

# The Dynamics of Information and Communication Technology in Oromia: The Case of Goro Woreda

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## Abstract

Information and Communication Technology is making the entire world as closer as human scale and nowadays it is becoming a hot government agenda. Thus, the Ethiopian government placed ICT policy to develop, deploy and use information and communication technology to improve the livelihood of every Ethiopian, and optimize its contribution to the development of the country. The objective of this study was therefore, to determine the challenges of ICT implementation in Oromia with specific reference to Goro Woreda. The study applied both qualitative and quantitative approach through concurrent mixed method. Primary and secondary data sources were used to collect relevant data. The quantitative and qualitative data were analyzed, described and explained by using descriptive statistics such as cross tabs, mode and chi-square test. Hence, the finding revealed that, though, some positive changes can be cited, the main challenges of ICT implementation in the study Woreda are lack of managerial oversight, poor organizational integration, inoperative ICT equipment, poor network, insufficient ICT professionals, lack of sufficient computer, and poor communication structure. Above all, the poor attention given to the ICT program was the root cause for majority of the challenges. Finally, the study concluded the services given through ICT were not adequate and the implementation of the program was not successful. From this, adequate managerial oversight and support and grass root level administrative support federal and regional concerned bodies is recommended.

**Keywords:** ICT, Video Conferencing, Server Mail Service and Rural Connectivity

## INTRODUCTION

Information and communication technology (ICT) is a system and method used for collecting as well as utilizing information as main issue of development. This ICT is a technology which binds jointly and exchange ideas in giving meaning, thinking about it and demonstrating the idea in a good manner (Kenneth et al, 1996). In addition, information and communication technology is a way in which information is gathered, managed and distributed in order to attain particularly proposed goal (Efraim et al, 2003).

According to Kenneth et al (1996), information and communication technology has benefits in recognizing difficulties in simple way and to propose way of solving problems. This technology has the capability in which people perceive new happenings in the world. In addition, ICT generates the base for comprehending ability in widening our vision. As a result, being familiar with technology, we can start managing our surroundings and begin generating answers and providing fast and interesting services (Kenneth et al, 1996).

In developing countries ICT undertake broad scope difficulties in all aspects of life. This technology takes a great part in achieving their development goals in developing countries by providing and facilitating information (POST, 2006). Besides, ICT has significant influence on trade of developing nations by originating latest possibilities. This is happened by initiating invention and provision of electronic materials (Alexander, 2003). Further, in developing nations ICT give chance in improving performance in community management, improve production of manufacturing, and encourage development in doing business (Marti, 2008).

Furthermore, according to Olugbenga (2001), ICT have grown as a facilitator of transformation in developing nation. It was not creating a change by itself however it enhances the change and new production. In addition, it also develops technological implementation for cooperation. Besides, enhancing new technique and instruments designed for technical and industrial research is another essential area which ICT contribute to developing countries. Moreover, ICT is used for making stronger the development of generating new method of exchanging information with decreasing expenses of gathering ideas (Olugbenga, 2001).

Information and communications technology is among the policy of a government which plays its role in the implementation of other policies. In Ethiopia, information and communication technology is on the developing situation. In addition, ICT is considered as skill and information used as device of growth as well as manufacturing. Furthermore, successful implementation of ICT helps another program to achieve their intended goals specially the implementation of good governance (MICT, 2009).

Ethiopian Government currently enhances the ICT policy through considerable improvement on right to use ICT. In this policy greater attention was given to coverage of ICT in rural areas which focuses on providing modern technologies to local societies. However, the country begins the progress of the information and communication technology sector from bottom and which has many problems in implementing all aspects of

ICT. The ICT coverage and practice in Ethiopia reflects developments of country incorporated with economical and social improvement (Lishan, 2008).

In line with National ICT policy, Oromia regional government adopted regional ICT policy which is implemented under Oromia Information and Communication Technology Development Agency. As a result, the agency has intended to perform many things to enhance ICT in the region. The main duties of the agency are expanding rural connectivity and center of information to provide significant information to local community. Information and communication technology promotes education, agriculture, health and etc. In addition, development of human resource through training and research is another focus of regional state ICT policy (Taffesse, 2012).

Implementation of ICT policy brings many changes in the region. Efficient and effective service delivery was improved as a result of usage of computers at all level of civil servants. Information and communication technology professionals provide improvements in developing MIS which help for HRM in the region. The ICT business incubation centres started at Adama, extending and developing soft ware are main achievement of the policy (OICTDA, 2013).

