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Implementation Situation of Information Technology at Local Governance of Nepal

Rom Kant Pandey
romkant.pandey@cded.tu.edu.np
Central Department of Education, TU

Vijaya Malla
vijaya.malla@sac.tu.edu.np
Sanothimi Campus, Bhaktapur, TU

Abstract

Implementation of broadband strategy, as well as information security basics, are important issues for local governments. Building a framework for ICT infrastructure development and offering e-services for businesses is making the local government a central body, influencing the development of the economy in the region. In this paper, we found that innovative technologies have not been used in service delivery at some local levels of Nepal. Some of the local levels were given the responsibility to the person who does not have any qualifications and knowledge related to information technology. The local government was not to be concerned about the security and sensitivity of the information technology-related equipment and materials used in the office and the capacity of the local level is weak in terms of expanding information technology infrastructures within their area and making necessary policy and legal arrangements for managing the use of information technology. This research focused on integrated software with a large capacity that needs to be developed and sent to all local levels through DoIT, needs to provide the technical knowledge and training for the IT manpower, every local level of Nepal has to develop and implemented its own Local Level IT Policy.

Keywords: *ICT, Implementation of IT/ICT, Situation of Information Technology, Local Governance of Nepal*

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Introduction

E-Governance in Nepal has steadily evolved from the computerization of Government Departments to initiatives that encapsulate the finer points of Governance, such as citizen centricity, service orientation, and transparency. Lessons from previous e-Governance initiatives have played an important role in shaping the progressive e-Governance strategy of the country. Due cognizance has been taken of the notion that to speed up e-Governance implementation across the various arms of Government at National and Local levels, a program approach needs to be adopted, guided by a common vision and strategy. This approach has the potential of enabling huge savings in costs through

sharing of core and support infrastructure, enabling interoperability through standards, and presenting a seamless view of Government to citizens (DoIT, 2017).

Information and communication technologies (ICTs) are technologies that use electronic means to convey, manipulate, and store data. This includes things like email, text messaging, video chat, and social media platforms. ICTs are used in various devices such as laptops and smartphones to perform communication and information tasks. In developed countries, ICTs are widely used and are considered important for social, political, and economic participation in developing countries. The United Nations recognizes that ICTs are necessary for achieving specific goals related to poverty reduction and other social and economic issues. The World Health Organization also sees ICTs as beneficial for improving healthcare in developing countries. They can help train doctors, deliver healthcare services to remote areas, and improve transparency and efficiency in governance and public health services. In modern times, knowledge has become a valuable resource, and the use of IT, including ICTs, has spread widely in business and public institutions. Countries with effective ICT programs can reduce corruption, promote good governance, and address social exclusion. Many public institutions have implemented e-government programs that incorporate ICTs to enhance accessibility, transparency, effectiveness, and accountability in government operations.

According to the Ministry of Communication and Information Technology, Department of Information Technology, "e-Governance in Nepal has steadily evolved from computerization of Government Departments to initiatives that encapsulate the finer points of Governance, such as citizen centricity, service orientation, and transparency. E-Governance Master Plan (e-GMP) takes a holistic view of e-Governance initiatives across the country, integrating them into a collective vision, a shared cause. Around this idea, a massive countrywide infrastructure reaching down to the remotest of villages is evolving, and large-scale digitization of records is taking place to enable easy, reliable access over the internet. The ultimate objective is to bring public services closer home to citizens, as articulated in the Vision Statement of e-GMP." And also the doIT says, "Make all Government services accessible to the common man in his locality, through common service delivery outlets, and ensure efficiency, transparency, and reliability of such services at affordable costs to realize the basic needs of the common man (DoIT, 2017)."

Objectives of the Study

To find out the implementation situation of IT in local governance and find the challenges in the implementation situation of IT in local governance are the main objective of the study.

Literature Review

A global culture centered on information access emerged in the past few decades. Information and communication technologies (ICT) are increasingly available to advance ease and efficiency in many areas of life. ICT holds particular promise in areas of governance and public participation. Open government, government 2.0, and e-government proponents believe governments in the digital age can use the information to

reduce corruption and increase government transparency, accountability, efficiency, and citizen participation (Camille & Brair, 2015).

Nepal is lagging behind other developed countries in terms of ICT infrastructure. Infrastructure is important in the development of the overall ICT sector and Nepal has a poor ICT infrastructure level. Although Nepal has cheap prices for internet and telecommunication accessibility mainly internet and other ICT resources are very poor. The government itself is also lagging in terms of ICT development. The country has been revising policies for better ICT implementation but the government is lagging in implementing ICT in its service delivery. The government has not been able to implement important e-government projects like the National ID which has been blocking the development of other e-government services. The government's sluggish pace in the development of ICT also has a discouragement for the private sector to make investments in this sector. The ICT development in Nepal is not directly connected to the production sector. The limited role of ICT in GDP shows that ICT has just been used as a service instead of using as a tool for economic growth. With the developing countries more tending towards innovations and products related to ICT, Nepal should also focus on developing a technology-driven GDP. More ICT-driven productions and manufacturing means more opportunities for ICT development among the citizens and the same thing is applicable and vice versa (Sharma, 2016).

Many governments around the world are using Information and Communication Technologies (ICT) to build a more transparent, efficient, and inclusive relationship with citizens. This new paradigm of open government, which is interrelated with e-government, differs among countries due to technological and socioeconomic conditions. The goal of this article is to examine the mediating role of ICT in the relationship between socioeconomic conditions and open government. In particular, we wonder if ICT development represents an intervening variable through which being a wealthy and innovative country may influence the development of open government (Maria, 2018).

Local bodies are the front runners in providing service delivery to the public. Even after the promulgation of a new constitution, local bodies remain the first link between the government and the public. Local bodies are the face of the governance for the public. E-Government can positively affect public service delivery if and only if the local bodies are well-equipped to deliver the e-service to the public. But e-based services initiatives have not been successfully implemented in any municipality. As Government of Nepal has recently formed several municipalities in different districts. The quality of service delivery will be improved, enabling Local Governments to build a good image and trust among citizens. Local Government has shared problems about abasing service will guide for other. Issues and challenges faced by proficient municipalities in the initiation of e-government will be a guide for newly formed municipalities to meet the national goal to implement e-Government (Dhonju & Shakya, 2019).

Clay G. Wescott (2019) published a report entitled "E-Government and The Applications of Technology to Government Services". The findings and conclusion of the report were the e-government experiences in Asia-Pacific have improved our understanding of what works and what doesn't, what practices are transferable, and under what conditions.

However, rigorous evaluation of reforms is rare, with few scholarly works measuring the performance improvement and citizen empowerment attained, nor the value-for-money achieved by necessary expenditures. Fully cognizant of the methodological challenges, greater investment is needed in more extensive research on how to achieve high performance by the public sector through e-government in the Asia Pacific.

Methodology

In this paper, mixed-method of research was used, including both quantitative and qualitative approaches, both quantitative and qualitative approaches were taken into consideration when appropriate. Under the quantitative research design, descriptive research methods were applied for the research the qualitative data was used for validation of qualitative results and There were a large number of population-related for this topic which is not possible to include therefore, the research was conducted a population for this research from two municipalities and eight rural municipalities. From each municipality and eight Rural Municipalities 40 related staff were selected as respondents. There is a large number of population related to this topic, which is not possible to include them all in the research. Therefore, among the various districts of Nepal researchers selected the ten districts as the field of research for this. Among the various Local Governments of Nepal, the researcher selected two Municipalities and eight Rural municipalities using the census method, where 40 respondents were. From each local level, the related respondents were selected as respondents for data collection using the purposive sampling method. Both primary and secondary data collection tools were used for data collection where primary data was collected through a questionnaire and secondary data collection, was collected through related articles, reports, and websites, and also through the phone call activity was applied for secondary data collection.

Result and Discussion

The state of Manpower Management

Manpower is an important tool for the effective flow of services provided by anybody. Its capabilities are linked to the quality of services provided. This section covers aspects related to the availability of manpower related to information technology, educational qualifications related to manpower related to information technology, experience of manpower related to information technology, and in-service training.

The status of the availability of manpower related to information technology

The status of availability of manpower related to information technology working at the local level has been prepared in three different indicators and the details obtained from 10 local levels of Nepal are as follows:

Table 1: The status of availability of manpower related to information technology

Indicators	No. Of municipality	Percentage
Manpower related to information technology is not working	1	10%
One it officer level employee is working at the municipality	9	90%

More than one it officer, including at least one computer engineer	0	0%
Total	**10**	**100%**

In the above table, out of 10 local levels of Nepal, 9 (90%) local levels have one IT Officer level employee whereas, found that there was no computer engineer level staff in any of the local levels. And, in only one local level i.e. Khotehang Rural Municipality, there was no manpower related to information technology.

According to the data, a maximum number of local-level, IT Officer is working as manpower in the field of IT. That meets the goal of the government to operate IT-related tasks at the local level.

The status of the educational qualifications related to the information technology of the manpower

The status of the educational qualifications related to the information technology of the manpower working at the local level has been prepared in three different indicators and the details obtained from 10 local levels of Nepal are as follows

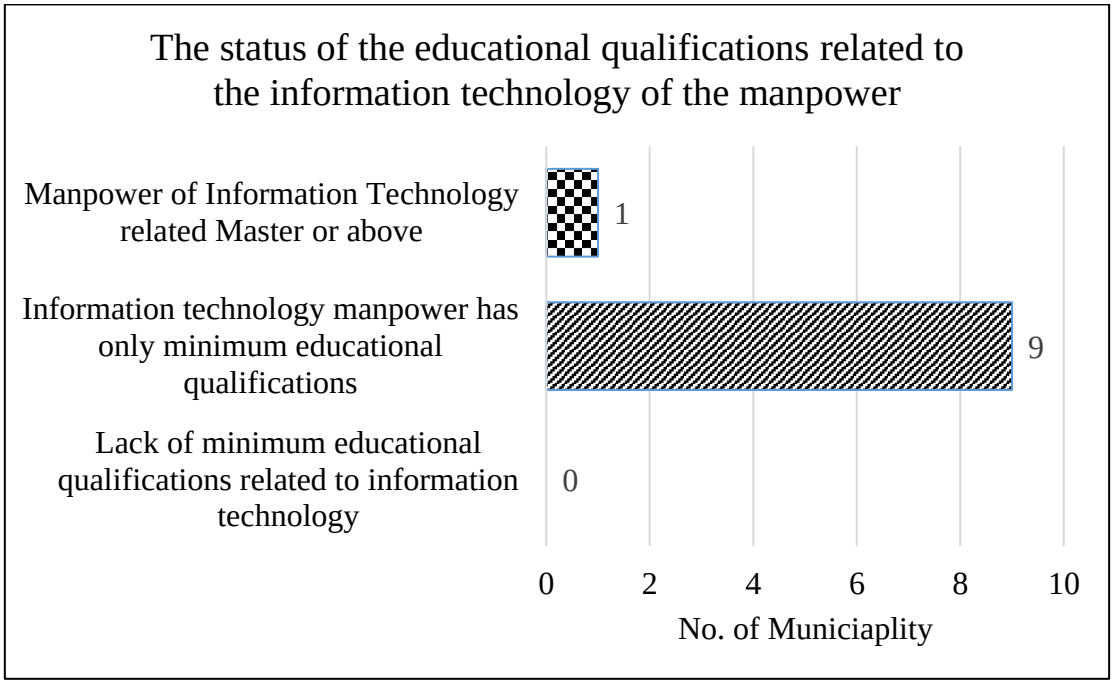


Figure 1: The status of the educational qualifications related to the information technology of the manpower

The above figure shows that the 9 local levels (90%) have minimum educational qualified information technology-related manpower and one local level (10%), has manpower of information technology-related Master degree or above.

