iJRASET
International Journal For Research in Applied Science and Engineering Technology



INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Volume: 8 **Issue:** IX **Month of publication:** September 2020

DOI: https://doi.org/10.22214/ijraset.2020.31540

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

Assessing the Challenges of Wolaita Zone Rural Roads Maintenance, Ethiopia

Getu Bireda
Lecturer, Department of Construction Technology and Management, Wolaita Sodo University, Ethiopia

Abstract: ***Improving the general road network in the rural areas has been used as a measure to alleviate poverty and attain the Vision 2030. Beyond alleviation of poverty the importance of rural roads extends to all aspects of development of rural communities including demand for and access to health, education, information. However, most rural roads in Ethiopia experience numerous challenges in their maintenance. This study seeks to focus on the factors influencing maintenance of rural road network in Wolaita Zone with the objectives being: to determine the attitude and perception effect on maintenance, to determine the cost effect on maintenance of rural road network, to find out instructional effect on maintenance of rural road network and to find out political effect on maintenance of rural road network. The study employs a descriptive survey design using both qualitative and quantitative approaches. The findings of the study technical team has a tendency to follow new road construction rather than road maintenance hence it affect the road maintenance. proper planning which is done by expert and estimation is based on surveying area as the method of approximation, construction materials and machinery are limited thus affecting the total cost of a project. There are poor planning and institutional factors such as unclear responsibilities for planning, budgeting and implementation at the various district levels. There is also political interference on prioritization and budgeting of roads projects. The recommendation of the study includes: to change cultural attitude and perception as regards to rural road maintenance at the local level requires more than exhortations and instruction. The Ethiopia Road Authority should advice on the most appropriate cost estimation method to be used in rural road maintenance. Strengthen the capacity at the district levels help the limited funds that are available have to spend in planned or organized fashion. The capacity needs to be matched with resources and clear targets and performance standards. Political leadership being a key influence, there is needed to have all key stakeholders look at the wider societal benefits and a balance between cost and political millage balanced. Both the national assembly and the county assembly should clearly come up with an act and procedure on the extent of involvement of the political leaders influence on rural roads development.***

Keywords: Wolaita zone, challenges, rural road maintenance, universal rural road access programme, influences

I. INTRODUCTION

The government of Ethiopia is embarking on a Universal Rural Road Access Program (URRAP) that sets out to connect all Kebele /sub district/ by roads of a standard that provides all-weather, year round access, meets the needs of the rural communities, are affordable and maintainable.

The program focuses on poverty reduction and is an important poverty alleviation catalyst. It is seen as an essential pillar for delivery of GTP and our MDG targets and furthermore underpins Government's actions and vision for expansion of all sectors of the economy. The program recognizes the challenges faced by isolated communities and their constraints in trying to take part in our economic growth. The program provides a response to the voice of the rural poor who demand and have a basic right to access to transport, social and other services. [1]

Without rural roads the potential for social and economic development in the rural areas will not be achieved. The emphasis on the achievement of the MDGs and on poverty reduction in general contains an implicit assumption of an improvement in rural access. Without such access the ability to provide improved health, water supply and educational facilities is compromised. The importance of rural access is certainly recognized, at least in terms of the provision of rural roads. [2, 3]

Roads, like any other infrastructure facility, need to be properly constructed and maintained if they are to adequately produce the benefits expected from them. This is a truism which appears obvious. Nevertheless, for a variety of reasons, the maintenance of rural roads still receives limited practical attention. The reasons for this are several: attitude, financial constraints, lack of capacity, unclear agency responsibilities, technical deficiencies, to mention the most important. What is clear is that, in many countries rural roads are deteriorating faster than they are being constructed or improved. This is a major crisis as not only are investments being wasted but the benefits of an improved rural road network are being lost.