In line with the regional state ICT Development Agency, there is ICT program at *Woreda* level which is implemented under *Woreda* civil service and good governance office objectively to make easy the learning situation and sharing of good practices, reduce cost and save time of productivity. Furthermore, this program enhances productivity and market opportunity. Moreover, ICT department at *Woreda* level provide computer training, internet service, and different technological services to the *Woreda* offices and community (OICTDA, 2011).

Regardless of the success of the ICT program, still there are problems which hinder the successful implementation of the program. The ICT program implementation is weak when evaluated with its intended objectives and goals. Reports of the Oromia ICT Development Agency show that, the region is far from the plan and there is a long way to achieve the target. There is ineffective quality and less efficient services especially services related to internet (OICTDA, 2011). Therefore, the purpose of this study was to assess critically the problems which hinder the implementation of ICT program in Goro *Woreda*. Thus, this journal article aims at answering the following research questions:

1. How the ICT program is implemented in the study area?
2. How the ICT implementation program is over sighted by management bodies?
3. What factors affecting the implementation of ICT?

The overall objective of the ICT program is to improve the efficiency and effectiveness of the public sectors. Therefore, regarding to the significance of the study, inter and intra connectivity of the *Wored* cannot be discussed in separation from the government ICT policy and strategy. This is because, ICT in campuses all local, national and international connectivity including telephone and Mobile Network, Internet, Video-Conferencing, Emailing among others. However, in many instances, lack of access and skill to use computer technology and poor ICT infrastructures are among the critical challenging factors that impede local connectivity and quality service provision (Gebre, 2014). Therefore, this study was an attempt to contribute towards filling the gaps in access and skill to use computer technology and the ICT to promote public service delivery. Methodologically, the Article was conducted on a case study method and pertinent data was collected both from primary and secondary data sources.

## **Review of Theoretical and Conceptual Literature**

### **Traditional Neoclassical Growth Theory**

Neoclassical theory of growth gives emphasis to technology by considering technology as one of the indicators or the variable of growth. Development of technology is one of the factors which describe continuing growth. In this theory technological progress is described independently of other factors of growth. In traditional neoclassical growth theory, technological progress is one of the powerful factors which enhance growth output (Todaro and Smith, 2012). Therefore, technology plays a great role in enhancement and acceleration of economic growth of the country. Moreover, this theory is related to outcomes of ICT program.

### **Modernization Theory**

Modernization theory explains level countries transformation. This theory describes the specialty in social structure and enhancing the implementation of democracy. It gives emphasis to process leads countries to modernization. The specific processes indicated in modernization theory are: education, urbanization, industrialization and communication are among the main chains. These chains collaboratively lead the country to economic development and modernization. In addition, modernization theory describes a worldwide, extensive, complex, permanent and long lasting process which shows the transformation of a people from traditional to modern (Adam and Fernando, 1997).

Modernization includes wide range of development and radical transformation in which society has

changed from traditional to modern society. Modernization is engaging the developmental path of developed countries. Modernity describe improved standard of living standard of community by distributing information and knowledge concerning more successful methods of production and giving services. Modernization described by replacing of older practices by recent practices and services giving methods. Recent practices and improved services supported by technology shows the modernity of the country. Modernity gives emphasis to technology as it is one of the main facilitator in which modernization incorporates the economies of developing countries into the developed countries system. The distinction between developed country and developing country is explained by technology which shows the modernity of the country (Matunhu, 2011). Therefore, as explained in modernization theory, ICT is the facilitator of modernization and the instrument which enhances the improvement of production and providing better service in transforming society.

### **Technology Acceptance Model**

Technology acceptance model is a theory which describes and intended to explain the behavior in ICT usage. This theory describes the reason of the implementers to implement successfully and to reject the use of ICT. The technology acceptance model perceived, ease use of and usefulness as two reasons which hinder the implementation of information and communication technology. These reasons show the willingness of the implementers in using the ICT program. In technology acceptance model, usefulness describes the attitude of implementers to accept and use ICT. On the other hand, ease of use describes, the attitude of implementers to use ICT (Eija, 2011). Therefore, willingness is important issue for successful implementation of information and communication technology.

### **The Conceptualization of ICT Program**

Information and communication technology is about technological skill and innovation. In addition to its facilitating social, political and economic goals, it helps the implementation of democracy in a country. Thus, ICT program encourages application of democracy by facilitating citizen's participation in politics. Furthermore, it provides information and knowledge in simple way and gives accessibility of important information. In enhancing democracy, the main focus of the program is facilitating government reforms in order to provide better service for the citizens. Therefore, governments give focus to the development of ICT program throughout their country to give information, knowledge, and other government services in equitable manner. Thus, the ICT program facilitates the development agenda of a country (NICTPS, 2009).

