ICT IN A LOCAL GOVERNMENT UNIT

A Case of Sharada Municipality, Salyan

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Abstract: Information and Communication Technology, ICT plays a strenuous role in the development & Economic growth of a Local Government Unit. ICT in the Local Government Unit can speed up the development process. This study has been undertaken to investigate the ICT services and resources in Sharada Municipality, Salyan, Nepal. The primary objective of this research is to explore current ICT status and use of ICT in Sharada Municipality. The research addressed a number of key issues relating to access and use of ICT by the public, government workers and officials. The study examined the ICT infrastructure, budget to implement ICT related programs, human capacity, organization will and ICT master plan in Sharada Municipality. Questionnaires, face-to-face and tele interviews, government workers/officials and public feedback, official records, field visit and internet research are the methods of data collection. This paper attempts to present some major achievements, initiatives and master plan in the use of ICT in Sharada Municipality. The study makes the following recommendations: First, adequate training for local government officials and workers on the use of ICT facilities to increase knowledge and skills to use ICT services. Second, increase the budget to transform traditional service delivery mechanisms into e-governance. Third, public awareness about the implementation, use and access to ICT in local government units.

IndexTerms – **ICT, Local government, Civil Service, Implementation, Information Technology, Development, Economic Growth.**

I. INTRODUCTION

ICT plays a strenuous role in the development & Economic growth of a nation. It can be defined as a term that includes any communication device or application such as television, mobile phone, radio, computer and network, hardware and software and satellite system which enable users to access, store, transmit and manipulate information. This system has certain benefits such as low cost, enhance service delivery, and increase in transparency and interaction between citizens and government (Sabri, Sabri, & Al-Shargabi, 2012). Mr. Suresh Adhikari (Mayor, Sharada Municipality) define ICT as an effective and efficient tool to facilitate the achievement of Municipal goals and objectives.

The Constitution of Nepal (2015) has divided the country into seven provinces, six metropolitans, eleven sub-metropolitans, two hundred seventy-six municipalities, and four hundred sixty rural municipalities. Among two hundred seventy-six municipalities Sharada Municipality is one. According to the last administrative division of Nepal, Sharada Municipality is located in Karnali province, Salyan district. The GPS coordinates of the Sharada Municipality are 28.38°N 82.18°E. It was formed by merging existing seven Village Development Committees (VDCs): Dandagaun, Hiwalcha, Kajeri, Khalanga, Marke, Sejuwal Takura and Syanikhal by the May 8, 2014 decision of Government of Nepal. Sharada Municipality is further divided into fifteen (15) wards for the smooth running of daily administrative tasks and to make the public feel the presence of local government units at ground level. It covers an area of 198.34 sq. km. According to the census report of 2011, the total population of the municipality is 33,730 in which 15,661 are male and 18,069 are female.

The Government of Nepal had made various plans, programs, and initiatives to implement ICT in each unit. Various projects have attempted to adopt Information Communication Technologies to improve access, enhance the use, minimize the processing costs, increase transparency, and reduce the cycle times to half. The use of ICT in local government unit includes the use of Information Communication Technology in the delivery of governance information and communication to government officials/workers, public representatives and the public in general. Furthermore, various ICT systems are used for day to day public service delivery purposes.

Sharada Municipality has also adopted Information Communication Technologies in various sectors to uplift day to day administrative tasks and enhance service delivery mechanisms. Some ICT projects are laid by the Government of Nepal and some are run by the municipality on their own. This research explores current ICT status and use of ICT, number of key issues related to ICT and show how Information and Communication Technology has contributed to the improvement in the local governance enhance service delivery, and increase in transparency and interaction between citizens and government minimizing the cost.

II. RESEARCH OBJECTIVES

The purpose of this study was to assess the state of ICT infrastructure; access and use of ICT in Sharada Municipality. The study has the following general and specific objectives:

General Objectives

The general objective of this study is to explore current ICT status and use of ICT in Sharada Municipality. It explores a number of key issues relating to access and use of ICT by the public, government workers and officials, and show how Information and Communication Technology has contributed to the improvement in the local governance enhance service delivery, and increase in transparency and interaction between citizens and government minimizing the cost.

