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Review on Construction Challenges in Tigray: Ethiopia

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Abstract: ***This article deals with Construction challenges in Tigray, Ethiopia. In Tigray region the construction sector is in a very fast growth, but it challenged by different factors. The aim of this study is to give the insight of the challenge that faced to the industry. The objective of the study is to assess the current scenario, to give insights about the challenges and to identify the challenges in the industry. The methodology applied for this study is review of literature. Results of this study hopefully will help the industry to recoup up challenges in the industry for future works in the industry.***
Keywords: Ethiopia, Tigray, Construction, Challenges, Overruns

I. INTRODUCTION

Construction industry defined as an industry where infrastructure development is achieved. It plays an important role in the economy of country's development. As the time goes the number of construction projects also increases due to desire of peoples for good life standards. In many countries it is considered as criteria for development so that they invest huge amount of budgets and it accounts more GDP. For example, the Ethiopian annual growth rate is 11.6%. It promotes national economy as a whole; it creates job and betterment of human life. In Ethiopia the sector is in a very tremendous growth, but it cannot run as it's expected. Because of the complexity nature of the industry it is always open to different challenges. Thus challenges have great impact on the reputation and achievement of the industry. This is due to nature of the industry, its complexity, people's awareness and expectations, lack of capacity in pre, during and post construction phases. If the study in pre- construction stage is not sounding (not feasible) it is necessarily happen problems in during and post construction phases. So, due attention should be given to due preconstruction stage because that is the cornerstone of other stages and its success starts there and comprehensive follow ups of all stages.

A. Construction Sector in Tigray

Tigray state is located in the northern part of Ethiopia. It's bordered by Eritrea to north, Sudan to the west, Afar state to the east, and Amhara state to the south and southwest. It has difficult terrain condition or mountainous areas. In the state the construction sector is good. But there are many challenges that retard it. Thus challenges are quality (K.S. Shobana and D. Ambika, 2016)[8], cost overrun, time overrun, budget short fall, imported material dependency, change regulations, contractor in competencies etc (Ibrahim M. and Nabil D., 2013[3], Anyanwu C. et al., 2017[4], Fetene N., 2008[5], M. Abubeker J., 2015[7]), to solve these problems the government take initiatives, but it is unable to solve it because the measures are not based on concrete study and luck of sustainability. Most of the area has good soil strength any infrastructure can be long last without any failure. Most of the challenges faced to construction around the world are also challenge for Tigray construction.

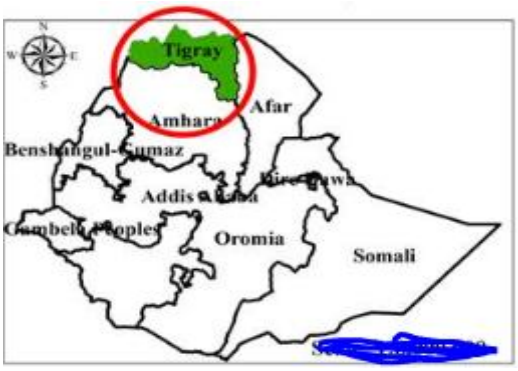


Fig. 1: Tigray state map [9]

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B. Objectives of the Study

This study includes specific objectives.

1) To assess the existing scenario.
2) To give insight about the challenges of construction in the state.
3) To identify the challenges in the industry.

II. RELATED WORKS

Tadesse A. et al. (2016)[1], their study was based on reports in UK that revels construction management in Ethiopia is poor than other developing countries in Africa. According to their study they found that: 1. Poor management knowhow, 2. Weak management functions, 3. Tools and 4. Techniques are unsatisfactory. Because of this problem of construction delay ranges 61-80% and 21-40% cost of risk, quality, resources and safety deviates from its predetermined cost.

Addis Ababa, road networks are increasing. Even though there is high increment by they are affected by over budget and delays. Improvement of decreasing those challenges is not tangible. That retards the progress of the development from it expectations (Shambel G. et al., 2018)[2].

A study conducted by Ibrahim M. and Nabil D. (2013)[3], identified 41 factors and conducted a survey on 26 consultants. That was aiming at identifying the factors and its risk zone and they concluded that political unrest, change of materials price, economic unpredictability, currency exchange rate, and competitors level are the major risks causing cost overrun in West Bank, Palestine.

