Information and Communication Technology Policy and it's Implication in E-Learning During Covid-19: A Nepalese Scenario

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Abstract:- Policy and regulatory frameworks governing the Information and communication technology was provided a basic foundation for the Digital Nepal framework, E-learning and basically emphasized to management, administration and governance to ensure transparency, accountability and answerability at all levels of society and state. The main objective of this study was to analyze and review the status of ICT policy and it's implication on e-learning during Covid-19 in Nepal. For this, secondary data reviewed the Nepal government ICT related Act, policies, plan, program and journals, reports were the major contextual analysis. Similarly, for the primary analysis, researcher selected BTTM program judgmentally because most of the students were come from both rural and urban parts of Nepal. Altogether 230 students were the population including even semester (2nd, 4th, 6th and 8th) semester students. The online survey (Google form/ Microsoft team 365) was used in February 2021.The major IT policy 2000 and ICT policy 2015 was focused on human resource development and ICT infrastructure development. Internet penetration in Nepal stood at 57% in 2017, higher than south Asian average of 36%. By analyzing the primary survey, IT infrastructure, network quality, internet connection and internet cost are the main hindering factors for E-learning and henceforth need to be improved. Similarly, government also ready to launch the IT for the effective digitalization of services and encouraged the students and teachers by providing the subsidies in internet cost.

Keyword:- Information Communication Technology, E-learning, Information Technology, Human Resource, ICT Infrastructure.

I. INTRODUCTION

The government's success in promoting e-Government was demonstrated by the widespread diffusion of ICT-based public services (UNCTAD, 2015). Global e-commerce was dominated by a group of 10 developed countries, excluding a developing country: China. In 2015, business-to business (B2B) and business-to-consumer (B2C) online transactions in these 10 countries totaled US$ 16.2 trillion, almost two-thirds of the overall global estimate (UNCTAD, 2017b). In the early 1990s, e-governance became a global pursuit towards improving public service delivery. Nepal joined the e-governance drive in 2007 when the government realized the need to adopt e-governance to improve public service delivery. Information about electronic services was provided to the service recipients and business. ICT in the different levels of administration and ICT budget in the central administration was crucial for ICT based service delivery (Barrenechea, Mark, J. & Jenkins, Tom, 2014). Thus, Rapid uptake of ICT was promoted by providing public services on-line. The rooted in hierarchical bureaucracies transformed into the cooperation and modernized government processes and service delivery through ICT.

ICT is mandatory and one of the strong means of reform in governance. The use of ICT can deliver significant benefits to taxpayers, revenue bodies, educators, government and the financial sector. For taxpayers, there can be significant costs saving since no need to visit a revenue office (or its agent such as a bank) for the tax payment. The new system allows taxpayers to complete tax forms and provide required payment details through online (KPMG, 2016). In Nepal, ICT policy generally covers three main areas: telecommunications (especially telephone communications), broadcasting (radio and TV) and the internet. It may be national, local, regional or international.

The major regulators and implementers of ICT policy were Nepal Telecommunication Authority, Ministry of Information and Communication (MOIC), High level commission for information technology, National information technology center, controller of certification authority (Bhattarai,2014). Likewise, NTC and other telecommunication industries also help to implement the ICT services towards users and their market penetration was growing sharply. Similarly, Minister, MOIC chaired by National ICT Policy Implementation Steering Committee would be formed with different ministries' Secretariats and two expert's collaboration as mentioned in ICT policy 2015. For the ICT based service delivery in Nepal, Nepal Government has enacted different IT policy, legal instruments and periodic action plans.

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Moreover, Government of Nepal also announced the digital Nepal framework 2019 for digitalizing the public services and also had launched a *Nagarik App (January 15, 2021)* mobile application with the aim of making public service delivery speedy and effective. The app helped to citizens to integrate their essential government documents into their mobile phones, get online service round the clock, one click, 24×7 (no public holidays bar). In Nepal, ICT tax is 13% which was costlier for consumers in general. Nepal government also made the slogan of Digital Nepal which basically emphasized ICT used in management, education, administration and governance. ICT is an integral part of the government vision 2022 promising a prosperous and equitable middle income Nepal.