Specific Objectives
1. To examine the existing ICT infrastructure, capacity and skill levels of the local government officials and workers, public representatives and public.
2. To assess the major achievements, initiatives and master plan made by the central government and local government in the sector of ICT.
3. To find out how ICT has made a positive impact to enhance service delivery, and increase in transparency and interaction between citizens and government.

Research Questions
1. What is the current status of the ICT infrastructure, capacity and skill levels of the local government officials and workers, public representatives and the public?
2. What are major achievements, initiatives and master plan made by the central government and local government in the sector of ICT?
3. What is the contribution of ICT in local government unit to enhance service delivery, and increase in transparency and interaction between citizens and government at a low cost?

III. LITERATURE REVIEW

3.1 A Brief History of Information & Communication Technology in Nepal

The Federal Democratic Republic of Nepal is one of the Least Developed Countries (LDCs) and the Information and Communications Technology (ICT) sector is one of the fastest growing sectors in Nepal. The history of ICT in Nepal can be dated back to 1913 with the establishment of Telecommunication Department (*Now known as Nepal Telecom*). In 1951, Radio Nepal started broadcasting. The Radio Act came into being in 1957. In 1962, the government first officially started using FACIT electronic calculators. IBM 1401, a second generation computer was used by the government to process census data in the year 1971. In 1975, an Electronic Data Processing Centre named the National Computer Center (NCC) was established. In 1982, First Private Overseas Investment in software development, Data System International (DSI) was established for export and was the first ever US-Nepal joint venture in the IT sector. State-owned Nepal Television started broadcasting in 1985. Distribution of Personal Computers in Nepal started since mid-1980s. In 1992, National communication policy was formulated, and the Computer Association of Nepal was also formally established. The Internet was first introduced into Nepal in 1993 in a venture of the Royal Nepal Academy of Science and Technology (RONAST) and a private company, Mercantile Office Systems (MOS). In 1993, National Broadcasting Act was formulated. Institute of Engineering launched engineering course in computing in the year 1994. Using liberalization policy and involving the private sector in a competitive environment for the development and expansion of telecommunication sector in Nepal, the then Government of Nepal 's (cabinet) decision dated December 25, 1995 A.D. has initiated the involvement of the private sector in the development of the telecommunication services. The internet was spread after the introduction of VSAT services in 1996. In the same year, Ministry of Science & Technology was established. In 1999, Nepal Telecommunication Corporation (*Now known as Nepal Telecom*) launched cellular service. Nepal Telecommunications Authority was established in 1998 in accordance with Telecommunications Act, 1997 and Telecommunications Regulation, 1998. The first IT policy was rolled out in 2000. Establishment of the National Information Technology Center(NITC) as ICT Implementation Body in 2001. In 2003, the HLCIT, High-Level Committee for Information and Technology, was formed. Later on, many policies and acts related to ICT rolled out- Telecommunication Policy 2004, Electronic Transaction ordinance 2004, Electronic Transaction Act 2006, Electronic Transaction rules 2007, The ICT Policy 2015, The national Broadband Policy 2015 etc.

3.2 Current State

According to the report published by International Telecommunication Union- ICT Development Index 2017, Nepal stands in 140th rank in the world. In the year 2016, Nepal was in the 139th position. The IDI value in 2016 is 2.60 whereas in 2017 is 2.88. The regional rank (Asia and Pacific) of Nepal is 28. Among the listed 41 Lest Developed Countries (LDCs) Nepal is in 8th position.

Below is a summary table of ICT Development Index comparing Nepal with some regions and a chart published in ICT Development Index 2017. Low rankings in the ICT Development Index and Mobile Connectivity Index indicates the need for considerable investment and focus in connectivity, primarily in connecting the digitally uninitiated population, increasing access and affordability of ICT services, providing digital education, and increasing fixed broadband/fiber network (2019 Digital Nepal Framework, Government of Nepal Ministry of Communication and Information Technology).