Information and communication technology is a collection of technological instruments which helps to share, generate, keep, and control information. ICT is important tool which enhance social, political and economic activities. Therefore, to make the people capable of knowledge the government supposed to provide valuable, reachable and consistent information. In order to develop consistent information system, the ICT sector is a primary focus of government. Therefore, to share, generate, keep, and control information and provide easily to a larger society the government is implementing the national ICT policy (Sirak, 2012). Corresponding to the National ICT policy, regions have their own ICT program implemented up to *Woreda* level. Furthermore, according to Gebre (2014), government of Ethiopia as many developing country governments endeavors to relate this influential ICT program as main facilitator for the implementation of reforms and to give better service.

### **Role of Information and Communication Technology**

As asserted by Gebre (2014), information and communication technology in the implementation of civil service reforms plays a vital role by facilitating the ongoing process. In addition, according to Daniel (2009), in education application of ICT program promotes cooperative student relations in academics further it enhances innovation, developing new approach of teaching and creating more suitable and attractive school environment is the main role of ICT in education.

In addition, ICT contribute its role in poverty reduction and economic development of the country. It gives chances for a country using a technology to tackle the poverty and enhance economic growth. Information and communication technology plays its part in the development of both developed and developing countries. This ICT developed in most cases of developed countries developed by public-private partnerships (Kundishora, n.d.).

Furthermore, ICT equipments improve farmer's skill and access of information which is important for their production. These equipments are used for increasing awareness of farmers by giving significant information related to technology in agriculture and prices of market. Therefore, these ICT equipments are device of agricultural extension program which lead to effective production (USAID, 2013). Thus, information and communication technology contributes a lot in all area of development. It plays a great role in the achievements of other policies of the country by creating conducive environment for implementation. Furthermore, it enhances all social, economic and political activities.

## Results and Analysis

### The Implementation of ICT in Goro Woreda of Oromia

As affirmed by, Gebre (2014), The *Woreda* in Ethiopia is an administrative subdivision with an average population of 100,000. The Ethiopian district level decentralization gives more power to the *Woredas* to administer the local community and the name *Woreda-Net* is derived from the *Woreda*. The *Woreda-Net* in Ethiopia is a global and satellite-based network which intentionally intended to supply the ICT services like Video-Conferencing, Message-Exchanging, Internet Connectivity and other service with the *Woredas*, Regions and Federal level government bodies.

Installation is therefore, one of the services provided to *Woreda* sectors by ICT department. In rural *Woreda*, installation of software requires soft-ware data in external devices. Therefore, hardware was required to install software. ICT professional is another important person who plays a vital role for the adequacy of installation of soft ware.

Table1. Educational level \* the installation of soft ware is adequate. Cross tabulation

Educational level		The installation of soft ware is adequate.					Total
		Strongly Disagree	Disagree	No comment	Agree	Strongly Agree	
Certificate	Count	0	0	0	1	0	1
	% within Educational level	0%	0%	0%	100%	0%	100%
TVET	Count	0	0	0	1	1	2
	% within Educational level	0%	0%	0%	50%	50%	100%
Diploma	Count	7	13	4	10	2	36
	% within Educational level	19.4%	36.1%	11.1%	27.8%	5.6%	100%
First Degree	Count	19	10	9	13	6	57
	% within Educational level	33.3%	17.5%	15.8%	22.8%	10.5%	100%
Total	Count	26	23	13	25	9	96
	% within Educational level	27.1%	24%	13.5%	26%	9.4%	100%

Source: Field Survey (2015)

As indicated in Table-1, 51.1% of the respondents stated that, the installation of software was not adequate. On the contrary, 35.4% of respondents confirmed the installation of software provided by ICT department was adequate. Moreover, interviewed experts stated that, installation of soft ware lacks ICT professionals and lack of soft ware used to install computers in the *Woreda*. However, the ICT professionals justified that, installation is implemented better than other services but *Woreda* offices bought software from private ICT centers by themselves and it lacks some parts of the software. Thus, in general the service provided by installation of soft ware was not successful as expected in Goro Woreda.

### Managerial Over Sight

*Adequate managerial oversight is the process of inspection which helps in the implementation of policies. In some cases inadequate managerial oversight is a challenge which hinders the successful implementation of the policy or a program* (Larry, 2010). In addition, Planned Behavior theory gives emphasis to cognitive self-regulation and focusing on behavioral control. Behavioral control describes to the observation of managing the achievement of a specified behavior. The theory suggests that the commitment and intention to apply information and communication technology is important issue for successful implementation of the program (Eija, 2011).

