



ADDIS ABABA UNIVERSITY
INSTITUTE OF TECHNOLOGY
SCHOOL OF CIVIL AND ENVIRONMENTAL
ENGINEERING

**Contributions of Small, Medium and Micro Enterprise
Contractors on road Construction
Projects in Ethiopia**

By: Addisu Mosissa GSR/7122/03

**A Thesis Submitted to the School of Graduate Studies, Addis Ababa University
Institute of Technology, School of Civil and Environmental Engineering in Partial
Fulfillment of the Requirement for the Degree of
Master of Science in Civil Engineering**

Advisor: - Prof. Dr- Ing. Abebe Dinku

December, 2013

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(Construction Technology and Management)**

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Abstract

This thesis presents the contributions and effects of small, medium and micro enterprise (SMME) construction contractors on the road construction projects of Ethiopia. The main objective of this thesis is therefore to present assessment report regarding the contributions and effects of the SMME construction contractors on road construction, maintenance improvements and their operational challenges in Ethiopia.

The study had developed through literature survey and in addition to this, questionnaire based studies were made to provide an overview of the various contributions and effects of small, medium and micro enterprises on road construction projects of Ethiopia as well as their challenges. Interviews were also conducted with various parties which have direct involvement in construction activities to strengthen the ideas of the subject matter. Extensive literature review and field surveys are conducted on 75 respondents. The field survey used the questionnaire instrument and random sampling. The critical findings from the literature were that there are huge contributions and effects as well as problems in the operations of SMMEs on infrastructure development projects.

After the field survey, the analysis result revealed that small, medium and micro enterprises (SMME's) seen as an essential input to the road network development and maintenance work of the road construction sector and are springboard for growth, job creation and social progress. The research also confirmed operational challenges as lack of finance, limited skills in construction management, and prevalence of unethical conduct amongst some of the stakeholders which are obstacles to their maximum potential contributions and their development. The findings also make an invaluable contribution to the search for solutions to the existing problems faced by SMME contractors in Ethiopia and provide insight for further research in institutional weaknesses and policy issues regarding the problems. The recommendations include the developing of training programmes in construction and business management, introduction of sector specific financing programmes and the provision of an appropriate regulatory and legislative framework. Conclusively, further investigations, research works and discussion forums are advisable by all stakeholders and the concerned higher government officials in order to give tangible solution to their challenges.

Declaration by Student

Declaration

Here with I, declare that, this thesis prepared for the partial fulfillment of the requirements for MSC. degree in Construction Technology and Management entitled “**Contributions of Small, Medium and Micro Enterprise Contractors on road construction projects in Ethiopia**” is prepared with my own effort except for secondary sources which have been acknowledged, as listed in the bibliography. I have made it independently with the close advice and guidance of my advisor.

Addisu Mosissa

Signature _____

Date _____

Acknowledgment

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ABBREVIATIONS

BCI	== Black Construction Industry
CIDB	== Construction Industry Development Board
CSA	== Central statistic Authority
DBSA	== Development Bank of South Africa
EEA	== Ethiopian Economic Association
ERA	== Ethiopian Roads Authority
GDP	== Gross Domestic Product
ILO	== International Labor Organization
IT	== Information Technology
LBAs	== Labor Base Approaches
LMIC	== Lower Middle Income Country
MOFED	== Ministry of Finance and Economic Development
MoWUD	== Ministry of Works and Urban Development
Msc	==Masters of Science
NCCT	== National Construction Council of Tanzania
NCICM	== National Construction Industry Council of Malawi
OECD	== Organization for Economic Co-operation and Development
ORA	== Oromiya Roads Authority
PESDEP	== Plan for Accelerated and Sustained Development to End Poverty
RSDP	== Road Sector Development Programme
SAQA	== South African Qualifications Authority
SMME	== Small, Medium and Micro Enterprise
SMMEs	== Small, Medium and Micro Enterprises
TACECA	== Tanzanian Civil Engineering Contractors Association
URRAP	== Universal Rural Roads Access Programme
USAID	== United States of America International Development
USA	== United State of America
WB	== World Bank

CHAPTER 1: INTRODUCTION

1. Background

The Ethiopian Road Authority has been working significantly on the road network expansion for the last two decades, but the road network is still limited and not yet adequate in terms of connectivity and quality despite the fact it plays a vital role in the country's all-around socio-economic activities. These Changes in the Ethiopian road transport sector occur in response to and in anticipation of change in the rest of the economy (ERA, 2008). The current on-going Road Sector Development Program four which is part of the Growth and Transformation Program planned more than two fold than the previous of RSDP's to construct 71,523km through establishment of more than 960 micro contractors/URRAP Contractors/. Today, our limited infrastructure has shown improvement compared to the situation in the 1990s (ERA, 2008). But the sustained growth acquires problems and under-achievements.

