Implementation Challenges of e-Governance in Nepal and Possible Steps towards Solutions[*]

Deepak Bahadur Dhami, Iván Futó

Corvinus University of Budapest
e-mail: `dhami_deepak@hotmail.com`, `ifuto@informatika.uni-corvinus.hu`

Abstract

e-Governance has become a popular focus of government efforts in many developed countries and, more recently, in several developing and least developed countries. Nepal is one such least developed country that has embarked on an e-governance initiative. It is true that e-Governance has the potential to minimize administrative and development issues. However, it is obvious that compared to developed countries, additional effort is necessary when implementing e-Governance in developing or underdeveloped countries like Nepal. This paper focuses the internal and external issues and challenges that Nepal is currently facing with regards to implementation of e-Governance. Although it emphasizes on the problems stifling the growth of e-Governance, the main objective is to present the hindrances in the context of what needs to be done to deal with the current issues and challenges. The recommendations are presented in terms of specific steps to bring into perspective the priorities that may be considered while making strategic plans for national level e-Governance implementation.

Keywords: e-Governance, ICT, GPR, Interoperability, Strategy, Infrastructure, Issues

1. Introduction

Nepal is a landlocked country with about 29.3 million people in south Asia. With an area of 147.181 square kilometers, it lies between two Asian giants India and China. Nepal is characterized by highly diverse geography, difficult terrain and lack of access to government services for people, especially in the rural and remote

---

areas; e-Governance can be the easy way to delivery government services to people throughout the country. With e-Governance, it is also expected to bridge the gap of digital divide in the country.

The rapid improvements in information and communication technologies are revolutionizing the way modern governments deliver services to the citizens. While the developed countries have been able to benefit greatly from the wide use of IT, many developing and least developed countries are still grasping to make sense of how IT fits into their problems. The trend is true in the case of e-Governance also. According to Heeks (2003), most implementation of e- Governance implementation in developing and least developed countries fail, with 35% being classified as total failures and 50% as partial failures [1]. This is a bitter fact, especially least developed countries like Nepal has very limited resources and money to spend and cannot afford to wastefully spend large amounts of money typically of such projects. In Nepal, e-Governance has been talked about a lot; some government offices have even taken innovative steps towards certain e-Governance projects. In the current scenario the speeds of its development is very slow and even the government is not taking it very seriously. However the development of ICTs and e-Governance are looked upon with great hopes to materialize the country's dream.

2. Conceptualization of e-Governance

"e-Governance" refers to the use of ICT and e-Commerce to provide access to government information, communicating within the government organization, delivery of public services to their citizens and business partners. In e-Governance, ICT support and stimulate good governance through better public service delivery to individual citizens and businesses, transparency in information, and easier citizen access to authorities.

According to World Bank (2007), "E-Government" refers to the use by government agencies of information technologies (such as Wide Area Networks, the Internet, and mobile computing) that have the ability to transform relations with citizens, businesses, and other arms of government. These technologies can serve a variety of different ends: better delivery of government services to citizens, improved interactions with business and industry, citizen empowerment through access to information, or more efficient government management. The resulting benefits can be less corruption, increased transparency, greater convenience, revenue growth, and/or cost reductions.

The terms e-Governance and e-Government are often used interchangeably. The choice of terms depends on what they are emphasizing; e-Governance emphasizes the governing processes whereas e-Government emphasizes the electronic infrastructure. e-Governance is composed of three major components.

1. Government to Citizen: deals with the relationship between government and citizens. For example payment of utility bills or Issuing and renewing of driving license.

2. Government to Business: consists of the electronic interactions between government agencies and private business entities. For example government procurement process through internet.

3. Government to Government: refers to the relationship between governmental organizations and interaction between their officials. For example use of e-mail for internal government communication.

3. Current status of e-Governance development in Nepal

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

3.1. Brief History of ICT in Nepal

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

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

3.2. Development of ICT infrastructure and Networks

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

mobile, C-phone, Sky phone, Sky data, internet, V-SAT and ADSL. Comparing with other sector, the telecommunication facilities have been improved remarkably in recent years. As per the report of Nepal Telecom Authority, Service penetration can be seen in Table 1 below [3].

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

Note: Projected total population for 2009 is 275,004,280.