Above data refers that at most of the local level of Nepal, the maximum qualified manpower is working as IT manpower, which helps to empower and promote the development of technology in local governance.

Training of manpower related to information technology (Related sectors only)

The status of training related to information technology of the manpower working at the local level has been prepared in three different indicators and the details obtained from 10 local levels of Nepal are as follows:

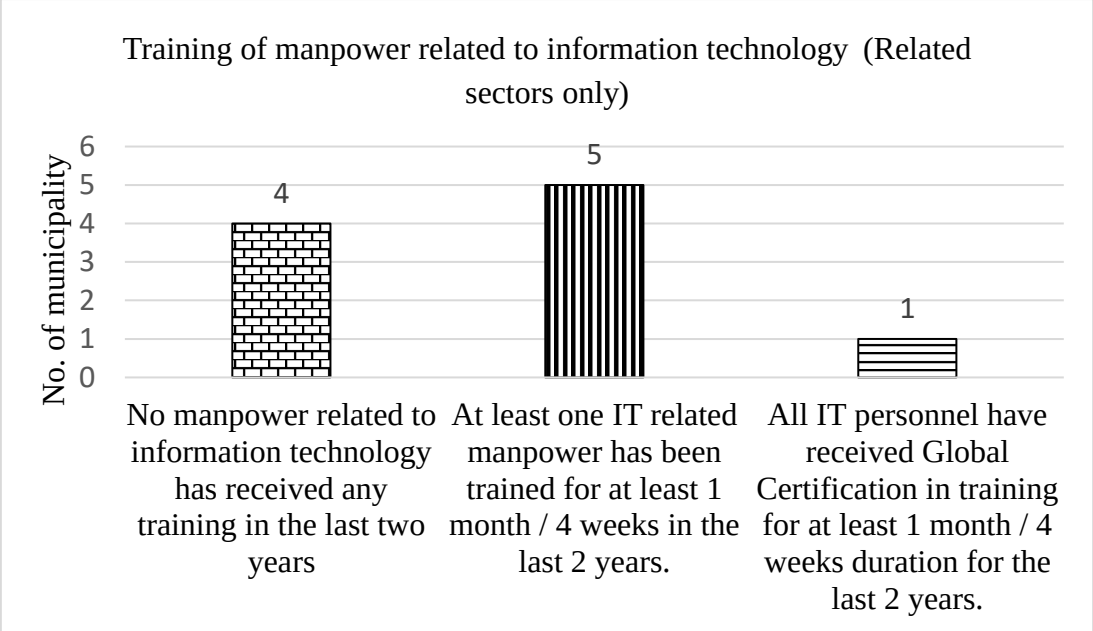


Figure 2: Training of manpower related to information technology (Related sectors only)

The above figure shows that IT-related manpower in 50% (5) municipalities have been trained for at least 1 month/4 weeks in the last 2 years, 40% of manpower has not received any training in the last two years and in 10% of IT personnel have received Global Certification in training for at least 1 month/4 weeks duration for the last 2 years. In some municipalities, IT-related manpower is still not being sent to the offices for training. As a result, their efficiency was declining and their work was slow. So, every manpower has to give equal opportunities to get the knowledge and send them to training.

Experience in manpower related to information technology

The status of manpower experience related to information technology of the manpower working at the local level has been prepared in three different indicators and the data obtained from 10 local levels of Nepal is as follows.

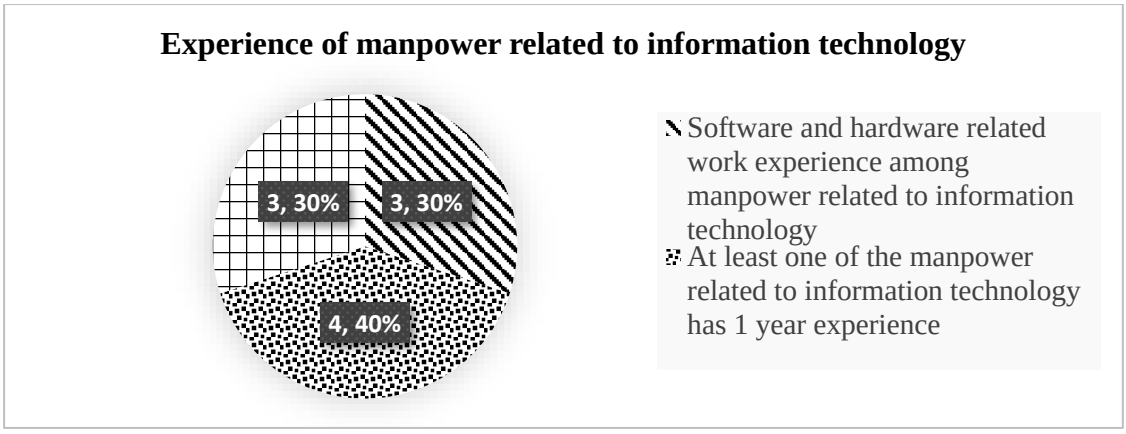


Figure 3: Experience of manpower related to information technology

The above figure shows that in 40% of municipalities, there is 1 year of experienced IT manpower, in 30% working experience on software and hardware, and similarly in 30% all the manpower related to IT have more than 2 years of experience in the related IT field.

According to the above data, most of the manpower have at least 1 year's experience in the IT-related field, which is helping them to conduct their tasks and duties in the offices.

In-service training of manpower related to information technology

In-service training can be compulsory relating to official professional development activities to maintain or upgrade professional qualifications or it can also be optional with the sole purpose to improve skills (UNESCO, n.d.). To empower and upgrade the professional qualifications of the manpower, in-service training is most important. So, the researcher found the status of in-service training of manpower related to information technology of the manpower working at the local level has been prepared in three different indicators and the data obtained from 10 local levels of Nepal is as follows.

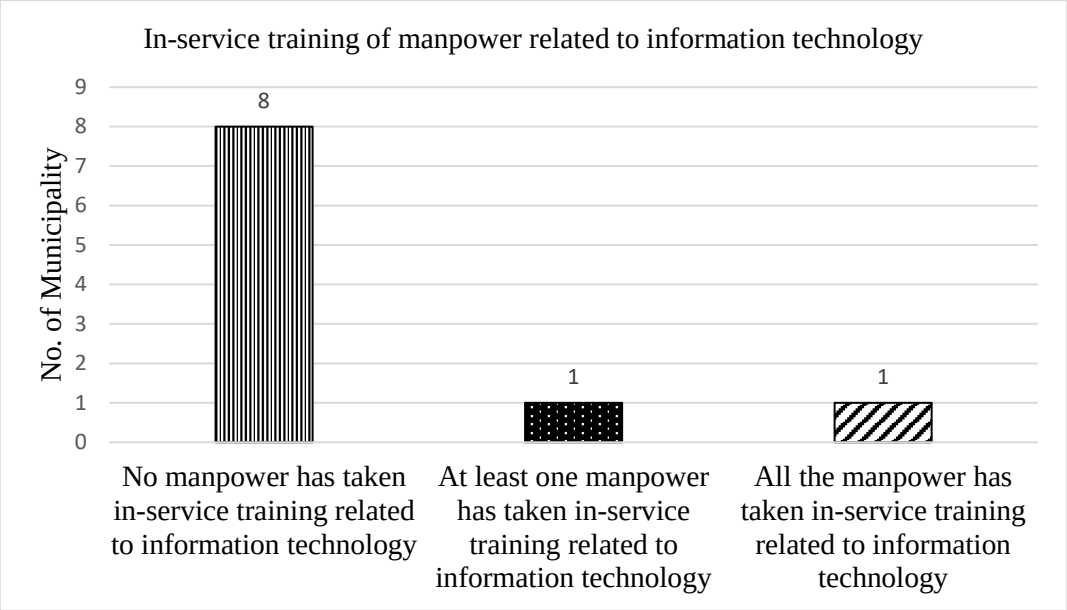


Figure 4: In-service training of manpower related to information technology

The above figure denotes that, 80% of local levels' manpower has not taken any in-service training related to information technology, 30% of at least one manpower has taken in-service training and 30% of all the manpower has taken in-service training related to information technology. So, according to the data, most of the manpower related to IT, need to provide the in-service training at once. Then only help to improve the service delivery and capacity development of the manpower.

Condition of Information Technology-related infrastructures

Infrastructure is another important tool needed to streamline the services provided at the local level. Without infrastructure, no services can be provided to the public. Therefore, in this section, researchers have analyzed in detail the availability of electricity, technical testing of electrical materials, backup availability of solar, access to the internet, computer usage, computer network, availability of multimedia, use of CC-TV camera, availability of free Wi-Fi and use of the shared and integrated system.

Availability of Electricity

The availability of electricity in 10 different local-level municipal offices and subordinate ward offices in Nepal was found to be as follows on the basis of three different indicators.

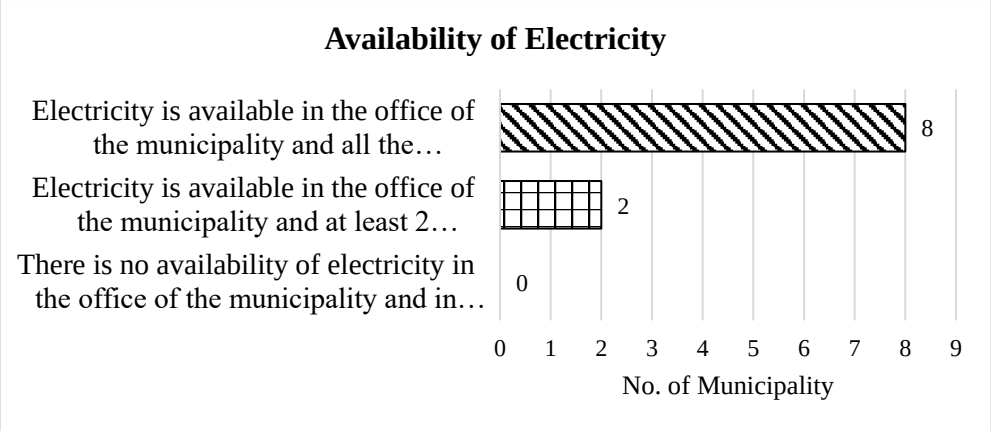


Figure 5: Availability of Electricity

Electricity is the main root of any electronic device, which helps to operate the system to perform its tasks. In this scenario, to find out the status of electricity in the municipality offices and subordinate ward offices, the above figure shows that the 8 local levels have electricity which is available in the office of the municipality and all the subordinate ward offices, in 2 local levels available the electricity in the municipality office and at least 2 subordinate ward offices. This data shows that the availability of electricity is quite good in most of the municipality offices.

Technical Testing of Electrical Materials

The status of technical testing of electrical materials in 10 local-level municipal offices and subordinate ward offices in Nepal was found to be as follows based on three different indicators.

Table 2: Technical Testing of Electrical Materials

Indicators	No. of municipality	Percentage
Not Tested	2	20%
At least once a year, the condition of the electronic equipment of the municipality office and ward office is tested	7	70%
At least once a year, the condition of the electrical equipment of the municipal office and ward office is tested and the electrical code is applied while electrifying the office.	1	10%

According to the above data, in 7 (70%) local levels i.e. municipal office and subordinate ward offices, the test of electrical materials is at least once a year, and in 1 (10%) local level, electronic materials are tested and the electrical code is applied while electrifying the office as well. This shows that most of the municipalities test electrical materials to speed up their daily tasks with the help of electronic materials such as Laptops, Desktops, Printers, etc.

