Implication of E-Government Implementation in Nepal

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Abstract: E-Governance, as an effective means of governance in Nepal was already conceptualized with the implementation of the first IT Policy in the year 2000. However, the implementation of e-Governance has not been largely successful. With failure to effectively implement e-Governance and the persisting digital divide, it has become necessary to find an alternative strategy for e-Governance implementation in the country. Socio-economic and cultural changes have created a huge growth in the telecom market in Nepal. Even still, policy makers and experts in the field have not yet set focus on m-Governance which could take advantage of the growth in the telecom sector and enable the country to implement an effective form of e-Governance using mobile technologies. The issues with e-Governance implementation observed in Nepal and the possibility of using a sustainable m-Governance framework for overcoming digital divide is researched.

Keywords: E-governance, Unique Identification Card, OTP, SSL, Biometric Recognition.

I. INTRODUCTION

The information and communication technology (ICT) industry has got a very good expansion in the last two decades. India became a global leader in the ICT sector on the basis of its advantages of talent pool, lower operational cost and the innovative remote delivery model. Principally, ICT has two sectors, first information technology (IT) and second Communication. In the world's other country just behavior with India as a bureaucratic economy country but they don't know the India is leading IT market in the whole globe, Indian IT sector has played an important role in changing of the innovative entrepreneurs. The major growth drivers in this Indian sector are online retailing, cloud computing, e-commerce and E-governance.

The new revolutionary emergence in Information and communications Technology (ICT) has brought a novel plan for governance on the ground of possibility. E-Governance makes comprehensive decisional processes and the use of Information and communications Technology (ICT) for proper contribution of Indian citizen in public affairs, as they are important participants in this e-Governance system. The aims of implementing e-Governance are to improve governance processes and outcomes with a proper vision to get better delivery of public services to citizens. As some authors have described e-Governance as the e-business, it seems suitable as both e-Governance and e-business use similar hardware, technologies and infrastructure. Conversely the

market definitions are widely anonymous thus validating e-Governance as a separate area of research. However, there are various definitions of e-governance; the aims of governments are indisputable: maintaining security, administering proper justice, providing the institutional infrastructure to the national economy and ensuring that vital social capital is augmented through improvements in health and education.

A broad definition of e-Governance proposes following changes of government in two related aspects:

1) Renovation of business of governance i.e. decreasing costs, improving service delivery and renewing processes;
2) Follow-up and feedback of the functions and processes of democracy itself.

The emerging results are diminished costs, lesser corruption, improved transparency, new revenue generation and more facilities for the citizens. India as a developing nation still lacks an E-governance enabling legal framework. The Information Technology Act, 2000 provides for the legal recognition to electronic communications, electronic transactions and storage of information and data in electronic form for subsequent reference. It also enables certain government agencies to facilitate filing; submission of forms related some specific processes, e.g. Income Tax Department, Banking Processes, etc. The Information Technology Act, 2000 was amended comprehensively in 2006 and 2008 which has made adequate effect in transforming some areas of governance into e-governance. But this is just a beginning. The real transformation from State to Welfare

State and Welfare State to Modern State with better governance will become Modern State with E-governance.

Efficient e-governance is a novel, inventive and more transparent method to deliver government services to citizens and exchange information with them in a more convenient, facilitate and transparent way with saving time and money.

E-governance (Digital Governance) is an upcoming and is talk of the town in every field of the society/system. Not only the technical but also the common man of the system/society has begun to understand its importance. Theoretically and practically this is a new system/subject for researchers and is growing exponentially. Lot of work has been done and endless has to be go because the invention or up gradation of new technology leads to the technical support i.e. the digital or we can say the cyber government or e-government. This is because every day a new technique project is being developed for doing the e-government and many times we are not having the proper method/model/technique to tackle that newly e-governance project.

The available method/model/technique mainly concentrates on part of the process (dealing with gathering, analyzing and presenting documents) and they do not explicitly identify the information flows in the process with secure manner. Many current methods are simply too technology specific. Also the prosecution and conviction of e-governance is completely based on paper work or less security not based on the standard models developed during last two decades. The largest gap in most of the presented days is, no attention has been paid on the delicate security enhancement and also on data acquisition process.