Table 3.1: ICT Development Index comparison of Nepal

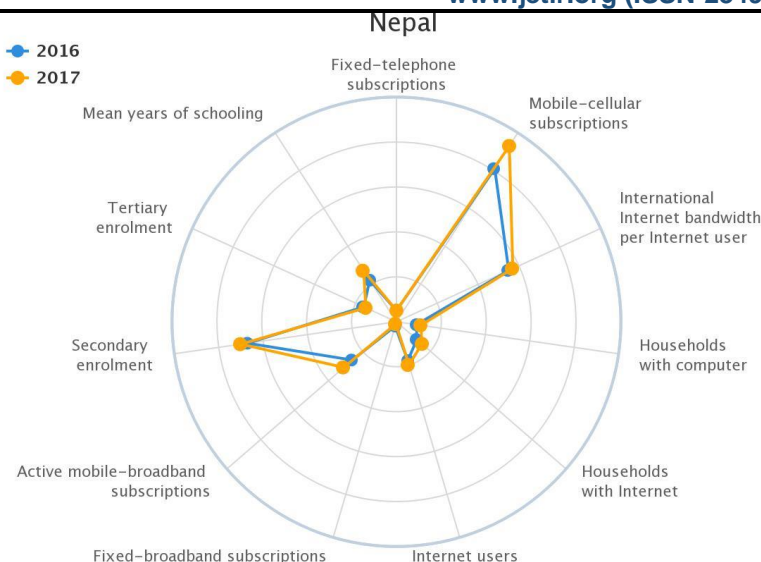| IDI Rank in	Rank (2017)	Rank (2016)
World	140	139
Asia & Pacific	28	-
Least Developed Countries (LDCs)	8	-

Figure: ICT Development Index-Nepal (Screenshot)
Source: International Telecommunication Union; ICT Development Index 2017

Till today, the Government of Nepal has undertaken the following ICT initiatives in the respective fields:

- Digital Foundation- Digital Signature, Optical Fiber Networking, Different types of Internet technology (VSAT), Virtual Private Network (VPN) Connections, Nepal Vital Registration, Cyber security and Data Center, Supply, delivery, installation & testing microwave radio for mid-hill etc.
- Agriculture- Some examples: Kisan Call Centers, Agriculture Atlas of Nepal, Land Usage Monitoring and Analysis, Land use zoning maps based on soil quality and crop suitability, Online Seedling Order System etc.
- Health- Some examples: Health Management Information System, Telemedicine, Mobile Health, Early Warning and Reporting System etc.
- Education- GPS Mapping.
- Tourism- Reliable Tourism Information System, Trekker's Information Management system etc.
- Energy- GIS Smart Grid, Energy Consumption pricing, Smart Licensing etc.
- Finance- Some examples: National Payment Gateway, Securities Data Management System, MeroShare etc.
- Urban Infrastructure- Some examples: CCTV surveillance for road traffic monitoring, electronic building permit system etc.

ICT Development Project (2008-2014) has helped the government to achieve the ICT goals. The project comprises of:

- Rural e-Community (wireless broadband, tele-centers)
- Government Network (Government Integrated Data Center, Groupware)
- eGov Application (Government Enterprise Architecture, PSC Recruitment MS, Land Record MS, Vehicle Registration System and Driving License MS)
- HR Development (awareness, training)

Similarly, e-Governance Master Plan (eGMP) (2007), eGMP 2 (2015), 10 Year Master Plan (2011), ICT in education Master Plan 2013-17, National IT Roadmap (2015) shows the strong will of the Government of Nepal to develop the country by using Information Communication and Technology. Observing International ICT day from government initiation is also a positive aspect.

Recently, the Government of Nepal Ministry of Communication and Information Technology (MoCIT) has published 2019 DIGITAL NEPAL FRAMEWORK- Unlocking Nepal's Growth Potential. Under the Digital Nepal framework, eight sectors – digital foundation, agriculture, health, education, energy, tourism, finance and urban infrastructure – have been identified based on close engagement with stakeholders. Eighty digital initiatives are identified which aims to propel socio-economic growth in Nepal by addressing crucial challenges while unlocking the growth potential in each of the eight key sectors. All identified 80 digital initiatives are discussed with all concerned stakeholders in workshops and feedback process setup by MoCIT (2019 Digital Nepal Framework, Government of Nepal Ministry of Communication and Information Technology).

