5581	0.6142	0.2714	0.7887
175	Myanmar	South-Eastern Asia	0.1869	0.0236	0.0084	0.5288
165	Nepal	Southern Asia	0.2344	0.1575	0.1684	0.3774
48	Oman	Western Asia	0.6273	0.7323	0.4873	0.6624
158	Pakistan	Southern Asia	0.2580	0.3228	0.1174	0.3337

Online services index indicates that application of ICT infrastructure in which subscribers can communicate with one another and exchange data in electronic form and such accessing of data carries a price. Nepal's online Service Index consists very low. The position of Nepal in SAARC region is 7th. [24] According to UNDP Report 2010, India is successfully maintained 1st position with 0.3683 index and Bangladesh holding 2nd position with 0.3556 Index in SAARC regions‟ eight countries. [21]

Table 6: E-participation index, Source UN, E-government survey 2014/15

E-Participation Index and its utilisation by stages

*Rank 2014**	*Country*	*EPI*	*Total (%)*
97	Mozambique	0.3333	31.03
172	Myanmar (ex-Birma)	0.0784	8.62
97	Namibia	0.3333	31.03
172	Nauru	0.0784	8.62
110	Nepal	0.2941	27.59

Table 7: Online service index and its components, Source UN, E-government survey 2014/15

Online Service Index and its components

Country	*OSI*
Namibia	0.3228
Nauru	0.0551
Nepal	0.1575
Netherlands	0.9291
New Zealand	0.8425
Nicaragua	0.0945

IV. Research Methodology

The research method employs survey based on semi structured questionnaire and interview with officials of different ministries and employees. The survey was conducted with Vice Chairman, High Level Commission for Information Technology (HLCIT), E-Governance experts, computer engineers and employees of (HLCIT, Ministry of Finance, Land Revenue Department, Ministry of General Administration, Ministry of Physical Planning, Works and Transport). Further the study of annual reports of government agencies and NGOs, data collection from websites, articles, national and international journals were taken into consideration. The primary data consisted of direct survey based on questionnaire for around 80 heads and employees of different ministries. The survey consisted 12 structured question and interview about E-governance practices. To support the survey annual report data, official publications and other resources were also considered as a secondary source.

A. Data analysis and findings

The successful implementation of E-governance in Nepal, is understood on the basis of opinions, perceptions, impressions and beliefs of a group of people directly working with these systems. The strategy followed is that of, the interviews conducted with E-governance practitioners, beneficiaries and the review of published documents. This helped in identifying the answers to the research questions that include major challenges faced in the implementation of E-governance in Nepal and also identifying the key factors that may affect the successful implementation of E-governance in Nepal. As it is already mentioned in the literature review that several review studies have failed to focus on the unique factors of E-governance practises in Nepal, this study attempts to fulfill the gap in knowledge.

The survey data and investigation of annual reports and publications and press release from ministries brought the current picture of E-governance practices in Nepal. The picture not only portrayed the current practices but also highlighted the problems and challenges associated with the E-governance. A further analysis of global initiatives in ICT and E-governance brought the current position of Nepal in this context. The data analysis and findings are discussed in the following sections and portray about challenges and barriers on the basis of respondents answer to the questions. A successful E-governance implementation is dependent on organizational, technical, social, and financial factors which act as opportunities as well as challenges/ barrier for it. This research identifies eleven barriers/challenges to e-Government services adoption in Nepal which are evaluated by the respondents. (1: not a barrier, 2: important barrier, 3: very important barrier). The barriers that might provide challenges to e-Government services implementation in Nepal are listed below.