Adequately address the problem of lack of security services in e-government maturity models, in relation to the goal of this research work. This section briefly presents main problem of present e-governance security loopholes for IT security terms: security risks, security threats and security vulnerabilities in relation to egovernment services.

Security risk refers to the potential that given threats would exploit vulnerabilities of e-government systems, and consequently cause harm to the organization information assets. Security risks affect confidentiality, integrity and availability (CIA) of e-government information assets while being processed, transmitted and stored across e-government domains.

Security threats refer to any situation or condition it refers to very harmful for all organizations critical assets, through un-authorized access, destruction, disclosure, or modification of information assets. Security threats exploit specific vulnerabilities within e-government systems and applications;

Security vulnerability refers to flaws or weaknesses in system security procedures, design, implementation, and/or internal controls that could be exploited by threat sources. Reducing any of the three elements, security threats, security vulnerabilities and impact, could result into a significant reduction of security risks.

II. BACKGROUND

Federal Democratic Republic of Nepal, which used to be a Democratic monarchy not long ago, is a nation that is nestled between Tibetan Autonomous region of China and India. It is a country of around 27 million people as per the census of 2011(Central Bureau of Statistics, 2014). It is a country of diverse cultures and geography. The country is struggling with development and its economy. Over 25% of those living in Nepal are considered impoverished, per World Bank (Uematsu, Rizal, & Tiwari, 2016). Nepal is a one of the Least Developed Countries or the LDCs as listed by United Nations. In 2016, the country was among the 48 countries that were listed as LDCs by the United Nations. The country has been enlisted as an LDC by the UN since 1971. Nepal also has a history of political instability. There have been major regime changes in the past four decades and even now it is in a state of transition. The new constitution of the country that was promulgated in 2015, is in process of implementation with major changes in governance structure ("President promulgates Constitution of Nepal," 2015).

E-Governance in Nepal is lagging even when comparing to neighbors like Bhutan and Bangladesh with the E-government Development Index of only 0.3458 as per the United Nations report of 2016 compared to 0.3799 and 0.3506 of Bangladesh and Bhutan respectively (United Nations Department of Economic and Social Affairs, 2016). The core problem with e-Governance implementation is the political instability within the country. The Communist Party of Nepal – Maoists (CPN-M) started militant struggles in 1996 and it lasted a decade until 2006. The war took the lives of 13000 people (Do & Iyer, 2010). Since then the country has been in a lengthy process of political transition. This has caused development works to move in a sluggish rate. Except for the political situation, another challenge for the establishment of eGovernance in Nepal is the economy and difficulty building infrastructure due to the geography (Kharel & Shakya, 2012). The weak economy and large

population being under the poverty line means that many people in the country do not have access to proper education and computers (Ganesh Prasad Adhikari, 2010; Harris, Jacquemin, Ponthagunta, Sah, & Shrestha, 2003). Added to this, the geography of the country in most parts is extremely difficult and building infrastructure is a big challenge (Prennushi, 1999; Uematsu et al., 2016). Thus, many villages still do not have electricity, connection to internet or telephone network (Central Bureau of Statistics, 2015). Some positive steps towards development of e-Governance in Nepal are evident. The government has recognized ICT as a sector of primary importance (HLCIT NEPAL, 2010; IT Policy 2000, 2000). There have been clear efforts on establishing a level of eGovernance in the country. Some landmark progresses have also been achieved such as the establishment of Government Integrated Data Center (GIDC), establishment of standardization document, establishment of Public Key Infrastructure and few others. The wireless communication infrastructure of Nepal has also improved greatly with mobile telephone access reaching all 75 districts of the country and 4G LTE network becoming available in January of 2017 ("Nepal Telecom launches 4G service," 2017). As a result of the progresses being made Nepal graduated from Low-EGDI to MiddleEGDI in 2016 (United Nations Department of Economic and Social Affairs, 2016). 14 Even though Nepal does appear to have recognized the important of ICT sector and eGovernance, implementation of e-Governance in Nepal is lagging (Ganesh Prasad Adhikari, 2012; Dhakal & Istiaq Jamil, 2010; Kharel & Shakya, 2012; Sharma, 2014). Issues such as poor execution of e-Governance projects, lack of infrastructure and long term sustainability of projects have proved to be major roadblocks in implementation of e-Governance in Nepal (Ganesh Prasad Adhikari, 2010; Poudel, 2010). Multiple projects such as the National Telecentre Pilot Project (Harris et al., 2003) and the One Laptop Per Child (OLPC) project (Kraemer, Dedrick, & Sharma, 2009) that were aimed at reducing digital divide for implementation of e-Governance have deemed to be a failure (Lee & Sparks, 2014). Mobile phones have been considered as the key towards sustainable development (Fuchs, 2008; Henning, Janowski, & Estevez, 2014; UNDP, 2012; United Nations Department of Economic and Social Affairs, 2016). Mobile devices provide the opportunity towards achieving UN"s Sustainable Development Goals covering education, poverty alleviations and maternity health (Henning et al., 2014; WorldBank, 2012). Access to mobile phones have increased to such an extent that more people have access to mobile phones compared to