IV. ICT IN SHARADA MUNICIPALITY

4.1 Current Status of ICT in Sharada municipality

The table below shows the current status of ICT in Sharada municipality-

Table 4.1: Current status of ICT in Sharada municipality

S.N	Service	Numbers
1.	**Telephone	*750 users
2.	**ADSL Internet (Nepal Telecom)	*325 users
3.	**Leased Line(Nepal Telecom)	*8 users
4.	Internet users from other Internet service providers	*480 (Approx.) users
5.	FM Stations	3
6.	Other Internet Service Providers	5
7.	Software and Hardware vendors	5

8.	Computer Institutes	8
9.	Cable Television Operators	3
10.	Mobile operators	2

Includes offices also.

Data Source: Field Survey; **Nepal Telecom, Salyan

4.2 Initiations/Achievements of Sharada Municipality, Office of the Municipal Executive on ICT

Sharada Municipality, Office of the Municipal Executive and its ward offices do all the paperwork by using computer system. Each department has its own computer system. Major achievements in the field of ICT can be listed as: -

1. It is a fundamental right of citizens in a well-functioning democracy to know what public officials are doing, what policies they are pursuing, what laws and regulations they are preparing, what programs they are running, how they are raising and spending money and what other agreements they are negotiating. Such information helps to curtail arbitrary use of local government power, increases accountability of public officials, transparency and help citizens to formulate their own opinions on issues affecting their lives. So, Sharada Municipality office has launched its own website with URL shaaradamun.gov.np (supported by the Ministry of Federal Affairs and General Administration) to deliver information to the public. Similarly, Shaarada Municipality mobile app was launched on December 16, 2018 (supported by Department of Information Technology, Ministry of Communication and Information Technology). For the same purpose, the public can use Audio Noticeboard Service with calling number: 1618-088-520138.
   The office uses a bulk SMS service also.
2. Traditional attendance system has been replaced by an electronic biometric attendance system in the municipal office. It helps to manage employee's attendance, leave and payroll. Employees are a primary asset and local government offices need to know how to keep track of their time and attendance. Thorough employee attendance reporting can increase productivity and lead to higher performance.
3. Now-a-days, electricity is the backbone of any office. Municipality office and ward offices were facing inconsistent power supply. So, they have installed online UPS and Servo Stabilizer on Municipality office and solar/inverter system in all ward offices to run day-to-day office tasks smoothly.
4. The municipality office and all the ward offices have access to broadband internet. The municipality office is offering free internet access to the public via hotspots in major areas.
5. To enhance the security, the municipality has been using CCTV camera in major areas of the municipality, municipality office and two ward offices. Municipality plans to extend the installation of CCTV cameras in all ward offices.
6. All wards secretaries are able to communicate using official domain email addresses.
7. Use of digital signage board to display citizen charter.
8. Use of digital LED display to provide typical information.
9. Offers online Vital Event Registration and Social Security (VERSS-MIS) services from respective ward level.
10. Use of District Health Information Software 2 (DHIS 2) to manage health-related information.
11. Use of Sub-National Treasury Regulatory Application (SUTRA), a software developed for planning, budgeting and accounting.
12. Integrated Educational Management Information System (IEMIS) is used by all schools in Sharada municipality.
13. Offers online tax payment services from the respective ward level.
14. Sharada municipality office gives priority to public grievance and feedback. Hence, developed own grievance management system mobile app. And are also using a grievance management system (*Hello Sarkar*) from the Government of Nepal.
15. Many ICT related trainings and seminars.

To implement, monitor, maintain and introduce new ICT systems in the municipality, the municipal office has one Information Technology Officer (*supported by Provincial and Local Governance Support Program (PLGSP) program, Ministry of Federal Affairs and General Administration*)

4.3 Future Plan of Sharada Municipality in ICT

Sharada Municipality has the following major plans in the future.