E-learning

The development of rapid technology have made distance education easy (McBrien et al., 2009). "Most of the terms (online learning, open learning, web-based learning, computer-mediated learning, blended learning, m-learning) have in common the ability to use a computer connected to a network, that offers the possibility to learn from anywhere, anytime, in any rhythm, with any means" (Cojocariu et al., 2014).

Online learning defined as learning experiences in physical distance environments using different devices (e.g., mobile phones, laptops, etc.) with internet access. In these environments, students can be anywhere (independent) to learn and interact with instructors and other students (Singh & Thurman, 2019).

Many academic institutions that were earlier reluctant to change their traditional pedagogical approach had no option but to shift entirely too online teaching–learning (Dhawan, 2020). Institutions must focus on pedagogical issues and emphasize collaborative learning, case learning, and project-based learning through online instructions (Kim & Bonk, 2006).

Due to global Pandemic of Covid-19, Corona Virus has made institutions to go from offline mode to online mode of pedagogy. Nepal is no far from them. Most of the cities are Lock down and government also directed to run the e-learning i.e. alternative e-learning education system not only universities but also schools level. Moreover, Initially, University, run their class in zoom meeting and then after office Microsoft 365 team software has introduced in Tribhuvan University. Public Youth Campus is leading constitute campus of Tribhuvan university to run the e-learning classes and ICT friendly Faculty members/teachers, staffs and students through launching training also. Online learning in education sector is growing in almost universities, schools and even Purbanchal University and Mid-Western University had already taken the online final exam through Time-bound method also. Nepal's ICT policy 2015 also aimed to focus the ICT education in graduate courses E-education, and widen and quality broadband connectivity, internet connection in rural part of the countries. Therefore, the quality enhancement of online teaching–learning is crucial at this stage.

Objective of the study

The main objective was to analyze the ICT policy status and it's implication on e-learning in Nepal.

II.   RESEARCH METHODOLOGY

The secondary data reviewed the Nepal government ICT related Act, policies, plan, program, journal and reports were the major contextual analysis. As stated in the ICT policy mainly aimed to increase the human competency, infrastructure development, easy access and reliability of policy implementation, researcher had conducted the used of ICT in education basically online class of Public Youth Campus (PYC), Faculty of Management, and Tribhuvan University PYC offered MBS (Master in Business Studies), MBM (Master in Business Management ongoing), Bachelor in Business Studies (BBS), Bachelor in Business Administration (BBA) and Bachelor in Travel and Tourism Management (BTTM) program. Altogether around 7000 students and 200 faculty teachers (full time and part time) and 60 administrative staffs (PYC, unpublished report, 2020) are involved for the academic excellence. During 1st phase of Covid 19 pandemic and still PYC operated the online class almost Microsoft team office 365. For this study, researcher selected BTTM program judgmentally because most of the students were come from both rural and urban parts of Nepal. Altogether 230 students were the population including even semester (2nd, 4th, 6th and 8th) semester students in which 200 (86.95%) was the valid respondents. The online survey (Google form/ Microsoft team365) was used in February 2021. All of the respondents had already taken their ICT based online class initially zoom meeting and then after Microsoft team office 365. Besides this, 10% of them 20 students and 4 computer faculty teachers were also involved in informal queries/interview. The collected data was administered through the SPSS version 18.0. Both quantitative and qualitative approach was used to analyze the data.