Backup Availability of Solar

The status of the availability of solar backup in 10 local-level municipal offices and subordinate ward offices in Nepal is as follows based on three different indicators.

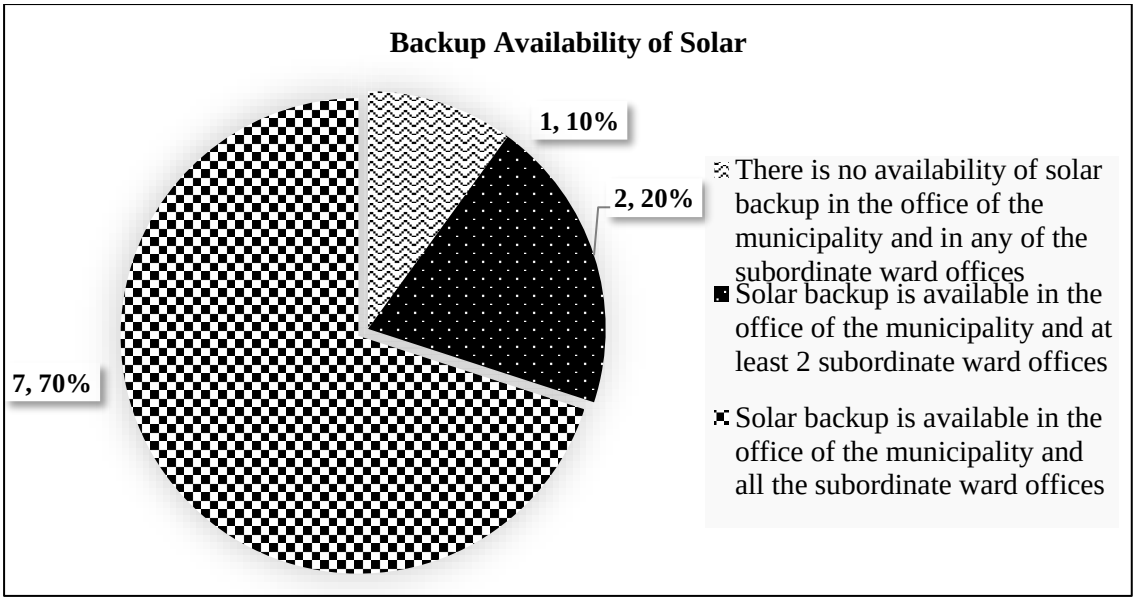


Figure 6: Backup Availability of Solar

In any sector, solar backup is mostly used as an alternate access to electricity. Thus the researcher found the above data from the related respondents. According to the above data, 70% of local levels are using solar backup in their municipality office and all the subordinate ward offices, and in 10%, there is no available solar backup in the office of the municipality and any of the subordinate ward offices. Most of the municipalities of Nepal are using the solar system as an electricity backup system for daily electrical operations. This means the accessibility of solar backup systems is quite good in municipal offices and related subordinate ward offices.

Access to Internet

Internet access to 10 local-level municipal offices and subordinate ward offices in Nepal was found to be as follows based on three different indicators.

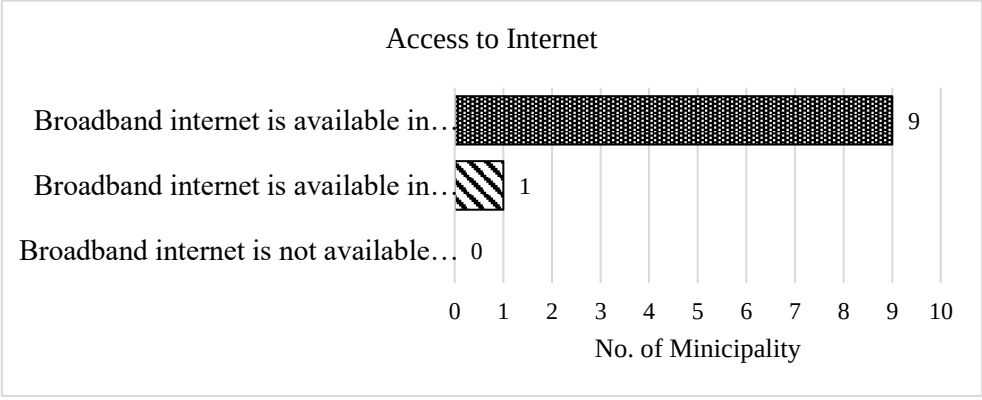


Figure 7: Access to the Internet

To operate any office, the Internet is the most important thing. Thus the researcher found the above data from the related respondents. The above figure shows that in 9 local levels, there is access to broadband internet i.e. Worldlink, Subisu, Techminds, Arrownet, etc. in the office of the municipality and all the subordinate ward offices, and in 2 local levels, there is access to broadband internet in the office of municipality and at least 2

subordinate ward offices. This data shows that the availability of Internet in municipality offices and related ward offices is quite satisfactory which is helping to deliver their service to the people at the right time.

Computer Usage

The use of computers in 10 local-level municipal offices and subordinate ward offices in Nepal is found to be as follows based on three different indicators.

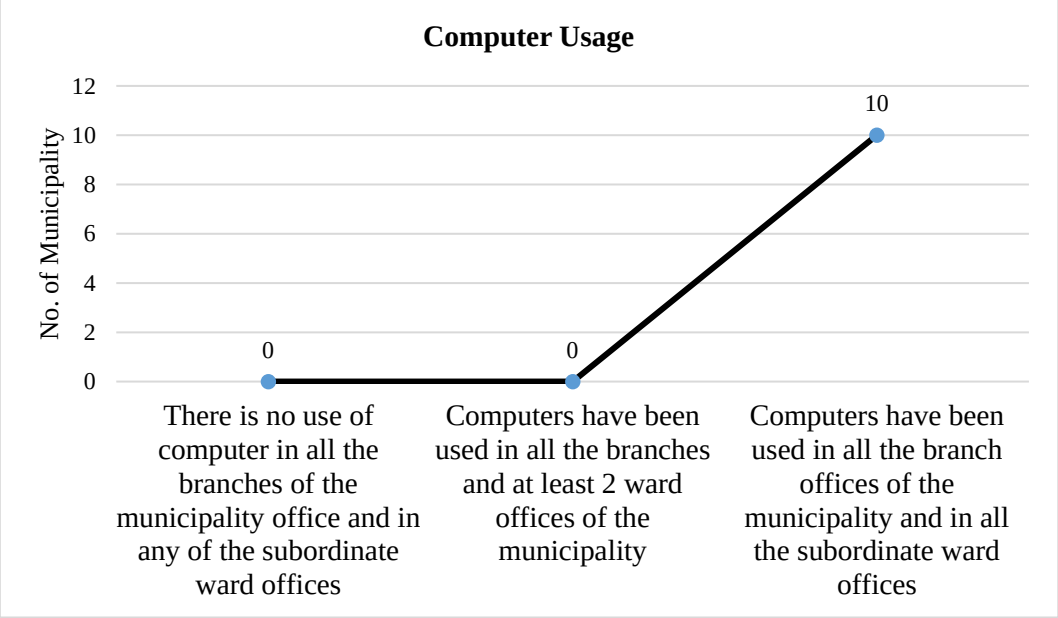


Figure 8: Computer Usage

The above figure clearly shows that in all the municipality offices and all the subordinate ward offices, computers have been used to operate their daily tasks, and this is why all the office's age practicing the paperless policy of the Nepal Government.

Computer Network

The condition of a computer network in 10 local-level municipal offices and subordinate ward offices in Nepal is found to be as follows based on three different indicators.

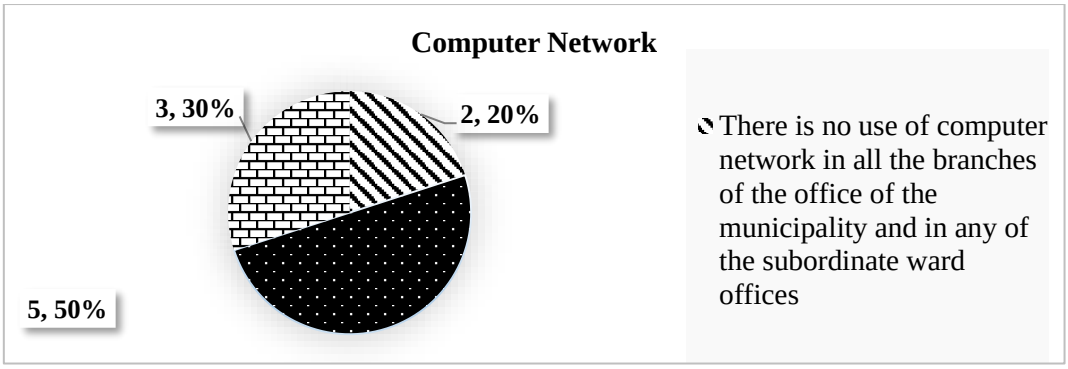


Figure 9: Computer Network

The above figure shows that 50% of local levels are using computer networks for communicating in all the branches of the municipality office and at least 2 subordinate ward offices, but 20%, there is no use of computer network in the branches of the

municipality office even in the subordinate ward offices. The above data shows that using of a computer network within the area of municipality offices and ward offices is in a 50/50 ratio. The municipality offices, where the computer network isn't installed, need to upgrade the networking system in the upcoming days.

Availability of Multimedia (Projector, Smart TV, HD web Camera, etc.)

The availability of multimedia in 10 different local-level municipal offices and subordinate ward offices in Nepal was found to be as follows based on three different indicators.

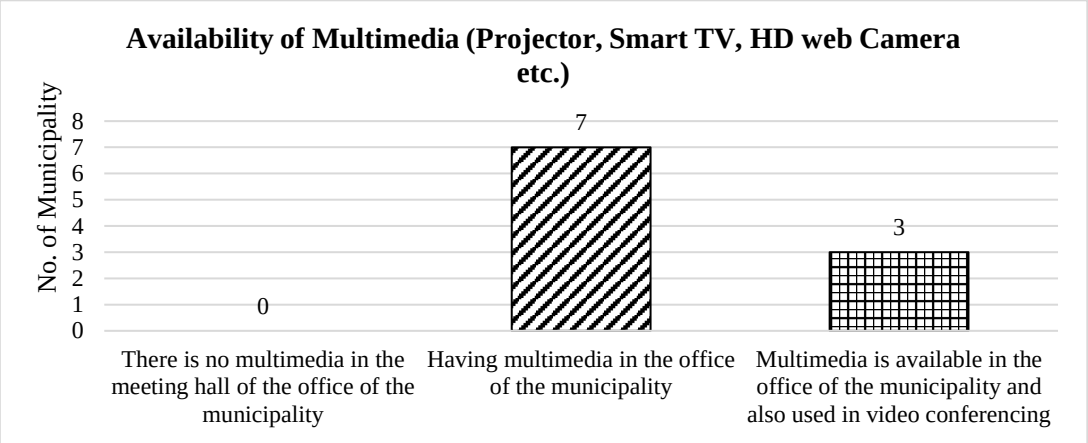


Figure 10: Availability of Multimedia (Projector, Smart TV, HD web Camera, etc.)

In the above figure, 7 local levels are using multimedia i.t. projector, smart TV, HD web cameras, etc. in the municipality office, and 3, multimedia is available in the office of the municipality and also used in video conferencing. Most municipalities have access to multimedia to perform their daily tasks. Which is improving the presentation of daily tasks.

Use of CC-TV Cameras

The use of CC-TV cameras in 10 local-level municipal offices and subordinate ward offices in Nepal is found to be as follows based on three different indicators.