Digital foundation
1. The municipality plans to develop an intranet connecting municipality office, ward offices, health posts, schools and all its sister organizations.
2. Develop and improve ICTs infrastructure for all sectors of the economy.
3. Promote local research and development in software and hardware relevant to all sectors of the economy.
4. Preparation of digital village profile.
5. Add more CCTV surveillance cameras.

Education
1. The municipality plans to improve and enhance ICT lab and install e-attendance system in all secondary level schools.
2. In addition, the municipality will provide computer teachers on certain circumstances.
3. Implement School Management System in all secondary schools.

Tourism
1. Nepal is observing visit Nepal 2020. So, Sharada municipality plans to make a documentary of tourist destinations using a drone.
2. Excessive use of digital media to advertise tourist destination places.
3. Use of digital board to give information on tourist destinations of Sharada municipality

Health
1. Excessive use of digital media to provide health related information and send alerts to the public.
2. Radio programs to bring awareness in public.

3. Establish a telemedicine center.

Agriculture

1. Information and Communication Technologies (ICT) that play an important role in uplifting the livelihoods of farmers and help in economic growth. The municipality plans to introduce agro technologies that can revolutionize the farming sector of Sharada municipality.
2. Provide agro advisory services, market and resource information using ICT.

Trainings/Workshops/Seminars

1. This year Sharada municipality plans to conduct numbers of ICT trainings/workshops/seminars for officials, staff, public representatives for each and every sector. Most of the trainings include active participation of the public.
2. Encourage full utilization of existing ICT infrastructure to reduce resource wastage.
3. Implement measures to develop and retain skilled human resources in the ICTs sector

Business

1. Promote local production of ICTs products to ensure the relevance of content and use of appropriate technologies that meet international standards.
2. Encourage ICT personnel to introduce emerging technologies.

4.4 Challenges to use ICT in Sharada Municipality

1. **Financial-** In the least developed countries like Nepal, the cost is one of the most important obstacles in the path of implementation of ICT. Every year Sharada municipality allocates a huge amount of money that is involved in implementation, operational and evolutionary maintenance tasks. These costs must be low enough so that to guarantee a good cost/benefit ratio.
2. **Access, skill and usage challenge-** Some ICT systems are intended for the use of the public. But all do not have access to such ICT systems. The digital divide is a barrier to the municipality in that people who do not have access to the Internet will be unable to benefit from online services. Those who have access to such systems also lack skills and fear to use emerging technologies. Even the politicians and office staff do not have an interest in using ICT integrated systems.
3. **Organizational and Administrative Transformation Challenge-** Though almost all organizational and administrative tasks are carried out by integrating information and communication technologies; still Sharada municipality faces problems to transform(digitize) traditional organizational and administrative forms. Even the politicians and staffs do not have interest in integrating ICT in the local government unit.
4. **Sustainability- A l**arge amount of budget comes from multi-donor agencies. This is the only money the government has for development purposes. The danger is that the development projects will not continue after the projects are over. Thus the initiation of the government for ICT integration in Sharada municipality will follow the same suit.
5. **Lack of awareness in people-** Most of the people are not aware of the benefits of ICT integrated services. Unawareness is a major challenge in the implementation of ICT integrated projects.
6. **Language Barrier-** English is not understandable by most of the people in Sharada municipality. The ICT applications are written in English. That is why ICT systems are not used by the public as per the expectations.

4.5 Contribution of ICT in Sharada Municipality

Information and Communication Technology has its major contribution to administrative tasks. Traditional paper works have been digitized. This system has certain benefits such as low cost, enhance service delivery, and increase in transparency and interaction between citizens and government. All stakeholders are benefited at the same time, the public gets easy access to government information and the government has the advantage of promoting, planning and making policies to resolve the community problems (Sarpoulaki, Rad, & Saleknia, 2008). Timely information flow helps to curtail arbitrary use of local government power, increases accountability of public officials, transparency and help citizens to formulate their own opinions on issues affecting their lives. Sharada municipality has initiated to enhance access of ICT resources to the public. The municipality is offering free internet in some areas, and encouraging entrepreneurs to introduce emerging technologies in the municipality. ICT is well equipped in all ward offices and departments of the municipality. This offers fast and reliable services.