©IJRASET: All Rights are Reserved

The principle objectives of road maintenance is to keep roads open, reduce rates of deterioration and extend the life of the road network, reduce vehicle operating costs and improve the speed, frequency, safety and convenience of private and public transport. When maintenance is provided it also provides employment opportunities and additional market prospects for the local construction industry. These are the benefits of maintenance, which will be benefits foregone if no maintenance takes place. [4]

As a result, the preventive action required as part of an effective maintenance system often consists of minor repairs to the drainage system before water causes any major damage to the road assets. If this is not carried out in a timely manner, the pace of deterioration increases, leading to and an accelerating increases in rehabilitation costs. In this journal some of the reasons for lack of maintenance are assessed in order to be able to suggest how these trends can be reversed.

II. GENERAL OBJECTIVE OF THE STUDY

The general objective of the research is to assess the challenges of rural road maintenance in Wolaita zone.

The Specific Objectives of the Study are

1) To determine the influence of attitude and perception on maintenance of rural roads network.
2) To determine the cost influence on maintenance of rural roads network.
3) To find out the institutional influence on maintenance of rural roads network.
4) To find out the influence of political leadership on maintenance of rural roads network.

III. MATERIALS AND METHODOLOGIES

A. The Study Area

The study was conducted at Wolaita Zone in Southern Nations, Nationalities, and Peoples' Region (SNNPR) of Ethiopia. The Zone is located 300 km south of Addis Ababa and about 155 km southwest of the Southern Nations, Nationalities, and Peoples' Region (SNNPR) state capital of Hawassa and geographically located 6º 54' N latitude and 37 º 45' E longitudes with an elevation between 1,600 and 2,100 meters above sea level. The climate of the location is Weina Dega with annual rainfall varies from 800 to 1200mm, while the annual mean temperatures also vary between 24 and 30ºc during the day and 16 to 20ºc at night, all year round.

Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), this Zone has a total population of 5,473,190; with an area of 4,208.64 square kilometers, Wolaita has a population density of 356.67. While 172,514 or 11.49% are urban inhabitants, a further 1,196 or 0.08% are pastoralists. [5]

Wolaita has 562 kilometers of roads managed by South Road Authority and 669 kilometers of URRAP roads managed by Wereda Road Authority, for an average road density of 292 kilometers per 1000 square kilometers. [6, 7]

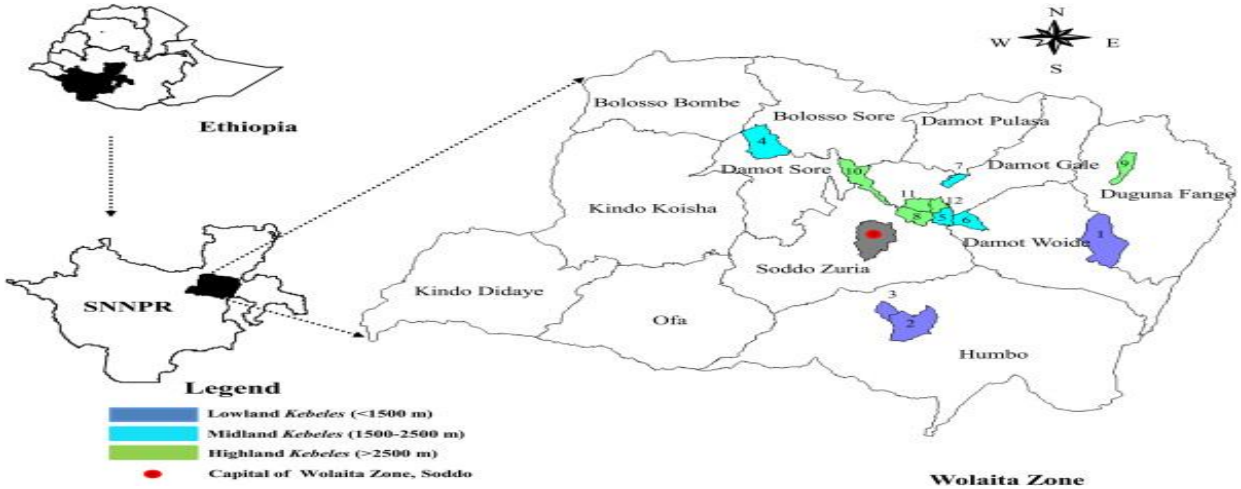


Fig.1:-Location of the study Area (Wolaita Zone)