justice or legal system (UNDP, 2012). Similar trend has been noticed in Nepal as well (NTA, 2016a). Considering the scenario, mGovernance may be the solution to the issues with sustainable development that has been faced by Nepal.

III. EVOLUTION OF ICT POLICIES OF NEPAL

Since the initial IT policy of the government of Nepal that was drafted in 2000, Nepal has been working towards slow but steady progress in ICT and e-Governance. There are a few available resources that have discussed the ICT and e-Governance policies in Nepal (Chapagain, 2006; International Development Research Centre, 2003; Martin Chautari, 2014). The initial progress of e-Governance in Nepal was slow. Volatile political situation due to the ongoing armed revolution from the Maoist Party of Nepal took a toll on development work as Maoists began with widespread destruction of development infrastructures (Lawoti, 2003). The economy took a hard hit. The real GDP growth rate of Nepal was 6.44% in 1990–91, which came down to 4.9% in 2000– 01 (Upreti, 2006). Also the then centralized polity of Nepal has also caused lot of regions and minority groups in Nepal to be left out from progress (Lawoti, 2003).

Even if the IT policy of 2000 was the first IT policy in Nepal, the then His Majesty"s Government of Nepal did come up with National Communication Policy in 1992 which was followed by The Telecommunications Act and Regulations in 1997(Chapagain, 2006; "Nepal Telecommunication Act," n.d.). These helped to lay the foundation of ICT framework in Nepal. However, a more comprehensive IT policy in Nepal was drafted in the year 2000(International Development Research Centre, 2003; Shields, 2009). Coming from the IT policy of 2000 to the Policy of 2015 lot of progress has been made in the ICT policy development in Nepal. The evolution of ICT policy in Nepal is further discussed.

The Telecommunications Act and Regulations in 1997, which was enacted after formulation of the National Communication Policy in 1992 was the first act that liberalized the telecom sector and allowed private sector and foreign direct investment (FDI) in providing telecommunication services (Chapagain, 2006; Martin Chautari, 2014). This also marked the formation of the Legal and institutional framework for the regulation of ICT sector. Nepal Telecommunications Authority as an autonomous regulatory body was also established in 1998 under this Act (Chapagain, 2006; NTA, 2004). This was a monumental change in the ICT sector in Nepal. Without this step, ICT sector would not have removed the state

monopoly in the ICT sector and the sector would not have become competitive (Chapagain, 2006). Also, an important provision as per the provision of Telecommunications Act 1997 was the creation of Rural Telecommunication Development Fund. As per this telecom Licensee required to deposit 2 percent of their annual income every year on this fund to be used for development of IT infrastructure in rural areas(Silva & Tuladhar, 2005).

IV. COLLECTING FACTORS FROM LITERATURE REVIEW

In the literature review chapter were highlighted areas, where the previous results have limitations. The authors have found a number of obstacles and factors in the implementation process. However, these factors are different in different researches. 19

Below in this chapter is described results of previous works which helped to investigate and get a wider picture of questions, factors, obstacles and problem situations in the implementation of E-Government. This data cover a lot of aspects and factors. within the area of the implementation of such big and complex E-Government systems with different E-Services.