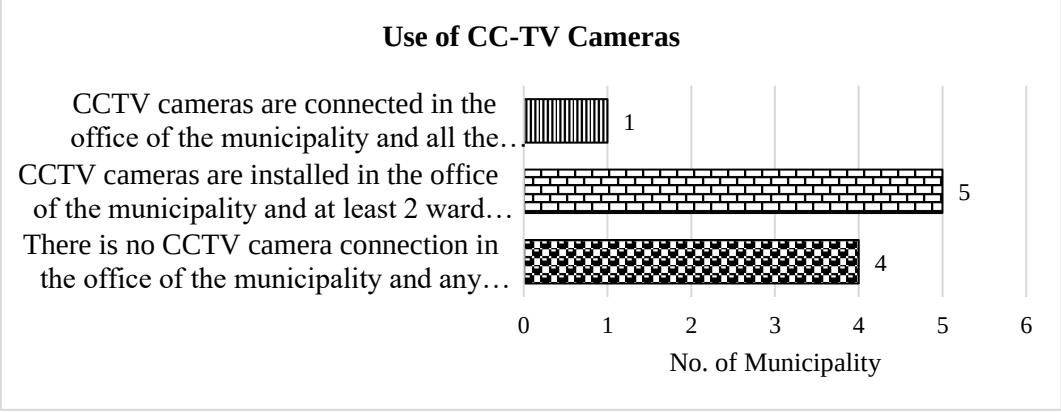


Figure 11: Use of CC-TV Cameras

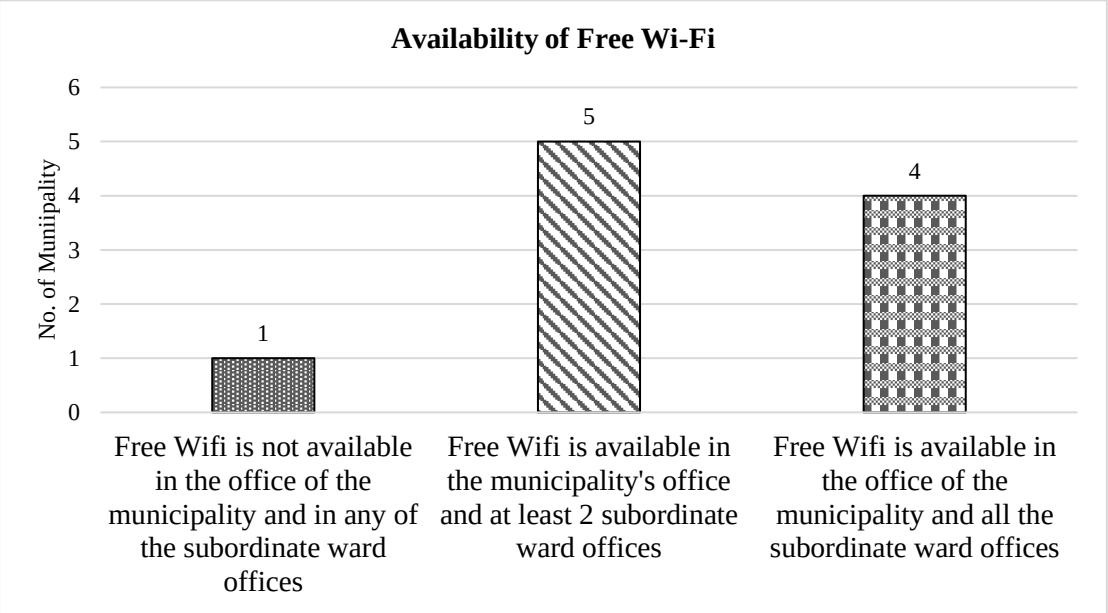
In the above figure, in 5 local levels of Nepal, CCTV cameras are installed in the office of the municipality and at least 2 ward offices for security purposes, similarly, in 4 local

levels, there are not installed the CCTV even in any of the subordinate ward offices and there is 1 local level where CCTV is connected in municipality office and all the subordinate ward offices. The above data shows that most of the municipality offices and ward offices are using and installing CCTV for the security purpose of the offices.

Availability of Free Wi-Fi

The availability of Free Wi-Fi in 10 local-level municipal offices and subordinate ward offices in Nepal is found to be as follows based on three different indicators.

Figure 12: Availability of Free Wi-Fi



To access the free internet, Nepal Government has delivered the Free Wi-Fi zone concept. Thus the above data shows that in 5 local levels, there is available of Free Wi-Fi in the municipality office and at least 2 subordinate ward offices, similarly in 4 local levels, Free Wi-Fi is available in the office of the municipality and all the subordinate ward offices and in 1 local level there is not available Free Wi-Fi in the municipality office and even in all the subordinate ward offices. The above data shows that most of the municipality offices and wards are providing Wi-Fi publicly within the area of the offices.

Institutional Capacity in Information Technology

There is also an institutional capacity based on information technology to streamline the services provided at the local level. Without institutional capacity, it will be difficult to provide services to the public. Therefore, this section discusses training related to email, information technology, and the use of office packages.

Usage of E-Mail

A study of the use of government emails by desk staff working at all local levels in Nepal found that the situation was as per the details based on three different indicators.

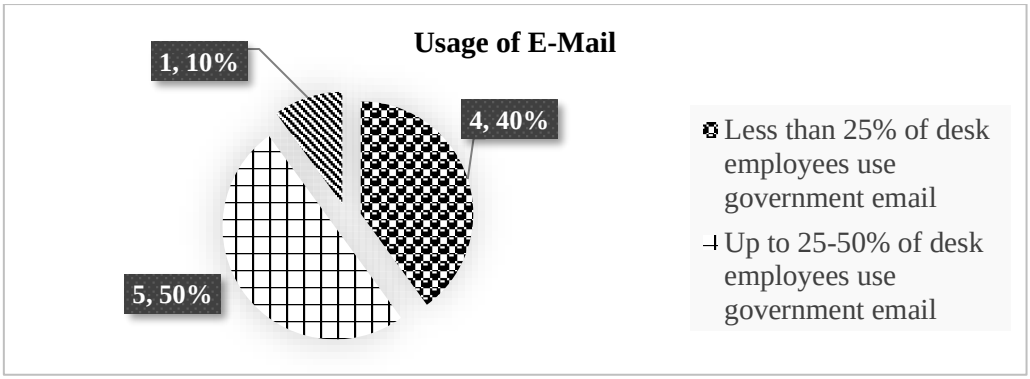


Figure 13: Usage of E-Mail

The above figure shows that in 50% of local levels, up to 25-50% of desk employees use government email, in 40% of local levels, less than 25% of desk employees use government email and in 10%, more than 50% of desk employees use government email. According to the data, most of the employees, those who are working as desk employees, they are using the government e-mail for document transferring and receiving purposes.

Training related to Information Technology

While studying the status of training related to information technology by the desk staff working at all the local levels in Nepal is found to be as follows based on three different indicators.

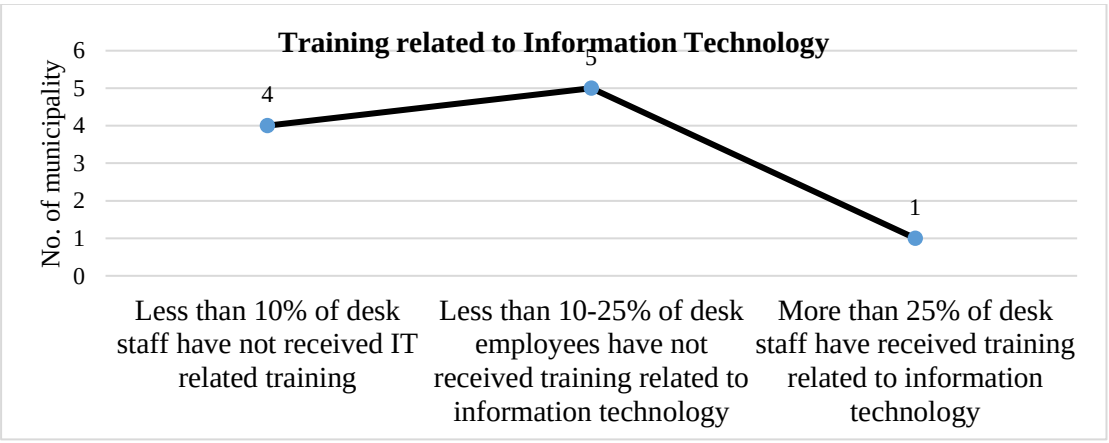


Figure 14: Training related to Information Technology

The above figure shows that most of the desk staff, who are working in municipality offices and wards, are not receiving any IT-related training, which shows that most of the staff are not getting any chance to develop their capacity in the field of information technology. Immediately, the local government should provide and organize IT-related training for all the staff who are working as desk staff in the offices of the municipality and wards.

Usage of Office Package

The desk staff working at all the local levels in Nepal while studying the status of use of Office Package is found to be as follows based on three different indicators

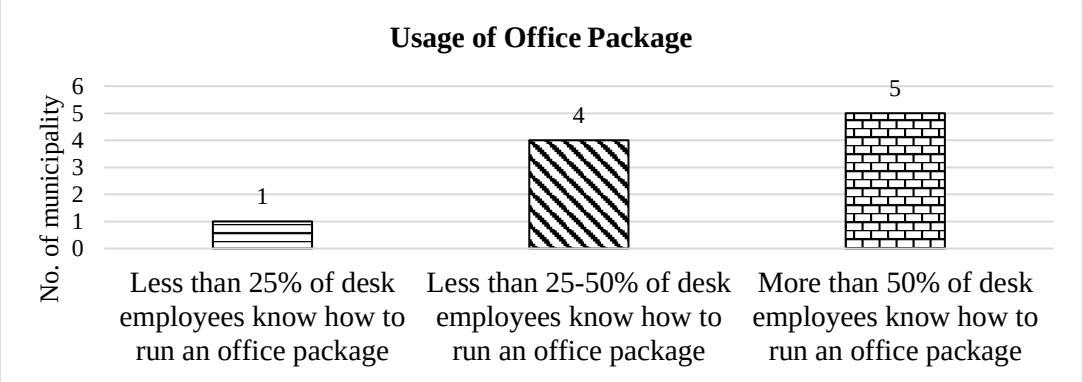


Figure 15: Usage of Office Package

To manipulate and operate the offices, office package software in being the most important tool, which makes the offices paperless and helps to keep the data safe. Office package is a packaged software where Office Word, Excel, PowerPoint, Access, etc. are packaged. Thus, the researcher found the above-implementing status of the office package which is used by the desk employee of the municipality office and the subordinate ward offices. The above figure shows that in 5 local levels, more than 50% of desk employees know how to run an office package. But most of the desk staff don't know to run the Office package. So, this shows that the implementation of an office package in office for doing the daily work is not satisfactory.

Use of Information Technology in Service Delivery

The use of information technology in the flow of services provided at the local level reflects the current state of institutional capacity. This section covers the use of SuTRA in financial administration, use and monitoring of electronic attendance, office automation, revenue payment system, e-bidding, revenue mapping, cost estimating of schemes and use of software in the construction of DPR, use of software in the monitoring system and information on educational health institutions under the municipality.

Use of SuTRA in financial administration

A study of the use of the SuTRA system, which was constructed to manage the accounting system at all the local levels in Nepal is found to be as follows based on three different indicators.