B. Design of the Study

Since the study is intended at assessing the challenges for rural roads maintenance projects, descriptive survey method was used in order to investigate and describe the problems on rural roads maintenance projects. Quantitative approach was also used in the study.

©IJRASET: All Rights are Reserved

C. Data Sources

Both primary and secondary sources of data were used to get ample information about the rural roads maintenance projects. The primary sources were used to get-firsthand information. The primary source was interview with Managers of Wereda Roads Authority and team leaders and experts at Wereda through survey questionnaires those have direct involvement on the work. The secondary source was used to strength the primary sources of data. The secondary sources are the second-hand information which includes Zone's and Wereda's different documents such as annual reports, journals, articles, reference materials, various books, websites, other published and unpublished sources and relevant documents were used to avoid the inadequacies of the data and to make the study reliable.

D. Instruments of Data Collection

Site Observations, Questionnaires, interviews, and document analysis were the main data gathering tools for this study. Employing multiple data collection instruments help the researcher to combine, strengthen and amend some of the inadequacies and for triangulation of the data. [9]

IV. DISCUSSION AND ANALYSIS

The study examined the working environment of road organization in Ethiopia mainland implementing gravel road management system. These roads organization falls into two categories, namely those managing by South Road Authority networks and those managing by District Road Authority networks. The both are managed by regional government and headed by regional manager. This study focused only on district URRAP roads in Wolaita Zone. Over the last 8 years the road networks of the district have increased significantly.

A. Response Return Rate

The questionnaires were distributed to randomly selected District Road Engineering officers from whom 75 were completed and returned, giving a response rate of 94%. The collection procedures involved personal administration, reminder and personal collection whenever possible.

B. Demographic Information of the Respondents

The research results showed that 88% of the respondents were male and 12% were female. Regarding the age bracket, the research findings indicated that 68% of the respondents were in the age bracket of 20-30 years and 32% were in the age bracket of 31-40 years. 92% of the respondents have acquired degree level of academic qualification while the 8% has acquired master's level of academic qualification. The research responses showed that 24% of the respondents have worked in the organization for less than 3 years; 36% have worked 3 to 5 years; 36% have worked 5 to 10 years and 4 % have worked above 10 years. Additionally, the research responses showed that 50% of the respondents are working on the position of expert in the organization; 25% on the position of team leader and 25% on the position of process owner.

Table II. Demographic information of the respondents

	Frequency	Percent
Gender of the respondents		
Male	66	88%
Female	9	12%
Total	75	100%
Age of respondents		
20-30 yrs	51	68%
31-40 yrs	24	32%
Total	75	100%
Academic qualification		
B. Degree	69	92%
Masters	6	8%
Total	75	100%

©IJRASET: All Rights are Reserved

Duration respondents worked in organization		
Less than 3 yrs	18	24%
3-5 yrs	27	36%
5-10 yrs	27	36%
Above 10	3	4%
Total	75	100%
Position in organization		
Expert	40	53%
Team leader	18	24%
Process owner	17	23%
Total	75	100%

The questionnaire comprised of four main questions, divided on the following themes; (A) attitude and perception influence on rural roads maintenance, (B) cost influence on rural roads maintenance, (C) institutional influence on rural roads maintenance, and (D) political leadership influence on rural roads maintenance. The analysis of responses follows the order of questions.