Table 1: Service Penetration

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

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

3.3. Development of ICT Education

Skilled human resources are one of the major problems in developing countries to implement e-Governance to the acceptable level. Four Universities (Tribhuwan University, Kathmandu University, Pokhara University and Prubanchal University) and their affiliated colleges provide IT education in Nepal. Beside these, a lot of Private IT institutions provide specific trainings and IT education to fulfill the requirement of IT professionals in the country. The 'National ICT Workforce Survey 2005', carried out by Computer Association of Nepal (CAN), shows that of the total ICT workforce, only 22.49 percent of the work force is engaged in real ICT activities such as programming software and hardware development, networking and animation compared to around 71.28 percent in professions such as teaching, training, secretarial jobs and other ICT related activities [4]. Although the production of ICT human resources in Nepal seems to be positive but the high percentage of them are migrated to different countries due to many reasons.

3.4. Government initiatives, Opportunities and Achievements

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

In the case of Nepal, a lot of work has been done for e-Government system. The Government of Nepal, with the support of Korea IT Industry Promotion Agency (KIPA), prepared an e-Government Master Plan (EGMP) in November 2006. The master plan basically (i) establishes the vision, strategy and framework for Nepal's e-Governance (ii) suggests major e-Governance projects and road map of e-Governance (iii) defines direction of the executing organization and restructuring legal framework. According to EGMP, E-government mission statement is: "*Improve the quality of people's life without any discrimination, transcending regional and racial differences, and realize socio-economic development by building a transparent government and providing value added quality services through ICT.*" [5].

In order to establish the foundation for the investment phase of the Master Plan, the Asian Development Bank (ADB) provided a project preparatory technical assistance (PPTA) to the Government of Nepal. The PPTA has identified 23 program components, defined responsible executing/implementing agencies, assessed risks, allotted priorities, and categorized the applications types. The ADB's fact finding missions and Appraisal mission visited Nepal in 2007 and it proposed ADB's grant of $25 million, the Government of Republic of Korea Economic Development Cooperation Fund (EDCF) loan of $30 Million, and the Government of Nepal finance of $9.0 million [4].

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

Enterprise Architecture is the framework for the e-Governance project. It is

based on open standards supporting interoperability for developing application solutions as well as quality assurance and testing. The framework would help during integration, interoperation of different e-Governance applications and systems. High Level Commission for Information Technology (HLCIT) has already floated tender for this and hopefully very soon work will start. Many Government agencies are developing ICT applications separately and some of them have operated the applications for their administration and public services. The following are some examples government agencies with applications.

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

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

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

Even though the various financial and technical supports from other countries and organizations to develop and implement the e-Governance in Nepal, the result is not up to the acceptable level. Government is gaining some unsatisfactory progress in its implementation. What could be the reason behind it and what

would be the steps to be carried out by government to achieve their objectives are the major questions at this time.

4. Major challenges of e-Governance in NEPAL

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

4.1. Insufficient Education

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

4.2. Lack of awareness of public as well as government officials about ICT

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

4.3. Employee Resistance to Change

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

revenue department staffs are those who caused most problems because they fear
to lose the extra income receive from bribes.

4.4. Inadequate skilled Human Resource Capacity

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

4.5. Lack of government's strong will and stand due to political instability

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

4.6. Inadequate ICT infrastructure and Access

ICT infrastructure and its access is the backbone of any e-Governance system.
Although the telecommunication facilities have been improved remarkably in recent
years, its current status is not enough to fully implement the e-Governance in Nepal.
Most of the facilities are centralized to capital and few cities. Internet penetration
is very low with 2.55% and its accessibility still remains restricted to city area. Still
some of the rural districts do not have telephone facility at all. This figure is not
enough to run the e-Governance system smoothly. Most ministries have a largely
inadequate number of working computers. Very few government offices have their
own Local Area Network (LAN) and their computers connected to the Internet.
However, it is also true that some government offices have computers that remain
almost unused due to lack of planning. Similarly, supply of electricity is a big
problem in Nepal so it needs to be increased.

4.7. Limited Information Sharing and Transparency

In Nepal, several e-Governance initiatives have been running in government agen-
cies. Some of them are implementing for the service and some of them are still

under development. Lack of information sharing, transparency and linkage among them is a challenge which may lead to the bottleneck in good governance and their integration to IT system of other government systems.

4.8. Less Priority

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

4.9. Lack of reliable training program among the government officials

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

4.10. Sustainability

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

5. Possible Strategies Towards Solutions and Recommendations

5.1. Evaluate e-Government Master Plan and Develop New Vision/Strategies/ Leadership for e-Governance

E-Government Master Plan is a long term vision and strategy to implement e-Governance in Nepal. E-Government master plan needs to be evaluated and try to find out where we are; where is the destination; How to go there. The pilot projects undertaken should be evaluated and classified as success or failure. Bottleneck and causes of failure should be identified and documented. With this evaluation, new vision and strategies should be developed and implement. The most important factor when meeting the challenge of e- Governance implementation is to develop a

strategy that is realistic, particularly in terms of the scope and size of the programs. One size does not fit all for e-Governance projects.