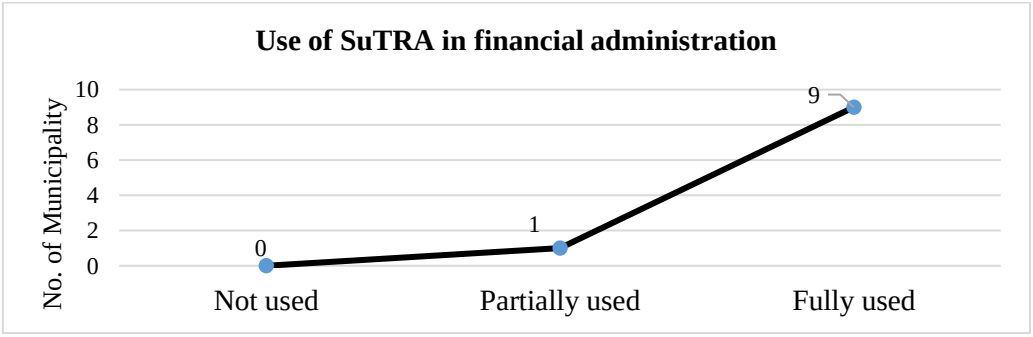


Figure 16: Use of SuTRA in financial administration

Most government offices use SuTRA as the financial management system. Thus the researcher found the above data which shows the implementation of SuTRA in their

financial mechanisms. According to the above data, at 9 local levels, SuTRA is used in financial administration. Thus the implementation of SuTRA as financial management system is highly implemented at most of the local levels of Nepal.

Use of Office Automation System

While studying the status of the use of office automation systems in all local-level municipal offices and subordinate ward offices in Nepal, it was found to be as follows based on three different indicators.

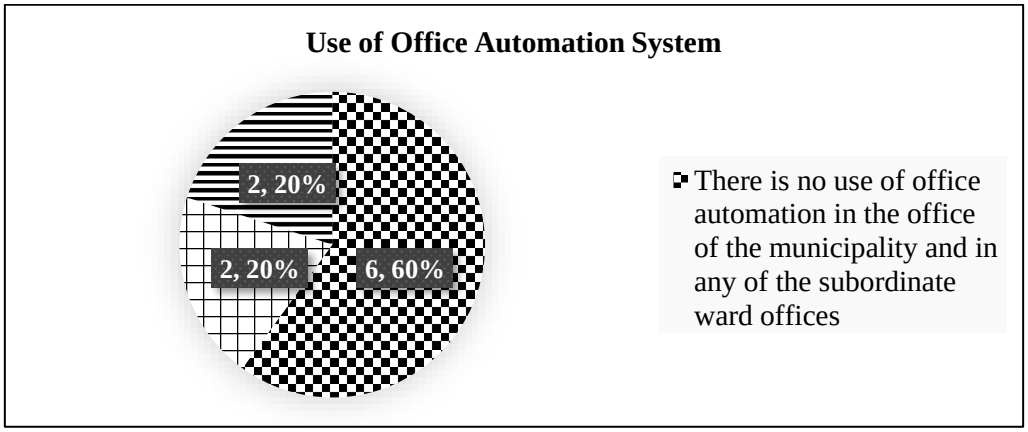


Figure 17: Use of Office Automation System

To manage and systematically operate any office have to use an office automation system. The above data shows that in Khotan district, in 60% of local levels, there is no use of office automation in the office of the municipality, and any of the subordinate ward offices, 20% of local levels are using office automation systems in their municipality office and at least 2 subordinate ward offices and similarly, 20% local levels are using the system in the municipality office and all the subordinate ward offices.

The result shows that most of the local levels of Nepal are not using the office automation system to operate the offices. So, to manage and manipulate the offices systematically, every office needs to implement an office automation system.

Use of e-Building Permission System

While studying the status of the use of the e-Building Permission System in all local-level ward offices in Nepal, it was found to be as follows based on three different indicators.

Table 3: Use of e-Building Permission System

Indicators	No. of Municipality	Percentage
Not used	8	80%
Used in at least 2 ward offices	0	0%
Fully used	2	2%

The above table shows that most of the ward offices (80%) are not using the e-Building permission system, which clearly defines they are still using the paperwork to give building permission to the public. So, every ward offices need to use the e-building

permission system to manage the files and record systematically and that could be easy access too.

Use of Online Revenue Payment System

Revenue is the money generated from normal business operations, calculated as the average sales price times the number of units sold. It is the top-line (or gross income) figure from which costs are subtracted to determine net income. Revenue is also known as sales on the income statement (Investopedia, n.d.). While studying the status of the use of the online Revenue Payment System at all local levels under Nepal, it was found to be as follows based on three different indicators.

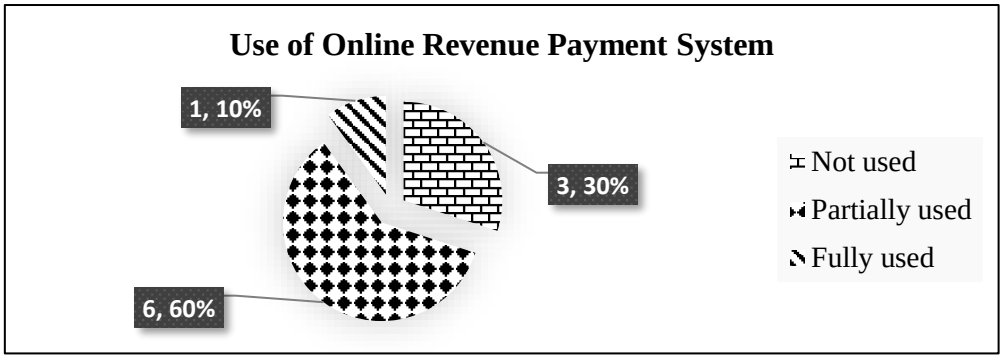


Figure 18: Use of Online Revenue Payment System

The above figure shows that most of the local levels of Nepal are using the online revenue system to control the revenue mechanism of the municipality. Which makes transparency in the tax collection system.

Use of E-Bidding

The use of e-bidding in all the 10 local levels of Nepal was found to be as follows based on three different indicators.

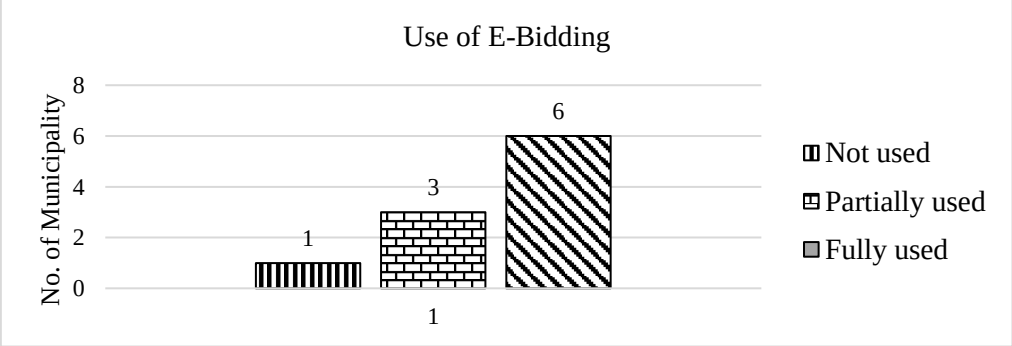


Figure 19: Use of E-Bidding

According to the above data, most of the municipality offices, about 60%, are using the e-bidding system, about 30% partially using the system but 10% i.e. Aiselukharka Rural Municipality, are not using the e-bidding system to perform the projects. Thus the above data shows that most of the municipality offices are using e-bidding for operating big projects.

Use of software in Project Cost Estimation and Construction of DPR

The use of software in the cost estimates of the project and construction of DPR in all the 10 local levels of Nepal were found to be as follows based on three different indicators.

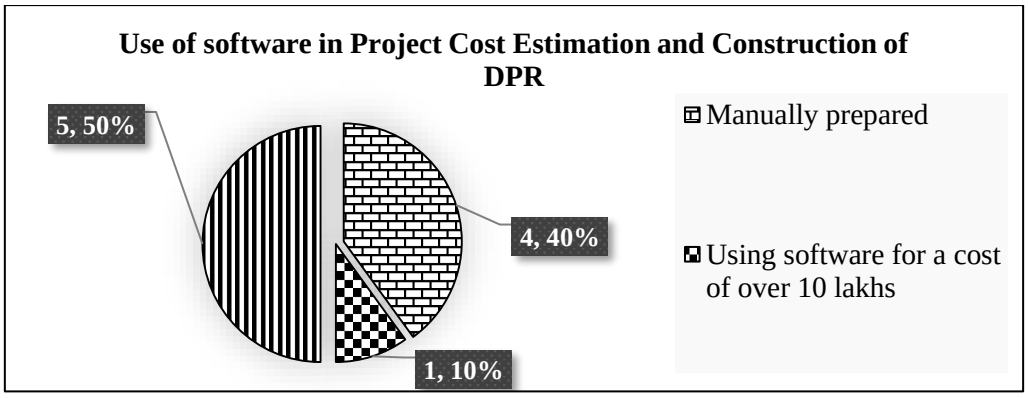


Figure 20: Use of Software in Project Cost Estimation and Construction of DPR

For the project cost estimation and construction of DPR, about 50% of municipality offices are using specialized software, about 40% of offices are using software for a cost of over 10 lakhs and similarly about 10% of offices, are still preparing cost estimation and construction of DPR manually.

This study found that the main reason not to use the software was the lack of skilled manpower, training, and so on. To solve this problem, the related manpower, need to send them for training.

Use of Resource Mapping

The use of resource mapping in all the 10 local levels of Nepal was found to be as follows based on three different indicators.

Table 4: Use of Resource Mapping

Indicators	No. Of municipality	Percentage
Not used	2	20%
Partially used	8	80%
A GIS-based resource map is prepared	0	0%
Total	**10**	**100%**

In the above data, about 80% of municipality offices of Nepal, are using the resource map but none of them are using GIS base resource map. About 20% of offices are still not using resource mapping. This causes the problem to find out the exact territorial locations of the exact places. So, the related manpower needs to provide GIS-based resource mapping training and develop the GIS-based resource map of all the municipalities.

Use of information technology in Educational Institutions

The use of information technology in the educational institutions operating in all the 10 local levels of Nepal was found to be as follows based on three different indicators.

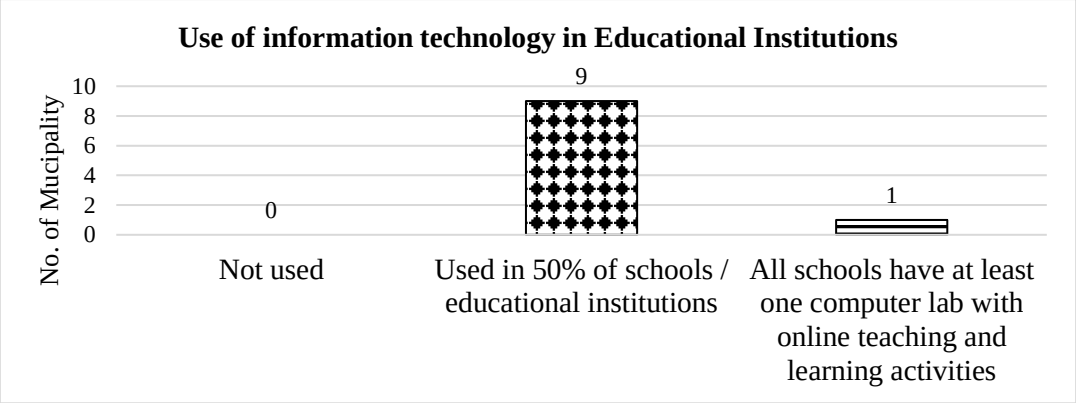


Figure 21: Use of information technology in Educational Institutions

Most educational institutions are using new technology to deliver education. This is why, day by day the education system is changing towards technology. CEHRD (Center for Education and Human Resource Development) has developed a software named IEMIS (Integrated Education Management Information System), which is helping to manage all the activities of educational institutions. Not only this, different types of technologies and devices are used like projectors, smart boards, e-attendance, e-library, online learning tools, etc. The above data represents the use of information technology in educational institutions. In 9 municipalities, 50% of educational institutions are information technologies to deliver education to the students and operate the schools.