C. Attitude and Perception Influence on Rural Roads Maintenance

Local authorities often underestimate the importance of road maintenance and consequently budgets for maintenance are usually severely constrained. Because maintenance is not seen as being important, little attention is paid to setting maintenance performance targets and standards. [4]

Table III Attitude and perception maintenance of rural roads network

	Frequency	Percent
Roads are left without maintenance after construction for the first 5 years		
Strongly agree	36	48%
Slightly agree	21	28%
Strongly disagree	18	24%
Total	75	100%
Technical team has a tendency to follow new road Construction rather than road maintenance		
Strongly agree	27	36%
Slightly agree	27	36%
Neutral	3	4%
Strongly disagree	18	24%
Total	75	100%
Engineers see road maintenance as		
Major element	33	44%
Minor element	42	56%
Total	75	100%
Local government wishes to have school and health center is well and maintained than road maintenance		
Strongly agree	21	28%
Slightly agree	30	40%
Neutral	3	4%
Slightly disagree	6	8%
Strongly disagree	15	20%
Total	75	100%

©IJRASET: All Rights are Reserved

As shown in Table 2 On the respondent's opinions on roads are left without maintenance after construction for the first 5 years, a 76% of the majority respondents agreed. On the respondent's opinion the technical team has a tendency to follow new road Construction rather than road maintenance 72% of respondents agreed. 56% of respondents of the engineers see road maintenance as minor element. On the respondent's opinion on the local government wishes to have school and health center is well and maintained than road maintenance, 68% of respondents said agreed. It can be declared that from afore mentioned table, the attention gave to maintenance of rural road network in Wolaita Zone was very low.

D. Cost Influence on Maintenance of Rural Road Network

The cost of a rural road network is more difficult to estimate than that of typical rural infrastructure such as wells, buildings, or small-scale irrigation projects since they are subject to severe damage by users, the natural environment and unpredictable interactions between the two. [17]

In practical terms it is useful to identify and quantify the defects, and then arrange the necessary maintenance to be carried out. Under regular maintenance there are roadside activities, drainage and road surface each activity quantified by ranking. [18]

Table IV cost influence on maintenance of rural roads network

	Frequency	Percent
Who is estimates the cost of road maintenance		
Road engineers	45	60%
Politicians	18	24%
Do not know	12	16%
Total	75	100%
Method of cost estimation always used		
Rating per item	15	20%
Surveying area	39	52%
Guessing	21	28%
Total	75	100%
Appropriateness of the method of cost estimation		
Strongly agree	48	64%
Slightly agree	9	12%
Neutral	9	12%
Slightly disagree	9	12%
Total	75	100%
Availability of construction materials		
Yes	30	40%
No	45	60%
Total	75	100%
Availability of construction equipment		
Yes	30	40%
No	45	60%
Total	75	100%

As shown in Table IV the responses on the cost of maintenance of rural road network in Wolaita Zone shows that the majority 60% of the respondents said road engineers estimates the cost of maintenance of rural roads, 52% said surveying area,20% said rating per item and 28% of respondents said guessing. On the respondent's opinion on the appropriateness of the method of cost estimation, a 64% of the majority respondents agreed. This therefore shows that the right people undertook the costing exercise but the estimation of rural road maintenance is unrealistic. 60% of respondents confirm that there is no readily available of construction materials and construction equipment. It is evident that effort is needed not only to equip road organizations but to give them training on the method of cost estimation.

©IJRASET: All Rights are Reserved

E. Institutional Influences on Rural Road Maintenance

The problems of rural road maintenance are not simply a matter of inadequate finance, but also relate to poor planning, inadequate information relating to the state of the network and institutional factors such as unclear responsibilities for planning, budgeting and implementation at the various district levels. [10]

1) *Weakness in Implementation:* Maintenance is essentially a management problem. The improvement of maintenance often involves institutional reform, human resource development and changes to management practices before addressing technical issues. [15]