Further, theory of IT Implementation Process focused on the institutional change, technological dissemination and innovation. This theory gives emphasis to guiding and managing structure for the implementation of ICT. Theory of IT Implementation Process describes stages in IT implementation. The stages are initiation, institutional adoption, reception or acceptance, and integration. This theory shows implementation process focuses on application of technology in day to day implementation of other programs to fulfill institutional goals. Thus, managerial oversight had a great value in the implementation of programs and policies.

Table2. Managerial Over Sight

Occupation		Managerial oversight					Total
		Strongly Disagree	Disagree	No Comment	Agree	Strongly Agree	
Expert	Count	7	15	7	11	4	44
	% within Occupation	15.9%	34.1%	15.9%	25%	9.1%	100%
Head of department	Count	6	13	4	4	1	28
	% within Occupation	21.4%	46.4%	14.3%	14.3%	3.6%	100%
Head of the Sector	Count	6	11	1	5	1	24
	% within Occupation	25%	45.8%	4.2%	20.8%	4.2%	100%
Total	Count	19	39	12	20	6	96
	% within Occupation	19.8%	40.6%	12.5%	20.8%	6.2%	100%

Source: Field Survey (2015)

As shown in table-2 above, majority of the respondents rejected the effective managerial oversight during the implementation of ICT programs. Similarly, interviewees were also justified that, officials at *Woreda* level do not follow-up attentively the ICT implementation program. In addition, experts confirmed that, Civil Service and Good Governance officials are not active and committed facilitators throughout the implementation of ICT in the *Woreda*. Thus, the situation in Goro *Woreda* contradicts with the supposition that emphasizes the crucial managerial over sight for successful program implementation. Hence, Goro *Woreda* lacks managerial oversight in ICT implementation program and little attention is given to the program.

### Organizational Integration

Conformity has various features in implementation phase of policy than its role in time of policy creation phase. In decision making agreement or bargaining is usually conventional element of politics. Once a public policy is formulated interest for the successful implementation is vital when it reflects realistically in policy makers' decision. In addition, officials are permitted in negotiation and bargaining which is used for reducing any unexpected challenges that is related to implementation phase of a policy (Larry, 2010). Therefore, organizational integration has direct impact in the implementation of government policies.

Table3. Organizational Integration

Occupation		Organizational Integration.					Total
		Strongly Disagree	Disagree	No Comment	Agree	Strongly Agree	
Expert	Count	10	23	5	6		44
	% within Occupation	22.7%	52.3%	11.4%	13.6%	0%	100%
Head of department	Count	7	16	2	3	0	28
	% within Occupation	25%	57.1%	7.1%	10.7%	0%	100%
Head of the Sector	Count	9	14	0	0	1	24
	% within Occupation	37.5%	58.3%	0%	0%	4.2%	100%
Total	Count	26	53	7	9	1	96
	% within Occupation	27.1%	55.2%	7.3%	9.4%	1%	100%

Source: Field Survey, 2015

Table-3 above summarizes that, the disagreement of respondents on the effective integration of organizations in supporting the implementation of ICT program. This means that, public sectors in Goro *Woreda* were not integrated to reduce any unexpected and expected challenges that hindered the implementation of ICT program. Furthermore, interviewed experts also stated that, most of the sectors in *Woreda* came to the ICT department to get different services if the condition is suitable but no sector is care about the challenge of the department and no sectors support the department.

### Sufficient Computer

In the implementation phase of any policy or program, failure in supply of adequate resources and little attention given to sectoral integration makes the implementation difficult (Stella, 2004). Therefore, fulfilling adequate resources which is important to implement the expect program is a crucial end-over. Thus, adequate supply computer is important for the success of ICT implementation.

Table4. Sufficient Computer

Educational level			Sufficient computer in ICT department				
			Strongly Disagree	Disagree	No Comment	Agree	Total
Certificate	Count		1	0	0	0	1
	% within Educational level		100%	0%	0%	0%	100%
TVET	Count		0	1	1	0	2
	% within Educational level		0%	50%	50%	0%	100%
Diploma	Count		15	17	2	2	36
	% within Educational level		41.7%	47.2%	5.6%	5.6%	100%
First Degree	Count		19	34	2	2	57
	% within Educational level		33.3%	59.6%	3.5%	3.5%	100%
Total	Count		35	52	5	4	96
	% within Educational level		36.5%	54.2%	5.2%	4.2%	100%

Source: Field Survey, 2015

As shown in table-4, 90.7% of the contributors were disagreed on having sufficient computer. Only 4.2% of them confirmed as the department has sufficient computer. Thus, the more the service need, the more they evaluate the situation by relating their expectation with their perception and the more they know the level of the problem.