Use of information technology in Health Institutions

The use of information technology in the health institutions operating in all the 10 local levels of Nepal was found to be as follows based on three different indicators.

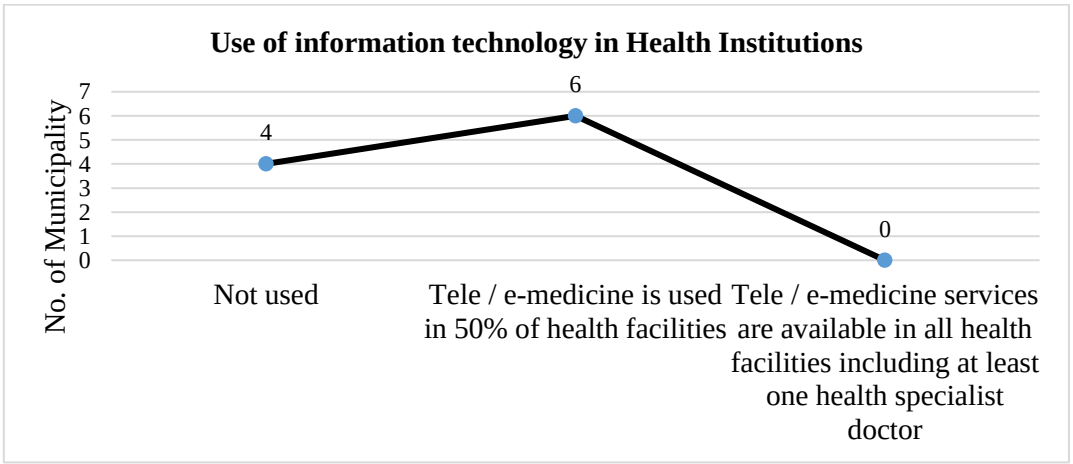


Figure 22: Use of information technology in Health Institutions

The above figure shows that in 6 local levels, 50% of health institutions are using tele/e-medicine facilities to deliver health services and in 4 local levels, they are not using any

kind of tele/e-medicine services. This study found that none of the municipalities' health institutions don't have at least one health specialist doctor.

So, the government has to recruit at least one specialist doctor to all the health institutions, which helps to promote health delivery services.

Hello Sarkar and Grievance Management

The government has started addressing public complaints at the local level.
With 753 local levels being connected through the new software portal of 'Hello Sarkar' established under the Office of the Prime Minister and Council of Ministers as a grievances-hearing mechanism, public grievances are being addressed through the local level (Nepal T. R., 2019). The situation of the use of Hello Sarkar and Grievance Management in all 10 local levels of Nepal was found to be as follows based on three different indicators.

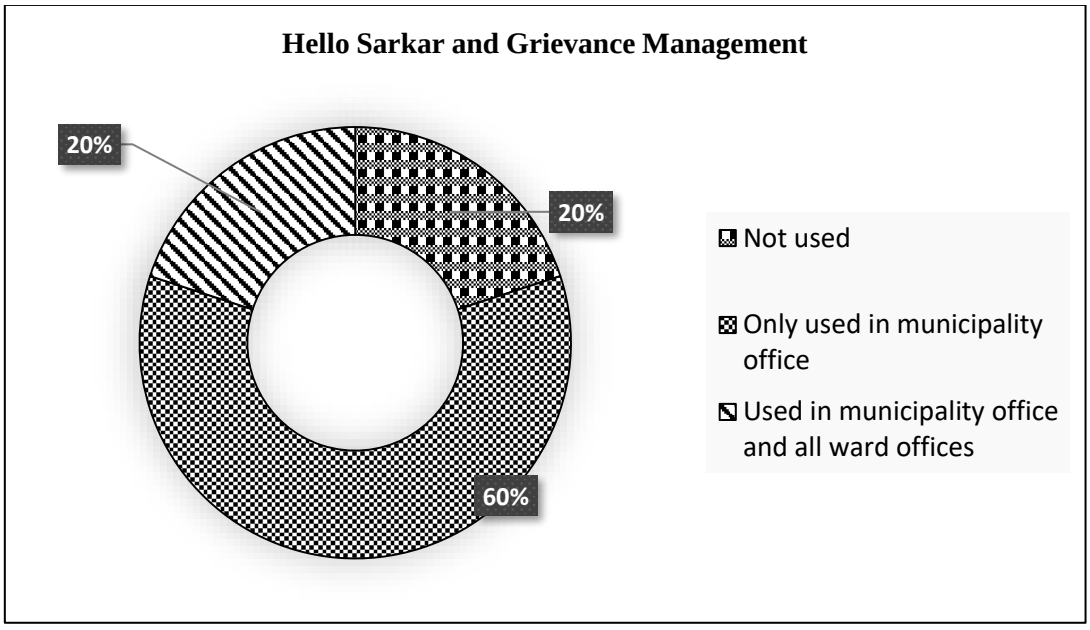


Figure 23: Hello Sarkar and Grievance Management

One of the best ways to complain to the public is the "Hello Sarkar" method. Based on the "Hello Sarkar", the above figure shows that 60% of municipality offices are using the same method to collect complaints from the public and help to communicate to the government and the public. Similarly, 20% of municipalities' offices and all subordinate ward offices are using the "Hello Sarkar" portal. And in 20% neither used in municipalities' offices nor subordinate ward offices.

Thus, this study got that majority of the municipalities and ward offices are using grievance management and using "Hello Sarkar" online portal for hearing the public voices.

Use of software in Vital Event Registration

The use of software for vital event registration in all 10 local levels of Nepal was found to be as follows based on three different indicators.

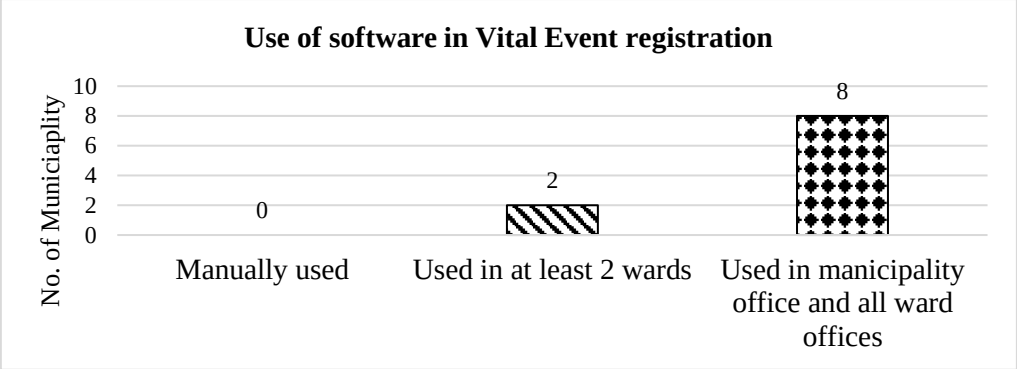


Figure 24: Use of Software in Vital Event Registration

In the above figure, 8 municipalities and all subordinate ward offices are using the Vital Event Registration Online System, which shows that most of the offices are applying the VERSP/MIS system for managing the Vital Event registration. Thus, the minority of the ward offices are not using the VERSP online system due to their lack of internet facilities and skilled manpower too.

Use of e-queue management system in service delivery

The use of an e-queue management system in all the 10 local levels of Nepal was found to be as follows based on three different indicators.

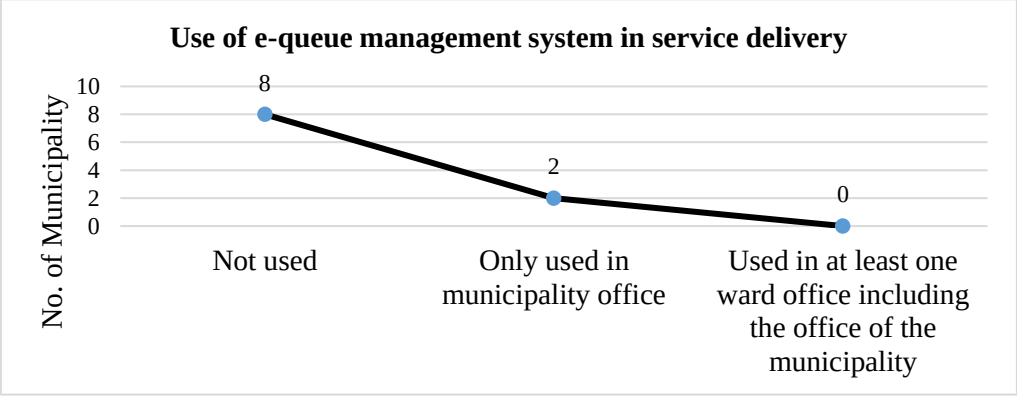


Figure 25: Use of e-queue management system in service delivery

Most public offices need to face several clients every day. The crowd of people truly affects the official works. So the best mechanism to handle the public crowd is a queue management system, which systematically helps to manage the queue of the public who are waiting to get services from the office.

The above data shows that most of the municipality offices and subordinate offices are not using a queue management system but only a few municipality offices are using this system to manage the queue of the public.

Tax Mapping

A tax is a compulsory financial charge or some other type of levy imposed on a taxpayer (an individual or legal entity) by a governmental organization to fund government spending and various public expenditures (regional, local, or national) (Wikipedia, Tax, 2022). The use of a tax mapping system for the transparencies of tax in

all the 10 local levels of Nepal was found to be as follows based on three different indicators.

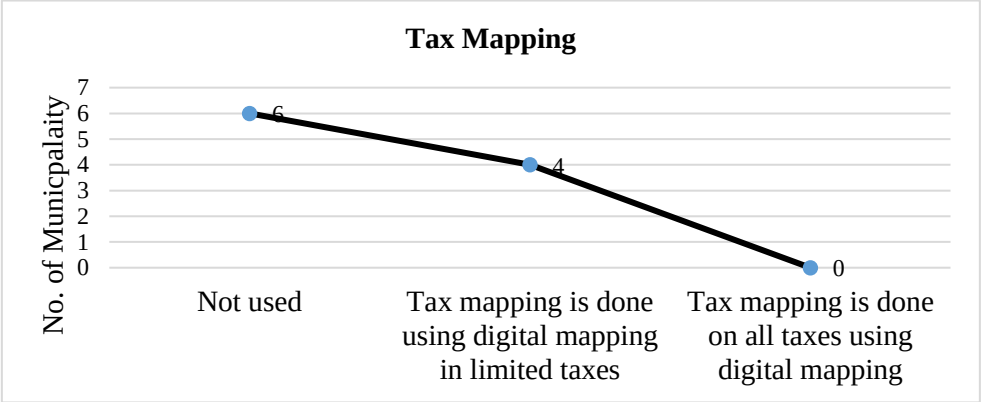


Figure 26: Tax Mapping

The above figure shows that 60% of municipalities are not using the tax mapping system, but only 40% of municipalities are using digital tax mapping for limited taxes. Thus the result of the study is transparency in taxation is not satisfactory.

Use of Street & House Addressing System

The use of the Street & House Addressing system in all the 10 local levels of Nepal was found to be as follows based on three different indicators.