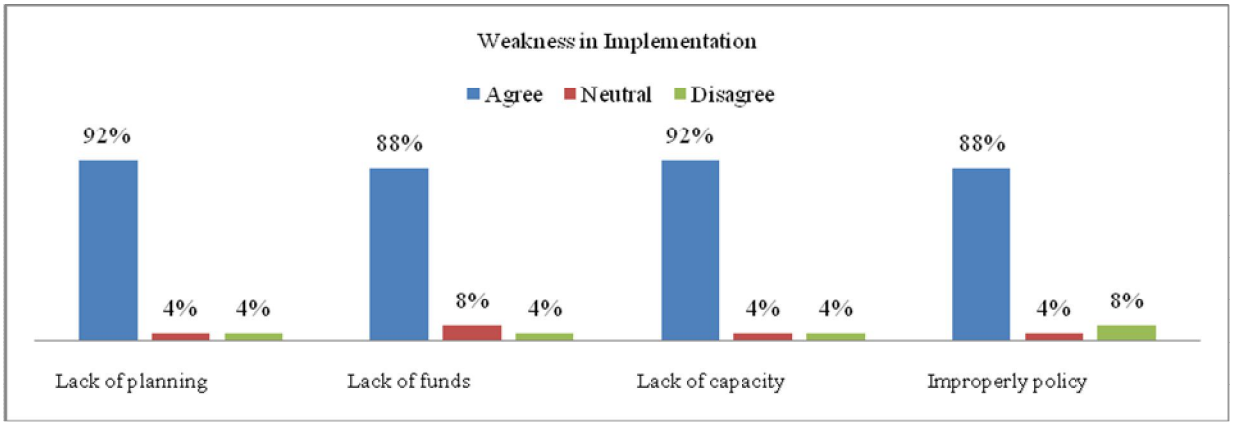


Fig. 2 Weakness in Implementation

As shown from figure 2 the responses on weakness on implementation, 92% of respondents agreed on lack of planning; 88% of respondents agreed on lack of funds; 92% of the respondents agreed on lack of capacity and 88% of the respondents agreed on improperly policy. It is no wonder that, majority respondents admitted that there was weak institutional implementation.

2) *The Current Condition of Rural Roads:* However significant parts of the network are in an unmaintainable condition and are therefore effectively unusable by vehicles. A better indication is given by using only the roads considered as maintainable, generally those classified as being in good or fair condition. In the case of rural roads this is particularly important given the poor state of most rural road networks. The relevance of this has been demonstrated recently by research which shows that poverty levels are directly correlated with the length of rural roads that are in good or fair condition. [12]