Vanka, Sriram and Agarwal (2007) in the 'Summary of Discussion of Critical Issues in E-Governance' wrote about E-Government project in United Kingdom. The UK government has commissioned a research to the 'Issues affecting the project life cycle of E-Government projects'. After the research they have published the "Common Causes of Project failure" in 2005. The analysts have defined seven classic causes of failure, based on this paper and other researches:

• Lack of strategic clarity (Lack of common view, with shared measures of success);
•Lack of sustained leadership at political and senior management level;
• Poor understanding and segmentation of user needs (failure to engage closely with users);
• Lack of effective engagement with stakeholders (users, suppliers, delivery partners elsewhere in the public, private and voluntary sector, politician and the media);
•Poor supplier management (strong partnership relationships with suppliers are essential);
• "Big Bang" implementation (many projects fail because they seek to deliver too much technological and organisational change at once).

Richard W. Schwester (2009, p.120) argued that E-Government adoption is a function of human, technical

and financial resources, where a political support is a key determinant of municipal E-Government adoption. In addition, he wrote about the privacy and security issues and the lack of community interest (Schwester, 2009, p.117). Author highlights the next key factors, which influence on the implementation:

• Lack of staff;
• Lack of knowledge;
• Lack of support elected officials;
• Difficulty justifying ROI;
• Staff resistance;
• Privacy issues;
• Security issues;
• Technology needs;
• Lack of community interest.

Hajed Al-Rashidi (2010) investigated the 'Internal Challenges of E-Government Implementation and Organizational Change'. He has defined a holistic framework for the E-Government project implementation.

V. RESULTS AND FINDINGS

The results of the single case study research done are discussed in this section. As discussed in the last section, the case study was done through study of available literature and semi-structured expert interviews. As discussed on the literature overview section, most available literature discusses the challenges in implementation of eGovernance. Other literatures discussed were the different policies and plans of the government and reviews of those. From the literature review the findings we can get that while there is an adequately positive progress in policy development and planning, multiple challenges seem to have created a situation of digital divide and inefficiency of implementation of e-Governance. The analysis of data from government sources also gave a better insight at the pattern of growth of the mobile industry in Nepal and the socio-cultural and economic aspects affecting it. In addition to this, results could also be drawn from the expert interviews that provided results that were similar to the results drawn from the literature overview. However, there are also additional or differing results that can be generated from the interviews. The results from the literature overview and the results from the expert interviews with some cross references to the theoretical background are presented further. 5.1 Progresses, roadblocks and possibilities – results from the literature overview Since the enforcement of the IT Policy of 2000 by the Government of Nepal, there has been significant progress towards development and use of ICT in Nepal.

Even though ICT was at a primitive stage in Nepal at the time, having a formal policy was an achievement. Major problem that existed were illiteracy, poverty, lack of infrastructure, lack of trained human resources, political instability and lack of leadership and commitment or coordination (Dhakal & Istiaq Jamil, 2010; Dhami & Futó, 2010; Kharel & Shakya, 2012; D. Shrestha, 2015). In addition to that there was the ongoing civil war that was led by the Maoist rebels which lasted until 2006 (Hachhethu, 2009; Lawoti, 57 2003). Coming from the year 2006 when the Comprehensive Pease Accord was signed (Hachhethu, 2009; United Nations, 2006) and the decade long civil war ended, there has been slow but significant progress in several aspects of e-Governance. Some issues have proved to be the major roadblocks. 5.1.1 Progresses towards e-Governance implementation The achievements in policy development and development of strategic plans are evident. There have been steady updates in policies related to ICT and e-Governance. IT Policy 2000, Telecommunication Policy 2004 and IT policy 2010 have been instrumental for lot of positive changes and progress in field of ICT in Nepal. Focus on ICT education from these policies, E-Governance Master Plan 2006 and ICT in Education Master Plan have paved way for satisfactory availability of ICT education in Nepal. Not long after the first IT Policy was implemented in year 2000, there already were four Universities in Nepal that were providing ICT education (Shakya & Rauniar, 2002). There has been largely significant participation from international organizations, foreign agencies and multi-lateral banks in the progress of ICT implementation in Nepal (Ganesh Prasad Adhikari, 2009; International Development Research Centre, 2003; Martin Chautari, 2014). ADB, KIPA, KCC and ITU among other organizations have actively participated in development of ICT and e-Governance in the country. The improvement of the institutional framework for implementation of e-Governance is also an important progress. The formation of institutional units such as HLCIT, NITC, IT Council, HLCIT, and the Department of IT (under Ministry of Science and Technology) provided a good institutional framework. Even though HLCIT was eventually dissolved (Maharjan, 2015; "Panel directs ministry not to dissolve HLCIT," 2011), the institutional framework still is sound and capable of steering the progress of e-Governance implementation. There are significant improvement in the infrastructure. The completion of GIDC, construction of "IT Park" in Banepa near Kathmandu and the start of the mid-hill fiber-optic cable project clearly are important achievements. Use of some