The level in which the ICT department of the *Woreda* fulfills the need of service users may play crucial role. In addition, interviewed experts also stated that ICT department of the *Woreda* has only one computer which serves for training, mail server service and other duties in the department. Furthermore, experts stated that, lack of computer hindered the training of basic computer facilitated for civil servants.

### Coverage of Internet

Adequate service is the level in which the customer accepted the service. Adequacy of service can be affected by factors that influence the provision of adequate service. Factors which can affect the adequacy of service are temporary service intensifiers, alternative service, customer perception, situational aspect and prediction of service. In addition, sometimes expectation of customer is further than service provided by service providers (Mercedes and Rodrigo, 2012). Therefore, adequate coverage of internet is important as successful implementation of ICT program.

As indicated in table-5 below, majority of the respondents disagreed about the adequate coverage of internet. Similarly, all the interviewed respondents and experts also stated that, there is no adequate internet coverage in the *Woreda*. Due to this, video conferencing and mail server service was unsuccessful, interruption is common.

Table 5. Internet Coverage

Work Experience		There is adequate internet coverage				
		Strongly disagree	Disagree	No Comment	Agree	Total
Less than a year	Count	0	4	1	2	7
	% within Work Experience	0%	57.1%	14.3%	28.6	100%
1- 2 years	Count	3	7	0	1	11
	% within Work Experience	27.3%	63.6%	0%	9.1%	100%
3-4 years	Count	4	3	1	1	9
	% within Work Experience	44.4%	33.3%	11.1%	11.1%	100%
Above 4 years	Count	23	40	2	4	69
	% within Work Experience	33.3%	58%	2.9%	5.8%	100%
Total	Count	30	54	4	8	96
	% within Work Experience	31.2%	56.2%	4.2%	8.3%	100%

Source: Field Survey, 2015

### Alternative Electricity Source

In the implementation of ICT program, power supply alternative is very important to provide effective ICT

services. To reduce interruption of service due to power supply, option generators and other means of electric power supply is very important. ICT Departments should have their own alternative electric power supply equipments to use when the normal power supply line is stopped (Frode and Stein, 2013).

Table 6. Alternative Electric Power Source

Gender		Alternative Electricity Source				
		Strongly Disagree	Disagree	No Comment	Agree	Total
Male	Count	19	43	2	7	71
	% within Gender	26.8%	60.6%	2.8%	9.9%	100%
Female	Count	15	9	0	1	25
	% within Gender	60%	36%	0%	4%	100%
Total	Count	34	52	2	8	96
	% within Gender	35.4%	54.2%	2.1%	8.3%	100%

Source: Field Survey (2015)

As shown in table-6, majority of respondents disagreed on the availability of alternative electric source which was intended for ICT program. Correspondingly, interviewees also stated that, ICT department has no alternative electric source. Likewise, experts affirmed that, the Generator intended as alternative electric source for ICT program was malfunctioned before eight years and its status was beyond the capacity of the *Woreda*.

As the experts stated, the *Woreda* reported the situation to the higher concerned bodies however the response given to maintain the generator was not adequate. Thus, the Generator which had the power to serve all sectors of the *Woreda* left inoperative. In addition, the solar used as alternative electric source is also malfunctioned before five years. The *Woreda* till reported the inoperative equipments to get maintenance support from the concerned bodies. However, the response of concerned bodies to maintain inoperative equipments was not adequate.

Therefore, as majority of respondents stated, poor internet connection, little attention given to the program in the *Woreda*, interruption of electric power, lack of finance, lack of support from other sectors, lack of ICT equipments and inoperative ICT equipments are the main problems which hinder the successful implementation of the program in Goro *Woreda*. Similarly, interviewed experts stated that lack of support from administrative bodies was the root cause of all problems which hinders the implementation of ICT program in this *Woreda*.

## Conclusion

Though ICT is of the transformation agenda of the Ethiopian government, the finding of the study shows that, its implementation in Goro *Woreda* was not successful and it did not meet the expectation of customers. Support from regional and federal bodies were not adequate. All the problems mentioned in the discussion together hindered the effective implementation of ICT in the *Woreda*. The major problems of the ICT program in Goro *Woreda* are lack of managerial oversight, poor organizational integration, inoperative ICT equipments which lack maintenance response from concerned bodies were of the serious problems hindering the implementation of the program. Besides, inadequate network, poor finance were also another serious problem in the *Woreda* which contributed for the ineffectiveness of the program.

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