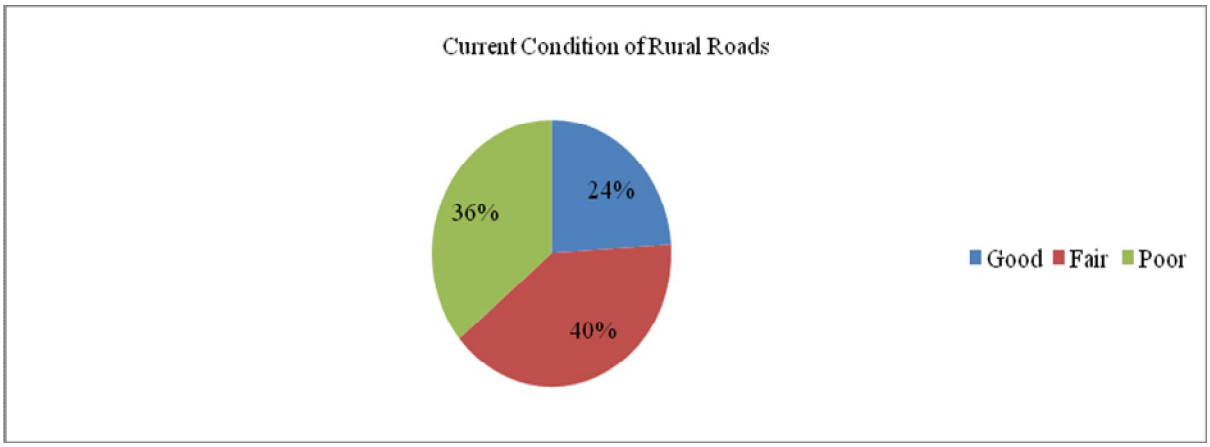


Fig.3 Current condition of rural roads in Wolaita Zone

As shown from figure 3 the responses on current condition of rural roads, 24% of respondents said that the current rural roads are found in good condition they need only routine maintenance; 40% of the respondents said that in fair condition they need periodic maintenance and 36% of the respondents said that in bad condition they need urgent maintenance. The data obtained from site observation at different road segments confirmed that the need of regular maintenance of rural roads.

©IJRASET: All Rights are Reserved

3) Technical Expertise: Education and training is a key feature of any pavement management system for it to be effective and implementable. [16]

Table V Technical expertise

	Frequency	Percent
The technical expertise for planning, supervision, budgeting, executing at district level is		
Adequate	21	28%
Inadequate	51	68%
Don`t know	3	4%
Total	75	100%
The establishment of maintenance manuals, training material, appropriate work methods and productivity rate is		
High	3	4%
Average	27	36%
Low	42	56%
Nothing	3	4%
Total	75	100%
The absence of accountability in maintenance is a common feature for lack of success in institutional development		
Yes	75	100%
No	0	0%
Total	75	100%

From Table V 68% of the respondents said the technical expertise at district level was inadequate. On the respondent's opinion on the establishment of maintenance manuals, training material, appropriate work methods and productivity rate, a 56% of the majority respondents said low.

Based on whether the absence of accountability in maintenance is a common feature for lack of success in institutional development each respondent said yes. It is evident from the response most district roads do ascertain the quality of road works done by them, in particular where there is no consultant employed for such work. This is the cause of corruption in road construction industry and shoddy works being accepted.

F. Political Leadership Influence on Rural Road Maintenance

Issues of political salience or patronage may affect road construction, while community dynamics may shape local use and access to roads. [14] Governments in the Sub-Saharan Africa are made of politicians. As it is known politicians are elected by communities so as to represent them and their needs. These politicians make the government and will tend to favor certain areas when it comes to development. [12]

In East Africa Countries there is also often little recognition by politicians of the importance of routine maintenance and preserving the existing maintainable network as opposed to spending money on opening up or improving other roads which garners more political support. [13]

©IJRASET: All Rights are Reserved

Table VI Political leadership influence on Rural Road Maintenance

	Frequency	Percent
Importance of political leadership in development		
Strongly agree	42	56%
Slightly agree	12	16%
Neutral	6	8%
Strongly disagree	15	20%
Total	75	100%
Political leadership playing a role in decision making for rural roads maintenance		
Strongly agree	33	44%
Slightly agree	36	48%
Neutral	3	4%
Strongly disagree	3	4%
Total	75	100%
Political leadership influence of funding on rural roads		
Strongly agree	30	40%
Slightly agree	27	36%
Neutral	15	20%
Slightly disagree	3	4%
Total	75	100%
Influence on the development of the rural areas		
Strongly agree	39	52%
Slightly agree	24	32%
Neutral	12	16%
Total	75	100%
Politician engaged in decision making in maintenance of rural roads		
Yes	42	56%
No	33	44%
Total	75	100%

Respondent's opinion on whether politics is important in development 72% of the majority respondents agreed. On the question political leadership plays a role in decision making for rural roads maintenance 92% of respondents agreed. 76% of respondents agreed that political leadership play a role in decision making for rural roads maintenance influence funding on rural roads. On respondent's opinion if political leadership influences the development of the rural areas 84% of respondents agreed. On the respondent's opinion on whether politician should be engaged in decision making in maintenance of roads 56% of respondents said yes. It can be noted that political interference on prioritization and budgeting of roads projects.