Table 8: E-governance challenges and barriers in Nepal, direct survey based data collection and semi structured interview

		NB	**IB**	**VIB**
S.N	Challenges/Barriers	%	%	%
1	Inadequate IT Infrastructure	0	43.7	56.2
2	Lack of awareness for e - Government services	13.7	47	37.5
3	Lack of security and privacy	3.75	58.7	37.5
4	Lack of confidence / trust in use of e - Government services	3.75	37.5	58.7
5	Policy vacuum and Legal frame work	0	36.2	63.7
6	Insufficient skilled human resources	8.75	65	26.2
7	Lack of public-private collaboration/partnerships	11.25	61.2	27.5
8	Lack of training and knowledge transfer	0	31.2	68.7
9	Lack of e -Government transformation / resistant to change	0	35	65
10	Budgets and operating costs	5	52.5	42.5
11	Lack of clear strategic vision	7.5	37.5	55

NB: Not a barrier **IB:** Important barrier
VIB: Very important barrier

The survey clearly emphasized that all the eleven identified challenges/ barriers were agreed upon by the respondents in successful implementation of E-governance in Nepal. The respondents felt that policy vacuum (63.25%), training and knowledge transfer (65%) and resistant to change (65%) (e-governmental transformations) were the most important barriers that provide a big challenge for the successful implementation of E-governance. This is true as a clear policy of government dictates the real application of E-governance. Lack of discreet policy is a lack of clear vision and this leads to failure of any system. An E-governance being a technological innovation and application needs more attention in terms of policy and vision to gain maximum benefit out of it. Training and knowledge transfer was considered as a very important barrier by the respondents. They felt that if there is no proper training and knowledge transfer in the stakeholders and users of E-governance system, the use of system becomes less which leads towards the failure of systems. People feel reluctant and lack in confidence which makes them stern to use the technology and they escape it, which is not a good sign for implementing E-governance. Resistant to change (e-governmental) transformation is also considered as one of the most important barrier, as if people using the E-governance do not accept it, the system becomes a failure. This fact is not only relevant to E-governance models but is relevant to all software systems. When automation was forced in the organizations, many people resisted to use it as they found a loss of autonomy, lack of confidence and were not friendly in the use

of new technology and methods. Many respondents felt that Nepal is poor in IT literacy and there is very less technological friendliness in people, moreover the heads of different ministries are of older age and they find a kind of insecurity with the current systems, these factors can pose a big challenge for the implementation of E-governance in Nepal.

Respondents felt that a proper training, transformation of knowledge and awareness about E-governance can help to overcome the problem of resistant to change. Lack of security and privacy (58.75%), public and private collaboration (61.25%) and budget and cost (52.5%) were considered important barriers by the respondents. They felt that the fear of losing privacy, data and information was an important barrier of the E-governance implementation. People still lack in confidence after making a computer transaction or entry as they do not receive physical proofs, which make them less confident in system. Respondents stated that this was decreasing with the advancement of technology and time and the problem is slowly reducing and will be overcome in next few years. Private/public collaboration was considered another important barrier by the respondents. They felt that Nepal government is poor and lacks concrete planning and vision in the ICT implementation due to its bureaucratic structure. The major development in ICT in Nepal was due to private sector, they were the pioneers in terms of using computing and communication as a tool in their business. Similarly the public institutions also are much aware of technology compared to government sectors. These two sectors are more close to people and if government is able to collaborate with these two sectors in terms of E-governance implementations, it will speed up the process. Government will not only benefit in implementation part but will indirectly enforce awareness, transparency and high degree of collaboration. Similarly a proper allocation of cost and budget is another important barrier for the successful execution and implementation of E-governance practices. Respondents felt that there must be adequate budget for infrastructure development, training, workshops and seminars. The other challenges/barriers were considered important (50%) and very important (50%) by the respondents. They felt that all eleven barriers should be prioritized by the government of Nepal, if it wants to see a successful implementation of E-governance practices.

Overall a good picture was portrayed by the survey in terms of E-governance challenges and barriers for Nepal. The survey results were good enough to show the awareness of government employees in terms of E-governance practices. The most striking part was that they were able to identify that was lacking and what was needed for a successful E-governance implementation.

In order to understand the ICT awareness quotient in employees and officials a mini questionnaire was distributed that attempted to understand ICT literacy, software awareness and ICT infrastructure capabilities in the ministries. These sub questions were important part of the study as it depicted the readiness of employees for adapting with the E-governance implementations. The results of the survey are represented below.