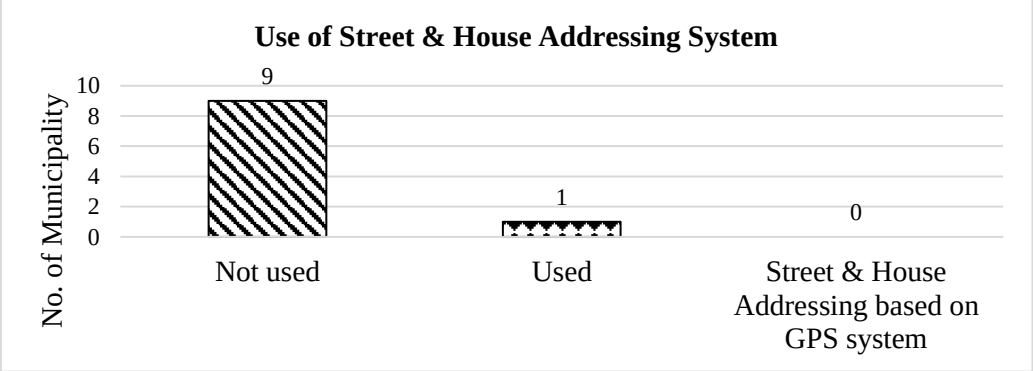


Figure 27:Use of Street & House Addressing System

The above data clearly shows that most of the municipalities are not using the streets & house addressing system, this denotes to the data of the housing and streets are scattered, not managed. Only less number of municipalities are using the street & house addressing system without based on GPS to manage the street and house address.

Management of the Official Website

Local-level website management provides information on how local levels are managing their municipality's website. Therefore, this section covers the status of the website, the use of digital certificates (https) on the website, details of employees, public representatives, and information officers on the website, services provided by the municipality, etc.

Status of the Website

The status of the website at the local level has been studied based on the following indicators.

- Registered on Domain but the website is not in operation
- The website is in operation but no regularly updated
- Website in operation and updated regularly

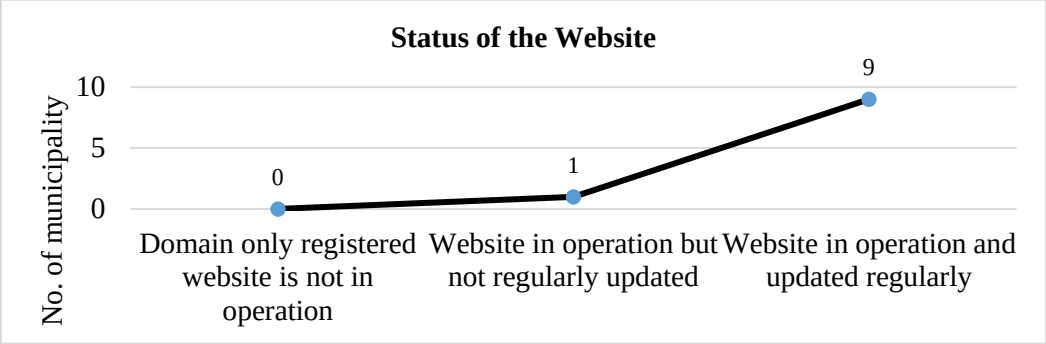


Figure 28: Status of the Website

The above graph shows that most of the municipalities have their official website but according to the data in 9 local levels (about 90%), the website is in operation and updated regularly, but in 1 local level (about 10%) i.e. Jantedhunga Rural Municipality, website in operation but no regularly updated. Thus, the websites must be updated regularly, which makes the effective service delivery to the public and other people.

Use of Digital Certificate (https) on Website

The status of the digital certificate (https) on websites is represented using the pie chart below:

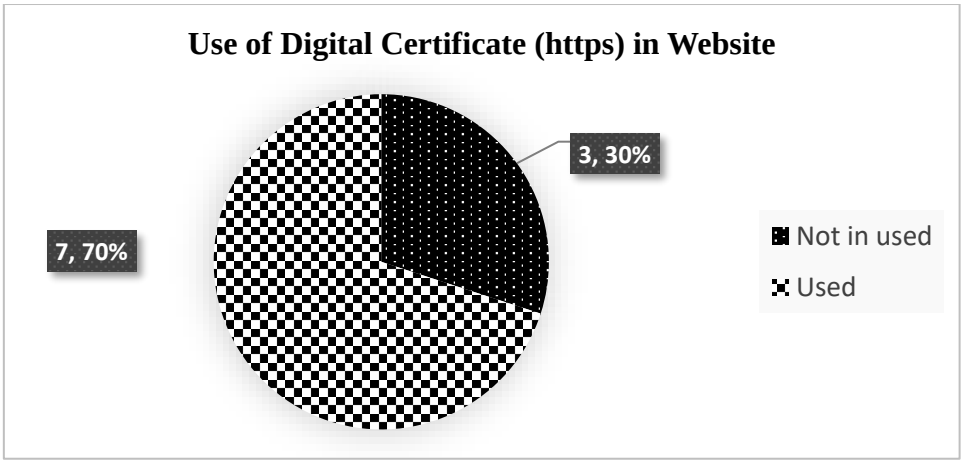


Figure 29: Use of Digital Certificate (https) on Website

The above chart clearly shows that most of the local levels are using the digital certificate (https) on their website and about 30% of local levels are not using digital certificates for their website security. So, those offices are not using the *https* on their website, they need to change their website into a secure website mechanism called a digital certificate.

Status of Elected Official on the Website

The people's representative is considered the first person for any organization. Therefore, the details of the people's representatives must be kept on the website. The status of an elected official on the website is presented below:

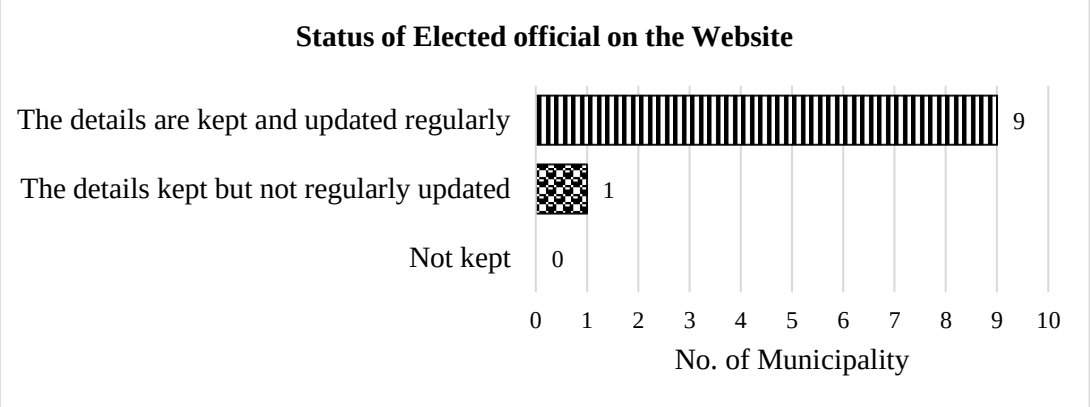


Figure 30: Status of Elected Official on the Website

According to the above statistics, most of the municipalities are updating the details of elected officials are kept on their websites, and details are updated regularly. Similarly, the details of elected officials have been posted on the website about (10%) but the details have not been updated regularly. Thus, the details of elected officials are being updated regularly on the websites of all the local levels of Nepal.

Status of Staff on the Website

On the website, the status of staff details is as follows:

Table 5: Status of Staff on the Website

Indicators	**No. of municipality**	**Percentage**
Not kept	0	0%
The details are kept but not regularly updated	1	10%
The details are kept and updated regularly	9	90%
Total	**10**	**100%**

According to the above statistics, most of the offices are updating and keeping the details of staff on the websites, and the details are updated regularly. Similarly, the details of staff have been posted on the website for about (10%) but the details have not been updated regularly. Thus, the details of all staff are being updated regularly on the websites of all the local levels of Nepal.

Publication of Information following Act and Rules on the Website

The website is a medium to deliver the information to the end-user, which creates a virtual service for service providers as well as end-users. So, every office should be updated and published their information through the websites. Thus, the study has found the following status of publication of information in accordance with Act and rules on the website as below:

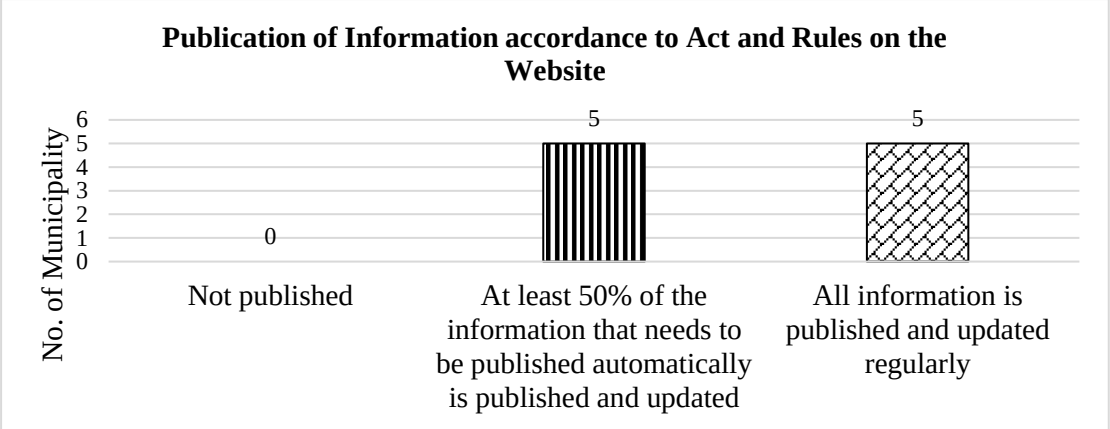


Figure 31: Publication of Information in Accordance to Act and Rules on the Website

According to the above statistics, in 5 local levels (50%) it is seen that all the information related to the automatic publication as per the rules and regulations related to the right to information is regularly published and updated. Similarly, information will be published in 5 local levels (50%) but not regularly updated. Therefore, the information to be published at all local levels should be updated regularly.

Details of Services on the Website

The list of the services must be kept on the website, which helps to make user friendly and easy accessibility of the services. The following status of services is found during the survey:

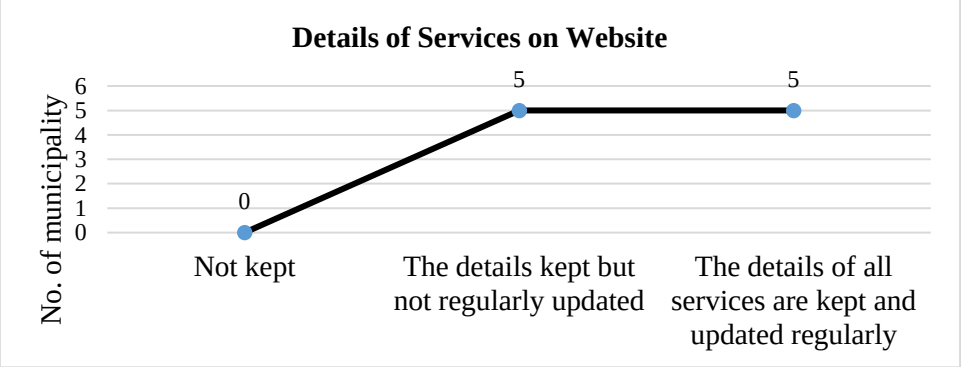


Figure 32: Details of Services on the Website

In the above figure, 50% of municipalities keep the details of all services updated regularly, and similarly, 50% of municipalities keep the details but they are not updated regularly. Thus, according to the above data, most of the municipalities are publishing the details of services and are regularly updated.