III.   REVIEW AND CONTEXTUAL ANALYSIS

Shakya & Rauniar (2002) mentioned IT as a tool for improving governance in Nepal. ICTs hold the potential to create conditions for better governance, with more transparent and efficient bureaucracies. National Communication Policy formulated in 1992 paved the way for the liberalization of the telecommunication sector in Nepal followed by the enactment of the Telecommunications Act and Regulations in 1997. This embarked the milestone in legal and institutional framework for ICT. A new ICT policy 2015 announced in 2004 laid the crucial groundwork (MOIC, 2015). The six pillars of the ICT ecosystem identified by the World Economic Forum were : i) infrastructure, ii) Applications and content, iii) Markets and competition iv) Policies and regulations, v) Government budgets, vi) Skills and education for IT (WB,2016,p.1-2). Nepal's ICT sector was one of the fastest emerging sectors in the country, with huge potential for growth in the coming years. All the services related to the ICT sector were open to foreign direct investment, except for media. For telecommunications, 80% foreign ownership

was allowed. Trade Integration Strategy 2010 of Nepal's government identified IT and business process outsourcing (BPO) as one of the five priority potential export service sectors. The Trade Policy 2015 also reemphasized the importance of developing this sector. The major

telecommunications service providers in Nepal were Nepal Telecom Corporation (government owned) and Ncell (mainly foreign owned) (MOI, Investment Summit report, 2016).

Review of ICT Plans and Policies in Nepal

Date/Description	Establishment/Policy	Objective as stated
1st five year plan in 1956	ICT discussion	GoN could not realize the socio-economic benefits of ICT in 1990s due to Political and socio-economic transformation.
In 1971	Nepalese government used computers (IBM 1401).	To process National population census data.
1974	Establishment of national computer center (NCC)	Imparting IT training with in Nepal
1996	NCC developed Software	Various government agencies processed examination results for SLC board and Tribhuvan University. Unfortunately, the NCC was dissolved in 1996 (http://www.enrd.org/e-governance.php)
1992	Mercantile communication Pvt. Ltd.	Commercial email through internet as first internet service provider (ISD).
1999	Government liberalized its policy to use VSAT.	Number of ISPs was increased and more than 15 ISPs and around 115,000 internet users existed in the country. 40 software development and 200 companies were involved in IT trading.
2000	IT policy 2000 (2057 B.S.)	Enhancement of People's access to IT, Implementation of e-government, Institutional capabilities strengthen. Establishment of National Information Bank and connection of IT Park at Banepa, Kavre district.
2002	Long –term policy on ICT sector	Designed to assist for the formulation of clear policy and legislations on the ownership issues of the government and private sector considering the integration of ICT.
2004	Telecommunication Policy 2004	Provided appropriate ICT and enhanced rural areas User's capacity through small service providers. Extension of network of ICT.
2002	GoN Tenth Five-Year Plan (2002-2007)	Promoted the access and ICT used, thereby "generating employment opportunities, contributing to form knowledge-based societies, promoting knowledge-based businesses and industries and increase the availability of online services.
2004	Electronic Transaction Ordinance, (Cyber ACT)	Legal provisions for authentication and regulation of electronic records, for transactions through electronic data interchange, and for controlling unauthorized use or illegal change of any electronic record.
E-governance Master Plan 2006 and High level commission for IT.	Strategies to enhance ICT competencies of human resource, e-administration.	The implement e-GMP US$ 75 million would be required out of which, Korean government and Asian development bank each provided US$ 30 million and rest US$ 15 million beard by GON. Rural community, government network and government application focused.
Electronic Act 2006 (2063 B.S.)	Legal provision for authentication and regularization.	Authentication, validity, integrity and reliability of generation, production, processing, storage, communication and transmission system of electronic records by making the transactions to be carried out by means of electronic data exchange reliable and secured.
1st E-governance policy 2007	Applied E-governance, breakthrough ICT introducing electronic transaction and digital signature Act 2063.	Finance controller General office, Inland Revenue Department, Election commission Department of Health, Custom offices, Department of land information and Achieves, Immigration office at airport, E-governance application at Ministry of General administration, General post offices, Company registration office and Nepal Police With a view to promoting e-procurement system www.bolpatra.gov.np was developed and handed over to government by IT professional forum (Shakya, 2007, Bhattarai, 2014).
e-GMP initiated in 2008	E-government Master Plan	Online vehicle registration and license system were developed, land reform information management system.
IT Policy 2009	IT Disaster recovery plan	Developed IT professional and ICT in all aspects. Prevented the occurrence of inappropriate, unethical or unlawful behavior by any user of its computing system and telecommunications networks.