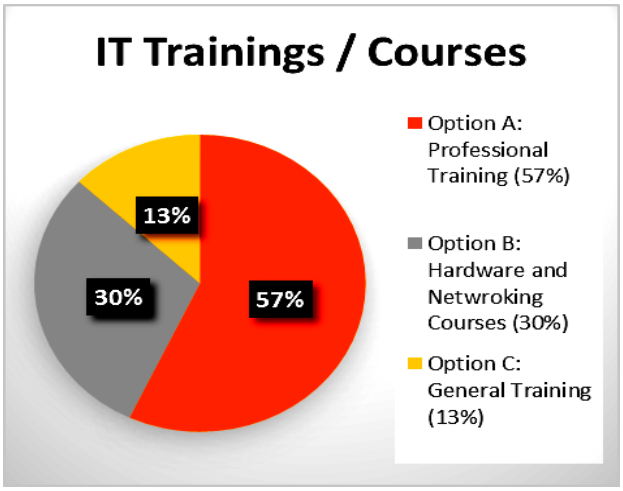

Fig 5: IT trained personnels in different government ministeries, direct survey result.

It was observed that 57% personnel's are trained professionally in the government ministries in IT, whereas 30% have got training in hardware and networking and only a very small portion of around 13% have a general training. Similarly, 98% of the computers are in a networked environment, compared to only 2% of the computers that are standalone. The standalone computers are generally used for typing purpose and printing of documents on the basis of payment. This clearly depicted that human resource is slightly above average in the use of ICT systems and none of the employees are reluctant from the technology.

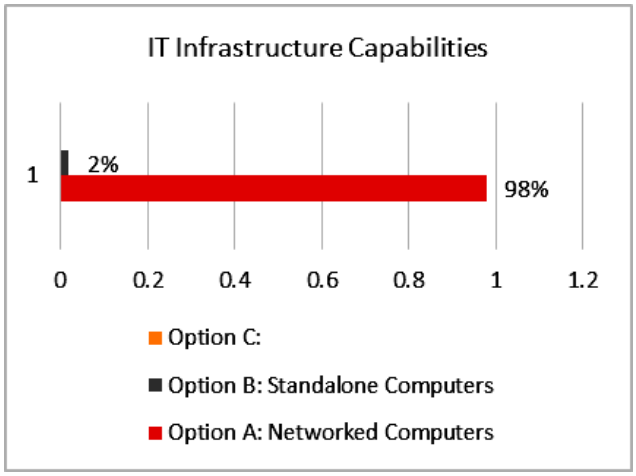

Fig 6: Networking vs standalone computer scenario of the ministeries, direct survey results

The survey on the software scenario also highlighted a positive represntation of the awareness quotient about software licensing and the kind of operating system in use. It was noted that windows based operating system was the mostly used operating system (68%) in the ministeries and Linux (24%) was next popular operating system. Some other operating systems like MAC and Unix formed a very small share of around (8%) only. Regarding the Intellectual property

right and electronic transaction act, around (50%) of the software used in the ministeries were licensed, open source (27%) and around (23%) were pirated ones.

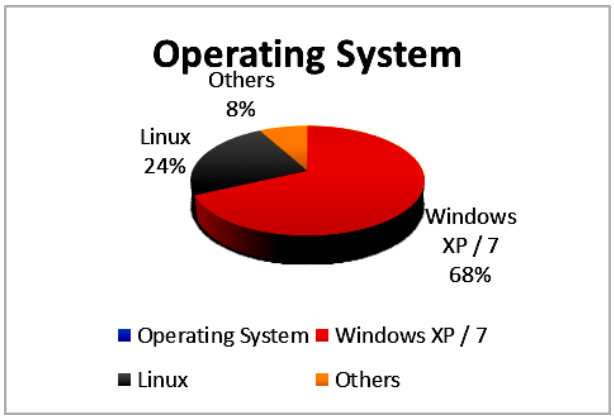

Fig 7: Operating system scenario of the ministeries and government offices, direct survey results