A study conducted in Imo state, Nigeria shows that the construction of building is highly influenced by cost overruns and thus creates negative impact in the industry and creates negative relationship between the stake holders. The study was aimed at identifying the responsible factors for cost overruns. A structured questionnaire was used to survey. They found that shortage of materials, poor cost estimates, weak soil conditions, insecure finance, design changes, lack of skilled labour are the major cause of cost overruns. Nigerian economy in general, less returns on investment, over budget to the client, loss of reputation, and loss of profits are the effects of cost overruns and the general effects are total abandonment, decrease production and lower national (Anyanwu C. et al., 2017)[4].

Even though building projects in Ethiopia is increasing time to time, but it is weak in completing on predefined cost and time. This is because of financial in capabilities of the country. His study was based on 39 factors and data was collected from archives and questionnaire survey. Results from archive shows that 67 of 70 are have had cost overrun. Results from questionnaire show 0%-126% cost overruns. He found the major factors causing cost overrun. See table 1.

Table 1: Major Factors Causing Cost Overrun In Building Construction

No.	Main factors
1.	Material price inflation
2.	Poor planning and coordination
3.	change orders due to enhancement required by clients
4.	excess quantity during construction

Adopted: (Fetene N., 2008)[5].

In Ethiopia there is high development in infrastructure and housing it covers the land scape. Due to its economic rise the country becomes destination of investors from around the globe. Mostly the projects are around or at the capital, Addis Ababa. The construction demand creates good opportunities for Chinese and European companies around the world. Even though there is high development of infrastructures in the country, there are challenges that retard achievements. These are the following [6].

A. "Inefficiencies of construction projects

Ethiopia's growing number of construction projects have inefficiencies that need careful management. These inefficiencies are:

1) Construction inputs are costly due to import fees.
2) High rates of foreign exchange require further funding in Ethiopia's private and public sectors.
3) Ethiopia's project managers are not as adept as other European or Chinese managers; thus, making project management a hassle.

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Despite these inefficiencies, business opportunities in the Ethiopian construction sector have been emerging for some time now. The country has opened its doors to more foreign investors. In turn, opening opportunities for European, Chinese and other companies all over the globe, to expand their businesses and increasing the country's employment rate."[6] Source: https://www.allianceexperts.com/en/knowledge/countries/africa/business-opportunities-in-the-ethiopia-construction-sector/

K. S. Shobana and D. Ambika (2016)[8], has also stated in their study on factors affecting quality in construction. Their research was carried out to identify the factors that have adverse effect on the construction projects. The main categories of factors that affect quality are: 1) Resources 2) Interaction and communication 3) Inventory and payment 4) Standards and experience 5) Labours 6) Inspection and monitoring and 7) Quality and risk.

B. Ashebir et al., (2017)[10], they found that material price strike, poor cost estimation, late raw materials delivery, ambiguous contract documents were top source of cost overrun and it ranges from 4.16% - 83.2%.

III.METHODOLOGY

Methodology is the way that applied to achieve our objectives. To conduct the study a through literature reviews of related works has been done to achieve the objectives and support the idea of the work. This study is the falls under desk study by referring published and unpublished literatures. This is because the idea of challenges of construction is attracting researchers to avoid or minimized and has been explained in different terms but having common meaning and impact.

IV.RESULTS AND DISCUSSIONS

As obtained from the literatures and confirmations from archives the industry is faced with many challenges. The industry is challenging by These challenges are topographic, lack of materials (import based), cost overrun, time overrun, frequent regulation changes, and luck of facilities at site etc. The following archives shows that the cost and time overruns are major challenges observed in the industry. From the following almost all projects are challenged by cost and time overruns. Besides these overruns it creates negative impact to the industry.