Contribution of ICT in Sharada municipality can be summarized as- enhanced collaboration and networking among employees, customers and partners by removing the barriers to real-time communication and effective information sharing; meet expectations of the new generation of employees; improved efficiency, service quality, built trust between citizens and government, contributed to achieve economic objectives, improved education, business performance, productivity and profitability through improved system performance; availability and security, ability to link the information provider with the information seeker via electronic channels, citizen engagement, improved achievement of municipal integrated development plans, improved return on ICT investments, ICT ability and agility to adapt to changing circumstances etc. The results from this study show a positive attitude toward ICT in terms of its impact on work.

V. RESEARCH METHODOLOGY

I have applied survey research to collect primary data from employees, public representatives, politicians and public of Sharada Municipality and adopted quantitative research technique. Questionnaires were prepared to get the information about demographics, physical facilities, ICT training, budget on ICT, initiation, master plan and challenges to use ICT etc. from respondents. Face-to-face and tele interviews, government workers/officials and public feedback, official records, field visit and internet research are also methods of data collection. The collected data have been entered into GNU PSPP and data analysis has been done. For preparing charts Microsoft Excel 2016 has also been used.

VI. RESULT, ANALYSIS AND DISCUSSION

The primary data have been collected from municipal office staff, politicians and the public. The total number of respondents was 150, out of them 48 are staffs, 30 are politicians and 72 are general citizens (Service recipient). Confidence level 95% and confidence interval 8 is used to determine the sample size.

Section A: Demographic Characteristics of the Respondents

Table 6.1: Age

Age	Staffs	Politician	Public	Total
15-25	5	1	7	13
26-35	8	1	11	20
36-45	17	7	23	47
46-56	12	5	18	35
56-65	6	13	9	28
66-75	-	3	4	7
Total	**48**	**20**	**72**	**150**

Table 6.2: Gender

Gender	Frequency	Percentage
Male	69	46
Female	81	54
Total	**150**	**100**

Section B: Access and use of ICT

Access and use of mobile phones and mobile Internet

Table 6.3: Access and use of mobile phones and mobile Internet

Phone Type	Staff	Politician	Public
Smart Phones	100%	73%	70%
Non-Smart Phones	-	27%	30%

The research findings revealed that 100% of respondents use mobile phones.

Access and use of Radio

Table 6.4: Access and use of radio

Phone Type	Frequency	Percentage
Use radio	117	78%
Do not use radio	33	22%

The research findings revealed that 78% of respondents use the radio. People from urban areas listen to the radio than people from the town.

Access and use of Televisions

Table 6.5: Access and use of mobile phones and Internet

Phone Type	Frequency	Percentage
Use Television	78	52%
Do not use Television	72	48%

The research findings revealed that 52% of respondents use televisions. People from urban areas use television less than people from the town.

Access and use of Telephone Lines

Table 6.6: Access and use of telephone lines

Phone Type	Frequency	Percentage
Use radio	9	6%
Do not use radio	141	94%

The research findings revealed that only 9% of respondents use telephone lines. Increasing use of mobile phones has dominated the use of telephone lines.

Section C: Degree of satisfaction

Table 6.7: Degree of satisfaction on initiation and achievements Sharada municipality on ICT

Age	Very satisfied	Satisfied	Ok	Dissatisfied	Very Dissatisfied	Total
15-25	2	9	1		1	13
26-35	2	16		2		20
36-45	11	19	13	4		47
46-56	17	9	9			35
56-65	12	9	6	1		28
66-75		2	1	2	2	7
Total	**44**	**64**	**30**	**9**	**3**	**150**
Percentage	**29.33**	**42.66**	**20**	**6**	**2**	**100**

Table 6.7 shows that 42.66 percent of respondents are satisfied with the initiation and achievements Sharada municipality on ICT. 29.33 percent of respondents are very satisfied, 20 percent are neutral, 6 percent are dissatisfied and 2 percent respondents are very dissatisfied with the initiation and achievements Sharada municipality on ICT. It can be observed from the table above that age group 36-65 are very satisfied.