IT policy 2010	Expansion and access of internet in education (to all schools)	Co-ordination and collaboration with national and international institution developed skilled human resources for continuous and quality education.
E-government Master Plan 2014	(e-GMP) 2015-2019) Tech-savvy	e-GMP was set to support the new technologies and demands of a more tech savvy in Nepal
ICT Policy 2015	ICT HR, infrastructure , service innovation,	Public Private Partnership, sustainable development, planned cent percent access to internet in Nepal by 2020, 80% government services through digital means.
2019	Digital Nepal Framework	Development of e-administration, digital apps for public service, transparency, accountability and e-services/quick service delivery.

Source: MOIC, (2015, 2020); Dhakal (2017); K.C. (2006); MOE (2013)

As stated review the Information Communication and Technology, Nepal has not so long history in ICT. Though, the stated development in ICT, the main IT policy and the latest ICT policy 2015 as the major development in ICT initiative. MOIC (2000) indicated that IT policy 2000 (2057 B.S.) extended communication sector in rural areas by adopting modern technology, promoted social and economic development , implementation of e-government, research and development, tech-savvy; human resource development and enhanced the public awareness through ICT. Similarly, this policy also focused on institutional strengthening, IT based services developed in agriculture, health, education and other sectors and establishment of government integrated data and training center (GIDTC). Similarly, ICT policy 2015, mainly highlighted human resource, promoting public access and content development, easy access to telecommunication and ICT services for rural and remote areas, government service innovation and governance through ICT and improved and access to public services in order to increase the efficiency of public service delivery. Moreover, this policy further emphasized on ICT human resource, educational institutions for adding ICT courses and special skills offering with technological dynamism shaping and institutional capacity along with infrastructure and human resource development and Public-Private Partnership (PPP), 100% internet access by 2020 and 80% government services through digital means (Dhakal, 2017) and (MOIC, 2015, 7).

Empirical Analysis

NTA (2017) depicted the used of mobile technologies for e-governance overcome the digital divide that existed with 120%; highly penetration. MOFDC (2017) the core areas of ICT reforms included trade facilitation, automation, capacity enhancement and infrastructure development directed towards reducing time and cost of international trade. Badu (2018) the major challenges for ICT in Nepal were: a) poor infrastructure, data and segregated standalone systems; b) lack of awareness at the citizen level; c) cultural resistance to change and the impact of the generation gap; d) political instability and lack of willingness at the policy level; e) lack of skilled human resources in the public sector; and f) lack of priority afforded to ICT budgeting. Newly-formed seven provinces and 753 autonomous local units the constitutional right to make local-level decisions also expected for better service delivery with more demand-based and customized applications. However, there was a great need to develop provincial and local level ICT infrastructure and arrangements to facilitate implementation for ICT in service delivery.