Table 2: Time and cost overrun in public building

Item No.	Project	No. of Projects	Sum of Contract Amount, $x10^3$ (Birr)	Sum of Actual Cost at Completion, $x10^3$ (Birr)	Sum of Contract Completion Time (days)	Sum of Actual Completion time (days)	Sum of Cost Overrun, $x10^3$ (Birr)
1	Educational Buildings	29	5,79,654.49	6,31,703.16	17,074.00	30,025.00	52,048.67
2	Office Buildings	15	81,602.00	93,714.40	7,462.00	12,860.00	12,112.40
3	Residential Buildings	10	1,49,574.00	1,71,906.75	4,856.00	7,545.00	22,332.75
4	Health Buildings	9	85,096.00	1,24,867.04	3,509.00	5,977.00	39,771.04
5	Industrial Buildings	4	68,705.00	85,219.42	1,630.00	4,090.00	16,514.42
6	Others	3	21,786.00	28,309.60	789	1,945.00	6,523.60
	Total/Mean	**70**	**9,86,417.49**	**11,35,720.36**	**35,320.00**	**62,442.00**	**1,49,302.88**

Adopted: Fetene N. (2008)[5]

Note: Birr means Ethiopian currency (1 Birr=0.036 USD)

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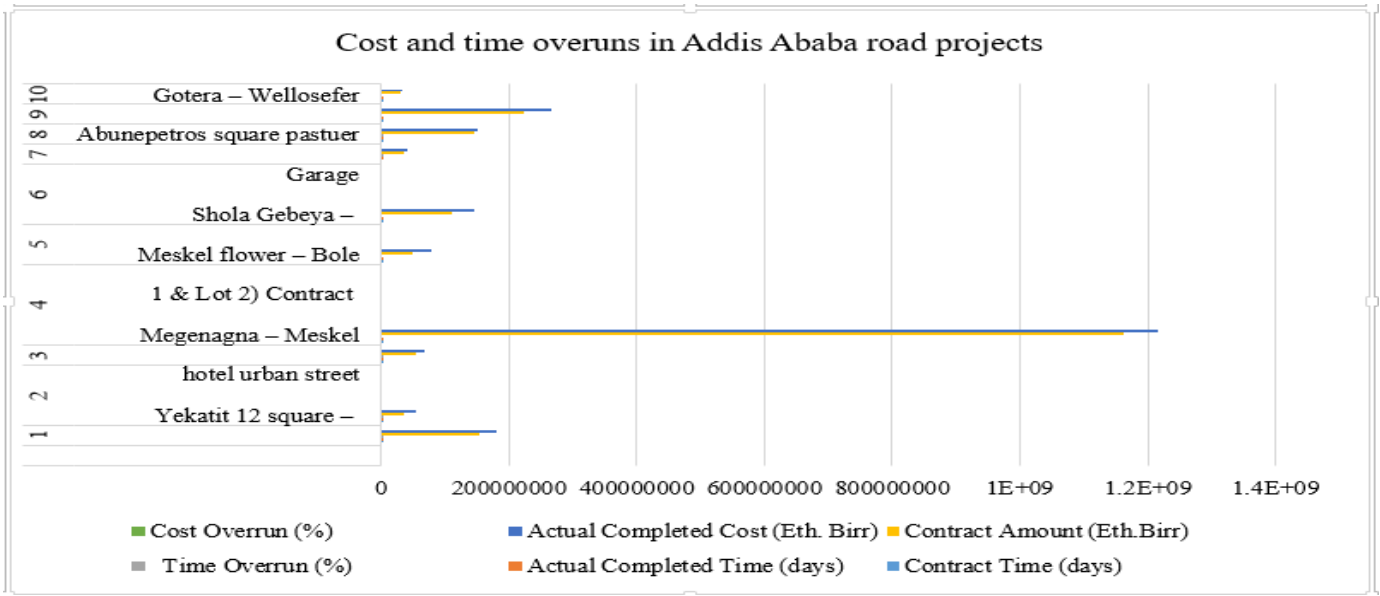


Fig.2: Cost and time overrun in Addis Ababa road projects ADOPTED: M. ABUBEKER J. (2015) [7]

V. CONCLUSIONS

In any country construction industry plays an important role. It is the gate for development by promoting the national economy, creating jobs, enhance better living standard etc. that is why many countries invest their budget in supporting to the industry. This environment is available Tigray state as well as in the whole country. Even though there is high development in construction industry in the state, but there are many challenge. These challenges are topographic, lack of materials (import based), cost overrun, time overrun, frequent regulation changes, and luck of facilities at site etc. I recommend to concerned body to give consideration for pre-construction phase and adjusting all accordingly to prevent these challenges and to success.