V. CONCLUSION AND RECOMMENDATION

A. Conclusion

Technical team and the local government see road maintenance as minor element in their work part. There is a general perception that maintenance is an activity that needs to be done when things go wrong. This may be in part cultural. You go to the Doctor when you are sick; you mend your car when it breaks down.

While cost as a factor is well taken care of in the planning stage since the experts ensure that the estimates are based on the unsuitable method, however other implementation resources like availability of equipment and construction materials are not readily available.

©IJRASET: All Rights are Reserved

The single most important issue related to the provision of rural road maintenance is the lack of capacity at the district levels. Only in rare cases has the devolution of responsibility been accompanied by the requisite capacity to shoulder that responsibility. Even if there was a political will, even if attitudes towards maintenance changed and even if finance was available, the implementation of effective maintenance would not be done unless the appropriate capacity existed.

Political leadership influences the maintenance of rural roads because from the findings it plays an important part in the development; it also plays a role in decision making which influences the funding of projects under maintenance.

B. Recommendations of the Study

The following are the recommendations of the study.

1) Work more on exhortations and instruction to change cultural attitude and perception as regards to rural road maintenance at the local level

2) The Ethiopia Road Authority should advice on the most appropriate cost estimation method to be used in rural road maintenance.

3) Strengthen the capacity at the district levels help the limited funds that are available have to spend in planned or organized fashion. The capacity should be able to make rational decision on how to secure preventive maintenance of core elements of the rural road network. The capacity needs to be matched with resources and clear targets and performance standards.

4) Political leadership being a key influence, there is need to have all key stakeholders look at the wider societal benefits and a balance between cost and political millage balanced. Both the national assembly and the county assembly should clearly come up with an act and procedure on the extent of involvement of the political leaders influence on rural roads development

REFERENCE

[1] Ethiopian Roads Authority. 2011. Universal Rural Roads Access Program Manual
[2] Edmonds. Transport, Access and the Millenium Development Goals. ILO ASIST AP 2005
[3] Edmonds. Infrastructure and Poverty Alleviation. Paper prepared for the DAC task team on Infrastructure for Poverty Reduction. ILO ASIST AP 2004
[4] Donnges, C., Edmonds, G. and Johannessen, B. (2007) Rural Road Maintenance. Sustaining the Benefits of Improved Access. International Labour Organization. Washington, DC: ILO
[5] Wolaita Zone Wikipedia website
[6] Annual Report 2019. Sodo, South Roads Authority
[7] Annual Report 2019. Sodo, District Roads Authority
[8] Creswell,J.W.(2009). Research Design Qualitatitive, Quantitative, and Mixed Methods approaches (3rd ed.) Thousand Oaks, CA;Sage Publications
[9] Robinson, Richard, Uno Danielson, Martin Snaith. 1998. "Road Maintenance Management Concepts and Systems." MacMillan Press Ltd.
[10] Hooke and Howe. Transport and the Millennium Development Goals. Background paper for the Millennium Project. 2005
[11] Levick K. (2003). How to sell the message “Road maintenance is necessary” to decision makers. Norwegian Public Roads Administration, Oslo.
[12] Leyland J. (2003). Prioritizing a process: Community participation in prioritizing rural road improvements in East Africa.
[13] Wales J. and Wild L. (2012). The political economy of roads; an overview and analysis of existing literature.Overseas Development Institute, London.
[14] Mwaipungu, R.R. and Allopi, D. 2012. The review of sub-Sahara Africa gravel road management system. England Wessex Institute of Technology.
[15] Kuenen, J. 2009. Manager your unsealed roads for best value. Performance. Road Science; Better Roads.
[16] Tighe D. (2008). Cost Estimation. Planning Rural Roads. Ottawa, Department of Roads.
[17] Ethiopian Roads Authority Manual. 2016. Part G: Road Maintenance