novel initiatives like telemedicine and e-education and m-banking are also observed through the review of the available literature (Banstola, 2008; Morrison et al., 2013; Roine et al., 2001). The ICT in Education Master Plan specifically tends to focus 58 on concepts of e-Education. There has been success with e-Education in Nepal to some degrees. M-banking has also been slowly accepted by Nepal"s population with already 1.5 million users using m-banking services provided by private banks ("1.5m use mobile banking services," 2016). Telemedicine has also already been experimented in Nepal with 25 hospitals already having telemedicine facility(Morrison et al., 2013). 5.1.2 Roadblocks in e-Governance implementation There are several critical roadblocks to e-Governance implementation that have been recognized through the review of the literature available as well. Lack of clear vision and also the political will towards implementation are the biggest problem that progress of e-Governance faces in Nepal (Dhakal & Istiaq Jamil, 2010; Dhami & Futó, 2010; Paudel & Kafle, 2016). Multiple regime changes, civil war from 1996 to 2006, the Royal massacre of 2001 and failure of conducting local elections for a lengthy period have badly affected the progress of e-Governance implementation(Do & Iyer, 2010; Sujan Shrestha, 2016; Upreti, 2006). The political climate has not improved still and issues of instability remains. Lack of vision and political will have caused e-Governance implementation to slip down the priority list and even important institutional units like the HLCIT has been dissolved (Maharjan, 2015; "Panel directs ministry not to dissolve HLCIT," 2011). An overall vision in the leadership for implementation of e-Governance in Nepal is largely lacking as well. The leadership in Nepal does not seem to possess the vision and understanding required for e-Governance implementation (G P Adhikari, 2007). With the vision lacking the leadership"s inability to commit to the case is apparent. Persistence of digital divide at a larger level does still seem to suggest a failure in eGovernance implementation and the strategy to overcome digital divide. The government"s strategy to use telecenters have not worked well with these telecenters not being able to sustain (Lee & Sparks, 2014). While the main issue can be analyzed to have been the lack of plans for revenue generation for the telecenter operators, broader issue related to concepts of sustainability have not been considered as well. Rapid advancement of technology and lifecycle of products and technology has not been considered. Alternative strategy has not yet been formulated. While the strategy to fulfil 59 the need for communication infrastructure has been

addressed there will still be probably last mile issue without a proper strategy.

VI. CONCLUSION

This section discussed the results of the research in line with the research question and the theoretical background. Theoretical backgrounds including international development theory, dependence theory and sustainability in ICT were considered for the theoretical background of the research. Discussion of the findings in line with the research question was done to provide for the answers to the questions. In addition, a framework that can be used in context of Nepal for development of a sustainable mGovernance for overcoming digital divide was also discussed.

VII. REFERENCES

[1]   Al-Osaimi K, Alheraish A, Bakry SH (2008) A STOP E-based approach for e-readiness assessment case studies. International Journal of Network Management (Wiley Inter-science) 18:65-75.

[2]   Esteve J, Joseph RC (2008) A comprehensive framework for the assessment of e-Government projects, Government Information Quarterly (Elsevier) 25:118-132.

[3]   UNDESA (2015) United Nations (UN) Department of Economic and Social Affairs (DESA), UN E-Government Survey.