VI. FUTURE WORKS

Researches has done on different basis in the state, but there is lack of concrete research that can help the industry in the state. All in all the researcher recommends further study in this area.

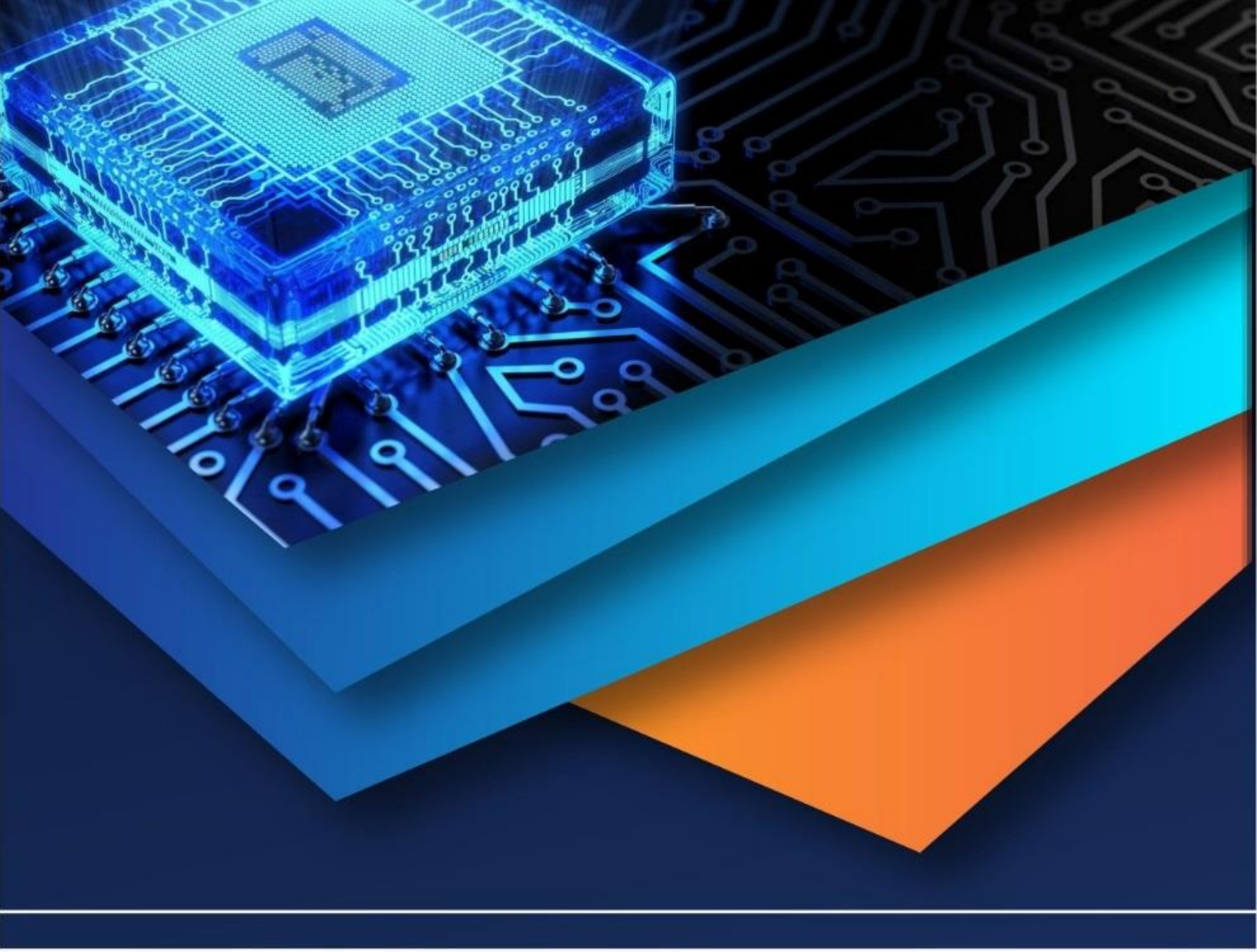
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