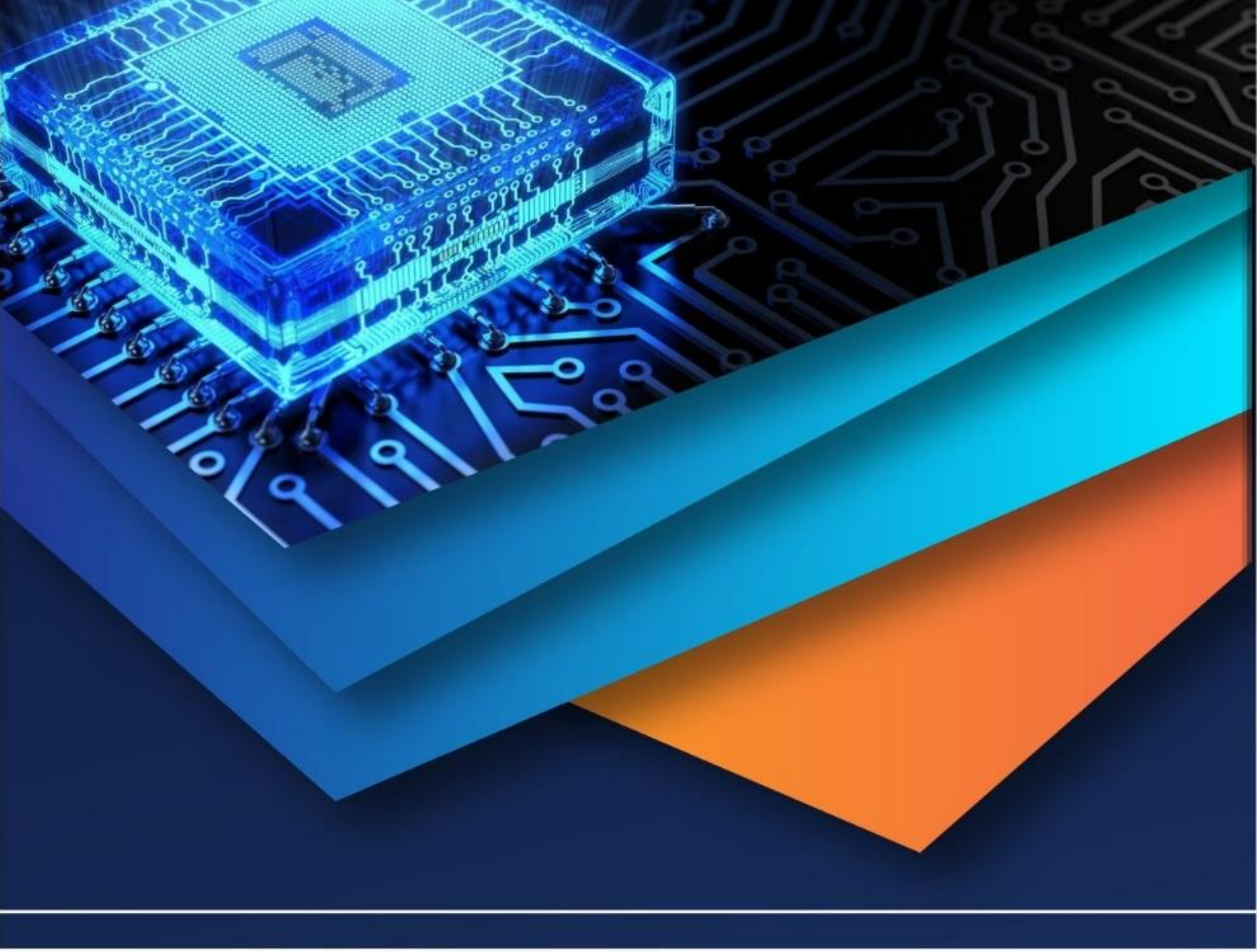
©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

©IJRASET: All Rights are Reserved

ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.429
Volume 8 Issue IX Sep 2020- Available at www.ijraset.com

©IJRASET: All Rights are Reserved



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)