Nepal Telecom Authority (2018) Growing popularity of social media and online communication platforms using smart phone had played important role in rising penetration of internet across Nepal. Internet penetration in Nepal stood at 57% in 2017, higher than south Asian average of 36%. Mobile connectivity in Nepal stood 125% of the population, which was higher than the regional average of 91% and 90% of India. According to Nepal Telecommunications Authority, 2.25 million new users were connected to the internet in 2017. MOIC (2019) Nepal e-commerce revenue by 2023 expected to cross US\$192 million annually at current growth. A shift to service economy had the potential to add another US\$ 4 billion in the fifth year of implementation, with potential cumulative impact of close to US\$ 10.5 billion across 5-years. Digital Nepal project expected to help grow Nepal's GDP by 3.2% at the end of initial implementation period. UNPACS (2020) Government to Citizen Service's web-portals/mobile-based applications, initiation of government cloud and online transaction services such as eSewa and Khalti for digital payments. As per the e-Governance Development Index (UNPACS, 2020), Nepal climbed up 30 positions in 2016 from 2014, ranking 135 out of 193 countries. However, it had declined from 117 to 132 ranks from 2018 to 2020. Digital portal (2020) the internet users in Nepal were 10.21 Million in January 2020. The number of internet users in Nepal increased by 315 thousand (+3.2%) as compared to 2019. Internet penetration in Nepal stood at 35% in January 2020. Similarly, social media users in Nepal were 10 million in January. The number of social media users in Nepal was increased by 879 thousand (+9.6%) between April 2019 and January 2020. Likewise, the mobile connections in Nepal were 42.85 million in January 2020 which was increased by 3 million (+7.6%) as compared to January 2019(Source: datareportal.com, 2020). MOIC (2020) the growing of social media was a crucial driver of internet adoption in Nepal stood second after Bhutan in south Asia regarding social media penetration. As at January 2018, Nepal had nearly 9.3 million Face book users.

IV. PRIMARY ANALYSIS RESULT

Respondent's View regarding ICT and e-learning

Descriptions	Strongly disagree	Disagree	Fairly agree	Agree	Strongly agree	Total
I satisfied the service quality of telecommunication	40 (20%)	72 (36%)	28 (14%)	56 (28%)	4(2%)	200 (100%)
I agree the broadband quality is very low	2 (1%)	38 (19%)	30 (15%)	110 (55%)	20(10%)	200 (100%)
I agree broadband network connectivity is very low	4 (2%)	40 (20%)	28 (14%)	104 (52%)	24(12%)	200 (100%)
I agree internet connection is poor while joining online class.	1(0.5%)	20 (10%)	33 (16.5%)	106 (53%)	40(20%)	200 (100%)
I satisfied with the digital services	10(5%)	92 (46%)	36 (18%)	60 (30%)	2 (1%)	200 (100%)
I satisfied my college fee paid through digital wallet	8(4%)	80 (40%)	50 (25%)	60 (30%)	2 (1%)	200 (100%)
I found the ICT policy of 2015 in Nepal is implemented effectively	20(10%)	78 (39%)	20 (10%)	79 (39.5%)	3(1.5%)	200 (100%)
I agree that the internet connectivity in remote areas is still poor	2(1%)	25 (12.5%)	30 (15%)	95 (47.5%)	48(24%)	200 (100%)
I agree the ICT based services are reliable	20 (10%)	52 (26%)	54 (27%)	60 (30%)	14 (7%)	200 (100%)
I found the ICT related course in my program	2(1%)	10(5%)	30 (15%)	118 (59%)	4020%)	200 (100%)
I agree that ICT empower the tech savvy manpower development	2(1%)	8 (4%)	40 (20%)	130 (65%)	20(10%)	200 (100%)
I feel that the cost of internet is expensive.	-	30 (15%)	20 (10%)	100(50)	50(25%)	200 (100%)
I agree that ICT promoted distance learning in education	8(4%)	40 (20%)	20 (10%)	86 (43%)	46(23%)	200 (100%)

Source: Field Survey February, 2021

From the primary survey of 200 respondents, the service quality of telecommunication, most of them disagree in which 20% strongly disagree and 36% respond as disagree. Similarly only 28% agree regarding the same view. Regarding brand quality and connectivity is very low most of them agree (including strongly agree) is 65% and 64% respectively. Almost respondents depicted that while joining the class or searching the Microsoft team 365 the broadband is very low and poor and online class disturbances time and again; 73% respond. Similarly, Due to Covid19 firstly PYC used the zoom meeting to run the class in which students felt easy to join the class. After the Tribhuvan University launched the Microsoft office team 365, PYC BTTM program also run the online class through team then students also join online class. Moreover, by tracking them and encouraged to join online class. However, students are come from different part of the Nepal, due to the low brand connection and network quality to join the office team online class. As respondents, they respond that if the teachers and management tried to join class with video, almost said that due to poor network quality and internet connection most of them said that if the video open then they lost the class; their internet connection and network quality could not supported. Hence, the management runs their class only three to four class maximum per hour per day of each semester due to their internet connection