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

5.2. Advancing ICT Infrastructure

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

5.3. Government Process Reengineering

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

5.4. Create and retain adequate skilled IT human resource

Well planned program is needed to create a greater number of skilled IT human resources to implement e-Governance in Nepal. For this strong tie up between university, industry and government should be developed. Steps need to be taken to monitor the quality of training institutes and university affiliated colleges. Retaining the massive skilled IT human resources is another big challenge. To stop this brain drain, a necessary steps needs to be taken like motivating them by giving

suitable employment and revising salary regularly. In the mean time, deployment of skilled trained personnel throughout the country is also important to run e-Governance projects smoothly.

5.5. Increasing training to improve IT literacy to government officials

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

5.6. Organize Public Awareness Programs on ICT

The e-Governance system is ultimately for the people. So public must be aware about the e-Governance system, its benefits and mechanism of its operation. People of different discipline are involved in e-Governance system, so frequent public awareness programs has to be organized on ICT. Since Nepal has very low literacy rate and culture of technology, frequent training programs would be very much effective in a very short period of time. Similarly regular awareness programs will help to convince people and finally ensure the privacy and reliability of the system. Conduct the awareness programs in citizen of online services and how to transact on portals.

5.7. Develop a mechanism to quick monitor and track the progress of the project

Each Ministry should develop IT department to monitor and track the progress of the e- Governance projects. This department will play the bridge between other ministry that makes better coordination for information sharing and accessing. It should make the relationship with IT industry and University for their requirement and future planning.

To increase the service consumption and public participation, the government Web Portals and internet based applications should be increased which will provide actual transactional service. In Nepal, large numbers of Telecenters are operated in rural areas. So effective monitoring of Telecenter is highly required to reach the targeted objectives. It is an effective way of providing ICT and e-Governance facilities in rural areas to the people of under-privileged society of Nepal.

5.8. Prioritize the issues of Enterprise Architecture and Interoperability

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

5.9. Assistance from donor community by raising awareness

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

5.10. Develop sustainable models for e-Governance

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

6. Conclusion

Nepal is still at an early stage of e-Governance development and its implementation. In these days Nepal has shown some progress in ICT sector but it is insufficient to implement e-Governance throughout the country. The popularity of ICT and e-Governance is increasing day by day in the country. However, Nepal is not yet ready for advanced e-Governance services but it is ready for basic services. The Government is keen and committed to promote e-Government. There are several challenges and also opportunities. For the implementations of e-Governance it is still required to improve basic foundations like literacy rate, ICT infrastructure, awareness, funding, and commitment and so on. Beside this cooperation from government officials and leadership commitment will contribute to a smother progress.

References

[1] Heeks, R. Most e-Government for Development Projects Fail: How can risks be reduced? iGovernment working paper series, paper No. 14, 2003.

[2] Danish Dada, A failure of e-Government in developing countries: A Literature review, The Electronic Journal of Information Systems in Developing Countries, Vol. 26 , 2006

[3] MIS Report Nepal Telecom Authority Vol. 32, 2010.

[4] National IT Workforce Survey 2005, Computer Association of Nepal (CAN).

[5] KIPA, Government of Nepal, e-Government Master Plan Consulting Report, 2006.

[6] Asian Development Bank. Aide Memoire of ICT Development Project, Fact-Finding Mission (2007)

[7] Kiran Gopakumar, Rajaleckshmi, E-Governance Services through Telecenters: The Role of Human Intermediary and Issues if Trust, MIT Press in its journal Information Technologies and International Development, Vol. 4 , Pages 19-35, 2007

[8] Thomas B. Riley, Strategies for the Effective Implementation of e-Government Projects, Journal of Business and Public Policy, Vol. 1, No 1 (2007)

[9] PPTA, Asian Development Bank, Project Preparatory Technical Assistance Report, 2007

[10] Madaan P. Pariyar, e-Government Initiatives in Nepal, Challenges and opportunities, ACM International Conference Proceeding Series; Vol. 232, Proceedings of the 1st international conference on Theory and practice of electronic governance, Pages 280-282, 2007

[11] Sameer Sachdeva, e-Governance strategy in India, White Paper on e-Governance strategy in India, 2002

[12] Electronics Commerce: A managerial Perspective, Efraim Turban, Jae Kyu Lee , Dave KIng, Judy McKay, Peter Marshall, Prentice Hall, 2008.