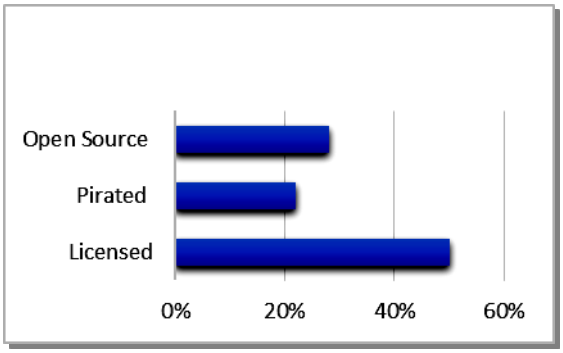

Fig 8: Software license scenario of the ministeries and government offices, direct survey results.

B. Major discussions

The interviewee's were of the view that that education improves knowledge, skills, and technology transfer and increase awareness of E-governance services. They believed that available infrastructure in Nepal is central not enough to support the implementation and participation of E-governance services. A drastic change in the communications architecture must be brought and all diverse regions should be integrated with the central ICT infrastructure. The use of computer/Internet access should be prioritized with good bandwidth and accessibility. Language was considered as another big obstacle as the ICT technologies in Nepal highly rely on English language and majority of Nepali mass is still not comfortable, this was one of the biggest barrier for successful E-governance implementation.

The interviewee's highlighted several benefits and positive impact of implementing E-governance services. According to them time, effort and will speed of working procedures of government and people has become more efficient. The best part was realized in the transparency and reduction of corruption. They also felt that some remote areas find a lot of application of the ICT technology and transfer of information and data is much faster compared to earlier days. Though acceptance of this modern innovation was popular with the young generation officials the older bureaucratic structure found it as a problem. The senior officials had mistrust, lacked confidence and worried on security issues. E-governance transformation was identified as the major barrier in implementation.

The interviewee's felt that government should proceed in planned way to make people aware of E-governance practises. Programs related to E-governance should be enforced in school university curriculum and high schools. A continuous monitoring & evaluation of E-governance practises should be enforced which should bring revisions, research and development activities in the forefront. A good financial support with clear vision should be prioritized to see the full-fledged implementation of E-governance in Nepal.

IV. CONCLUSION AND RECOMMENDATIONS

This study presented the results of a direct survey into the issues surrounding the practices and implementation of E-governance in Nepal. It was noted that Government in Nepal is still in its early stages and only 50% of its government agencies implement E-governance services. The country has challenges in all sectors which include political, social, technology and economic. Power crisis is one of the biggest challenge and puts a lot of obstacles in the current implementations. The plans should be tabled, to seriously think about the alternate power alternatives in days to come. It must be noted that a bad infrastructure and economic problems can often derail E-governance services initiatives, similarly poor awareness and lack of quality manpower can be fatal. So immense measures and concrete planning should dictate the E-governance models.

This study provides substantial contributions to Nepal's E-governance practices, initiatives and as well as to the growing body of knowledge surrounding the topic. This study could serve as a blueprint for strengthening E-governance practise and services in Nepal. The government in particular needs to overcome the barriers of implementation of E-governance as discussed in the above sections and this may help developing countries like Nepal to exploit the potential benefits of E-governance in coming days. The following recommendations are forwarded from our study in order to see a good implementation of E-governance in Nepal.

- Awareness and Education: Education in ICT and regular training courses on knowledge on E-governance is a core requirement.
- Learning and Knowledge Sharing: The government of Nepal should learn from countries who have successfully implemented E-governance.
- Transformation with local context in picture: Nepal is a non-English speaking country, therefore it is important for the E-governance projects to take care

of the language barrier and try to implement local language and practises as a priority.

- Partnership with the private sector: It is clearly seen in the study that private sector plays a vital role in development of ICT in Nepal, therefore government should prioritize private/public partnership in their plans.
- Strategy for transformation and resistant to change: The stiff structure and the need of transformation should be dealt with educating the mass and generating the confidence in the end users and policy makers.
- Political and financial support: Infrastructure development and political support are the most important and crucial part of E-governance in Nepal. The government should be clear in allocating sufficient amount of funds and political support for the system.

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