problem and lack of computer or technology devices while asking them through informal queries mainly class captain and group leader of each semester. Similarly, as follow up fee collection through digital wallet i.e. e-sewa, IPS connection, mobile banking and so on few of them 30% only followed as they respond. However, Due to the government academic institution, there is problematic for auditing system as the accounting section while discussing the fee payment also. Due to the Covid-19 pandemic, management and administrative agreed for the digital payment system. However, traditional payment through voucher system and final audit through only voucher is another policy issue regarding ICT of the Government of Nepal. Now the government should think the ICT audit for digitalizing the services. It means that ICT policy of 2015 is not found effectively as respondent's respond 49% in which 10% strongly agreed. Similarly, almost, 71.5% (including 24% strongly) agree that the internet connectivity in remote area is still poor. The researcher further investigates by tracking outside valley or rural areas respondents, most of respond that the online class is frequently disturb due to poor network quality in rural areas. Henceforth, respondents only 37% respond as ICT based services are reliable. Similarly, ICT related course are introduced in their program as Computer information technology, e-tourism, Airlines GDS ticketing and lab based class also as

respondents agree ICT related education course statistically 79% (including 20% strongly agree). Similarly, respondents agree almost 75% respond that ICT empower the tech savvy manpower development or enhanced the technical knowledge. The most problem as the respondents said that the cost of internet is expensive and most of them have not Wi-Fi-internet connection and mobile data package of telecommunication VIZ; NTC and Ncell. However, due to the long hour class they even spend more amounts to join the online class as they respond. However, almost respondents respond that ICT promoted distance learning education or e-learning 66% (including 23% strongly) agree. By chi-square test, there is relationship between internet broadband, internet connection quality and network quality and effective online class since p value is less (0.000) than 0.05 (at 5% significance level).

Similarly, informal interview with the computer faculty teacher of BTTM, as respondents respond that ICT policy application of e-education is not reached at rural areas due to internet connection, low quality of network, IT infrastructure development, promote the digital services, i.e. web based flow of information towards students and other stakeholders, promote the digital fee payment systems towards students, develop digital or online form application, operate the IT tech savvy to all faculty teachers and staffs and also develop IT auditing system and also develop the digital library/e-library and by this activities e-learning can be developed in education.

V.   CONCLUSION

Policy and regulatory frameworks governing the ICT sector provided a basic foundation for the Digital Nepal framework. National ICT policy introduced in 2015 seeks to enhance the vision of transforming Nepali society into knowledge and information based society. Similarly, the National Broadband Policy announced in 2016 put forth a framework for stimulating broadband access and availability across the country. It shows the rapid penetration of internet and e-commerce in Nepal. However, the growth of ICT based service delivery in Nepal is still hindering due to the lack of supporting ecosystem such as limited digital payment options. However, e-Sewa and Khalti connect IPS (online payment)/ credit card etc. is expected to upset the payments landscape. Digital signature, good cyber law, data security, and e-payment provision are the major ways of e-governance. E-government vision is the Value Networking Nepal 'through: citizen centric service, transparent service, network government and knowledge based society for e-government. Similarly, by analyzing the primary survey, IT infrastructure, network quality, internet connection and internet cost are the main hindering factors for E-learning and henceforth need to be improved. Similarly, government also ready to launch the IT for the effective digitalization of services and encouraged the students and teachers by providing the subsidies in internet cost. Finally, ICT improved the quality of people's life without any discrimination and realized socio-economic development by building a transparent government and providing value added quality services.

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