Table 6.8: Degree of satisfaction on the contribution of ICT on Sharada municipality

Age	Very satisfied	Satisfied	Ok	Dissatisfied	Very Dissatisfied	Total
15-25		4	7	2		13
26-35	2	13	4	1		20
36-45	3	19	23	2		47
46-56	6	14	11	3	1	35
56-65	2	11	4	7	4	28
66-75	3	3	1			7
Total	**16**	**64**	**50**	**15**	**5**	**150**
Percentage	**10.66**	**42.66**	**33.33**	**10**	**3.33**	**100**

Table 6.8 shows the degree of satisfaction on the contribution of ICT on Sharada municipality. 42.66 percent of respondents are satisfied, 10.66 percent of respondents are very satisfied and 33.33 percent of respondents are neutral. 10 percent of respondents are dissatisfied and 3.33 percent of respondents are very dissatisfied.

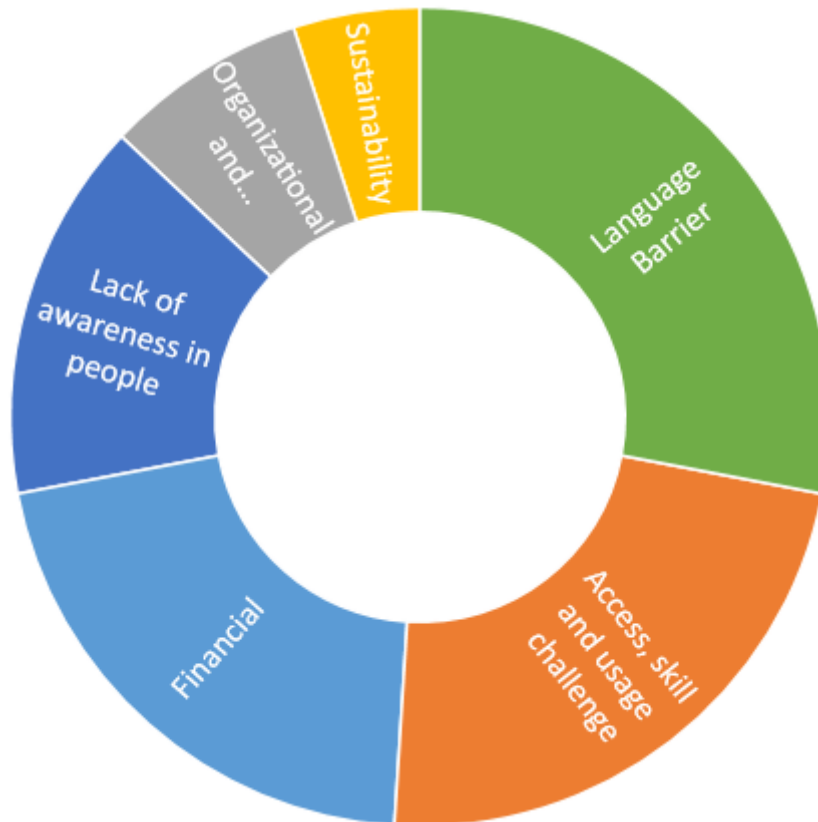**Section D: Challenges to use ICT in Sharada municipality**

Figure 6.1: Challenges to use ICT in Sharada municipality

The sunburst chart above shows the language barrier as the major challenge followed by access, skill and usage challenge and financial challenge respectively. The study shows that sustainability is the minor challenge to use ICT in Sharada municipality.

VII. CONCLUSIONS

The use of ICT in the local government unit has set the stage for greater transparency, enhanced service delivery and the possibility for greater citizen participation. The degree of satisfaction shows the will of Sharada municipality and the active participation of the citizens to use ICT. The municipality plans to integrate ICT in each and every sector for the development and economic growth of the municipality. In spite of the advantages, certain problems were identified. These problems represent barriers to progress. These barriers should be minimized.

VIII. RECOMMENDATIONS

The study makes the following recommendations:
1. Adequate training for local government officials and workers on the use of ICT facilities to increase knowledge and skills to use ICT services.
2. Increase the budget to transform traditional service delivery mechanisms into e-governance.
3. Public awareness about the implementation, use and access of ICT in the local government unit.

IX. ACKNOWLEDGMENT

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