[4]   Al-Almaee SM, Khayyat WR (2010) Strategic planning and supporting initiatives department: Saudi e-government program, 10th European Conference on e-Government, National Centre for Taxation Studies, University of Limerick, Ireland.

[5]   Jamal-Aldeen R, Bakry SH, Nouh A (2000) Performance-based evaluations of the tangible benefits of information networks with applications. International Journal of Network Management (Wiley Interscience) 10:2:91-101.

[6]   Bakry SH (2010) The intelligent e-government (in Arabic), A Seminar at Naif University, (Arab League), Riyadh, Saudi Arabia..

[7]   Kukreja S., Dalal S. (2018) Performance Analysis of Cloud Resource Provisioning Algorithms. In: Saeed K., Chaki N., Pati B., Bakshi S., Mohapatra D. (eds) Progress in Advanced Computing and Intelligent Engineering. Advances in Intelligent Systems and Computing, vol. 563. Springer, Singapore

[8]   Carrizales, T., 2008. Critical factors in electronic democracy: A study of municipal managers. Electronic Journal of e-Government, 6(1), pp.2-30.

[9]   Chen, H., 2002. Digital government: technologies and practices, Decision Support Systems, 34(3), pp.223-227.

[10]   Chukut, S.A. and Zahvoyska, O., 2010. Master of Electronic Governance as a modern institutional framework of public administration reform. Electhrone governance: international scientific journals, 1, pp.29-37.

[11]   Cook, E. M., LaVigne, M. F., Pagano, C. M., Dawes S.S. and Pardo, T. A., 2002. Making a Case for Local Government. [online] Center for Technology in Government.   Available at:<http://www.ctg.albany.edu/publications/guides/making_a_case/making_a_case.pdf> [Accessed 21 June 2014].

[12]   Coursey, D. and Norris, D. F., 2008. Models of E-Government: Are They Correct? An Empirical Assessment. New Perspectives on E-Government, pp. 524-534.

[13]   Dr. Yogesh Kumar Sharma and Dr. Surender (2013), "Future Role of Zigbee Technology in Wireless Communication System", Paper published in Grip - The Standard Research International Referred Online Research Journal, ISSN-2278-8123, Issue No. XVI, Pp. 18-31.

[14]   Dr. Yogesh Kumar Sharma and S. Pradeep (2019), "Deep Learning based Real Time Object Recognition for Security in Air Defense", "Proceedings of the 13th INDIACom; INDIACom-2019; IEEE Conference ID: 46181 2019 6th International Conference on "Computing for Sustainable Global Development", 13th - 15th March, 2019 Bharati Vidyapeeth's Institute of Computer Applications and Management (BVICAM), IEEE - New Delhi, (INDIA)", ISSN No: 0973-7529 , ISBN: 978-93-80544 , Volume : 32, Issue: 8, Pp. 64-67.

[15]   Evansa, D. and Yen, D.C., 2006. E-Government: Evolving relationship of citizens and government, domestic, and international development. Government Information Quarterly, 23, pp.207–235.

[16]   Seth B., Dalal S. (2018) Analytical Assessment of Security Mechanisms of Cloud Environment. In: Saeed K., Chaki N., Pati B., Bakshi S., Mohapatra D. (eds) Progress in Advanced Computing and Intelligent Engineering. Advances in Intelligent Systems and Computing, vol. 563. Springer, Singapore

[17]   Flak, L.S., Olsen, D.H. and Wolcott, P., 2005. Local E-Government in Norway: Current Status and Emerging Issues. Scandinavian Journal of Information Systems, 17(2), pp.41–84.

[18] Golobutsky, O., 2008. The concept of e-government and current needs of Ukraine. [online] Institute of the Information Society. Available at: <http://194.44.242.245:8080/bitstream/handle/123456789/8818/7-golobutskiy.pdf?sequence=1> [Accessed 12 January 2013].

[19] Golubeva, A. and Merkuryeva, I., 2006. Evaluation of Demand for e-Government: the case of Saint-Petersburg. The development of e-government in Central and Eastern Europe (CEE), 11(3,4), pp.241-254.