Details of the Information Officer and Spokesperson posted on the Website

A study conducted on the website of all the local levels of Nepal, including the details of the Information Officer and Spokesperson, found that the details were as follow.

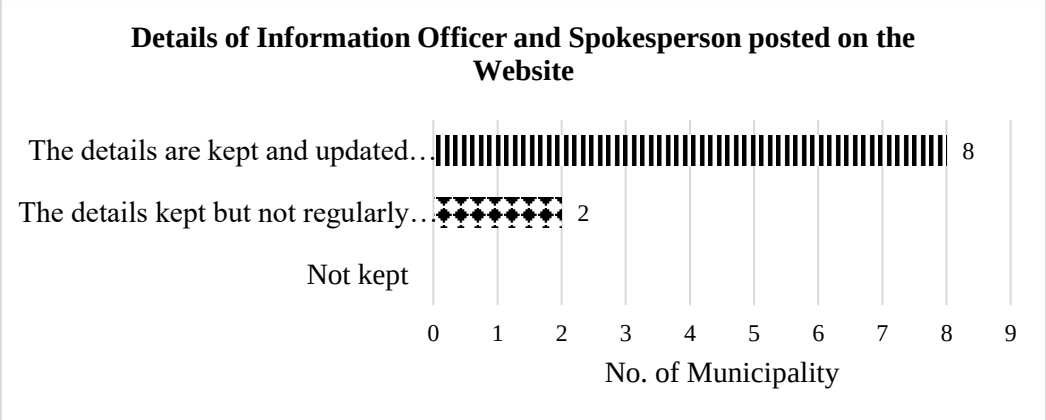


Figure 33: Details of Information Officer and Spokesperson posted on the Website

According to the above statistics, the details of the Information Officer and Spokesperson in 8 local levels (80%) are posted on the website and the details are updated regularly. Similarly, the details are kept in 2 local levels (20%) but it is not updated regularly. Thus, the websites of all the local levels of Nepal are regularly updated with the details of the Information Officer and the spokesperson.

Status of Digital Literacy in Municipality

Digital connectivity in common terms refers to access to a fast and reliable internet connection allowing users to take benefits from smart and digital services. In Nepal, digital connectivity is considerably improving in the last few years along with an increase in access to mobile services (e-Sewa, n.d.). The state of digital literacy at the local level seems to further help in the flow of services provided by the local levels through information technology. Therefore, in this section, aspects like internet access and mobile access have been discussed.

Access of Internet

At the local level, access to the Internet was studied based on indicators such as less than 25% of households, up to 25-50% of households, and more than 50% of households. The data are represented below:

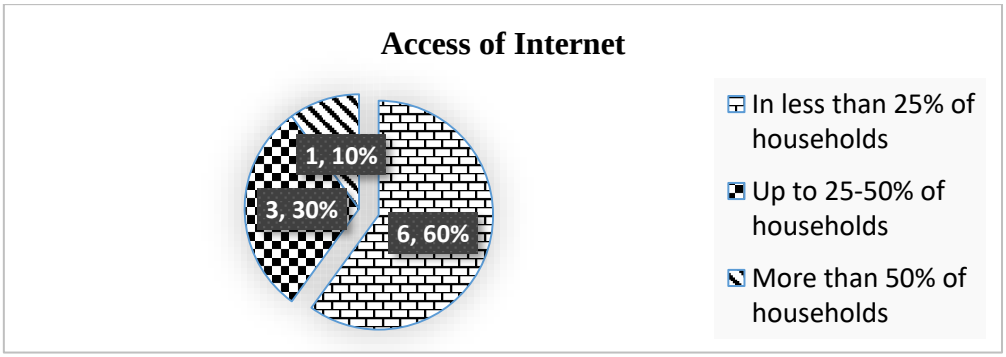


Figure 34: Access to the Internet

According to the above statistics, internet access has reached less than 25% of households in 6 local levels (60%). Similarly, in 3 local levels (30%) 25-50% of households appear to have reached, while in 1 local level (10%) more than 50% of households appear to have reached.

Access of Mobile

At the local level, mobile access was studied based on indicators such as less than 25% of households, up to 25-50% of households, and more than 50% of households. The data are represented below:

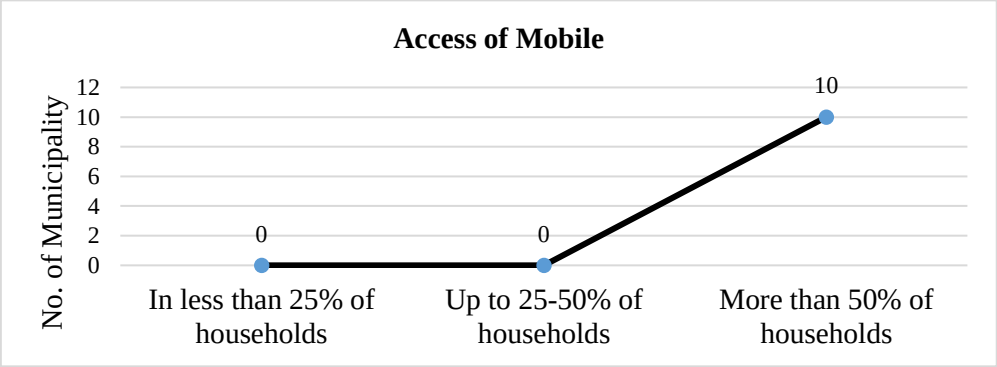


Figure 35: Access to Mobile

According to the above statistics, it is seen that all the households in Nepal have mobile facilities. As a result, it seems to be easier to exchange information in Nepal.

Policy Provisions Related to Information Technology

At the local level, the policy provisions related to information technology provide a legal basis for the flow of services provided by the local levels through information technology. Therefore, in this section, the status of Local Acts related to Information Technology and policy provision related to information technology for manpower has been discussed.

Status of Local Act Related to Information Technology

At the local level of Nepal, the situation of local law related to information technology was studied based on three different indicators and it was found that the situation is as per the details.

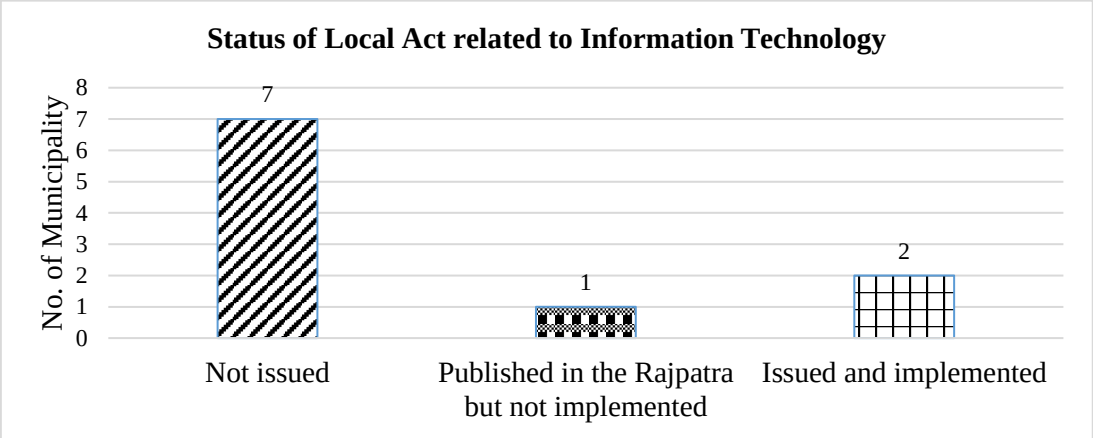


Figure 36:Status of Local Act related to Information Technology

According to the above statistics, 7 local levels (70%) do not seem to have issued any local activities related to information technology. Similarly, in 2 local levels (20%) the Act Rajpatra has been published and is being implemented, while in 1 local level (10%) only the local law related to information technology has been published in Rajpatra but it has not been implemented.

IT Policy for Manpower

After studying all the local levels of Nepal based on indicators such as the status of policy implementation of information technology for manpower and the status of publication of rules and regulations in Rajpatra, it was found that the details are as follows.

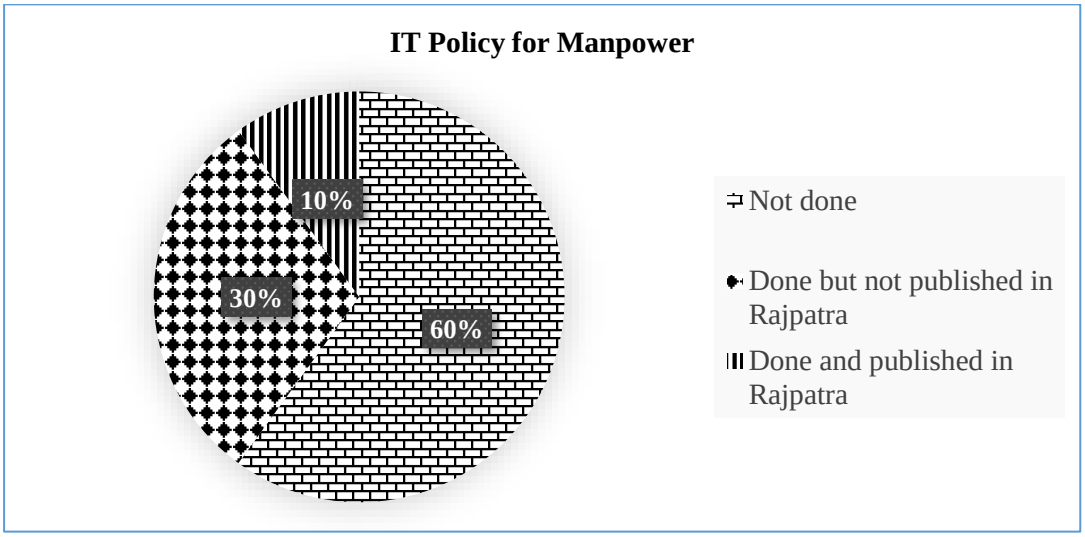


Figure 37: IT Policy for Manpower

According to the above statistics, there is no policy provision for manpower in 6 local levels (60%) so far. Similarly, in 3 local levels (30%) there is an information technology policy for manpower but it is not published in Rajpatra. At one local level (10%) there is an information technology policy for manpower and it is also published in Rajpatra.

Conclusion

Developed countries are responsible for creating information technologies, but there is a need to adapt and make them suitable for developing countries by recognizing the importance of aligning IT implementation with local development needs. It is not solely about the technology itself, but about adopting appropriate strategies to establish an effective information system in each country. Research plays a crucial role in identifying relevant issues and assisting in the formulation of suitable strategies. Each country has its unique characteristics, and appropriate information technology, as perceived by policymakers, supports activities that are deemed desirable at the national level. By formulating a favorable and supportive information strategy, a country can effectively utilize information technology for overall progress.

The main challenge lies in managing information technology in specific environments. There is no one-size-fits-all approach to IT management because it depends on various external factors such as social, economic, political, and cultural differences between countries. Internal factors like organizational culture and varying skills within organizations, even within the same industry and country, also come into play. Therefore, there is a significant need for academic research to understand the role of government in developing national capabilities and address IT-related challenges in developing countries.

An assessment conducted in Nepal across 10 local levels, covering 40 indicators in 7 provinces, examined the use of information technology. These indicators included manpower management, information technology infrastructure, institutional capacity, and information technology in service delivery. The assessment yielded mixed results, with some indicators showing relatively sufficient availability of IT-related manpower, regular website updates, and consistent information dissemination by information officers at the local level.

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