Under-achievement is causing growing dissatisfaction amongst industry clients in both the private and public sectors. Projects have largely not been delivered on time, within budget and to the expected quality standards. In short, construction too often fails to meet the needs of modern businesses and impacts on their competitiveness in international markets and rarely provides best value. Construction must improve its performance and achieve its objectives and targets in terms of predictability, cost, time and quality (Ofori, 2009). It is therefore important for construction to take measures to improve performance. This has now been recognized by several developing countries at various levels of socio-economic development.

In some developing countries (those classified under the International monetary Fund's World Economic Outlook Report, April 2012 and World Bank data) small, medium and micro enterprises /SMMEs/ has demonstrated their powerful propellant contribution for rapid economic growth (IMF, 2012). The SMME sector has also been instrumental in bringing about economic transition.

Hernes (1998) observed that the construction industry, in developing countries typically employs 5-10 percent of the direct workforce in addition to employment in the various industries which have linkages with construction. Moreover, it is responsible for creating at least half of most countries' fixed assets, including health centers, schools, administrative buildings and

infrastructure. It is therefore of national importance that it is running competently at all levels. The study assesses and investigates the Contributions by small, medium and micro enterprise (SMME) specifically URRAP contractors on road construction projects in Ethiopia and their challenges. It further investigates the indirect effects of these contractors in road sectors by conducting assessment on existing scenarios and speculates on the outcomes and different consequences due to these micro contractors through literatures, world practices and applicable research methods.

1.1. Statement of the Problem

Over the last decade, in order to improve the overall performance road construction the Ethiopian Road Authority has been working significantly on the road network expansion but still there is a big gap for improvement to reach the current average road density per square kilometer of lower middle-income countries 0.30 km/km^2 . Ethiopia's road density is only 0.0468 km/km^2 of the total land area (ERA, 2009). If we consider 80% of the land area to be populated, the country by now has 0.058 km/km^2 of road density (ERA, 2009). Clearly, one can easily observe that the Ethiopian Road Network compares poorly even with other low income countries – including some Sub-Saharan Africa. The issue of addressing huge network expansion and improvement as well as backlogs of maintenance needs are under funding constraints, few local and international contractors, lack of large number of competitive contractors, experience and technologies like Labor intensive, Labor Base Approaches and intermediate technologies (small to cost effective large technologies) which creates larger employment opportunities, weak capacity of work force in the regions are indeed a great challenge for Ethiopian road sector (Ofori, 2009). In addition weak implementation capacity of the local construction industry, high turnover of professional and managerial staffs, less competitive and expensive cost of construction and lack of researches and revisions of manuals to alleviate things to cope up problems on time can be cited as major challenges (ERA, 2009). This thesis is therefore an attempt to address the contributions and effects of small, medium and Micro enterprise contractors directly or indirectly on such issues considering their challenges and constraints as well.

1.2. Objective of the research

1.2.1 General Objective

It is widely accepted that transport infrastructure is vital to the economic well being of our nation. For most national and local authorities the existing small road network is the most valuable community asset under their control. Despite this, there is a growing realization that the expansion/construction and management of these vital and valuable assets is not constructed and maintained as expected and planned by sector organizations (ERA, 2008). These are due to lack of large number of competitive contractors of all level, experience and technologies like Labor intensive, Labor Base Approaches and intermediate technologies etc, (small to large cost effective small technologies), less competitive and expensive cost of construction and lack of researches and revisions of manuals to alleviate things to cope up problems on time etc.

The general objective of the research is therefore, to assess the contributions and effects of SMME contractors on the road construction industry on overall performance of road construction and maintenance improvement and value creation in filling some of the existing stated problems and gaps.

1.2.2 Specific Objectives

The following are the specific objectives of the study,

- To assessing the contributions and effect of SMME contractors on huge road network expansion plan and improvement of maintenance needs
- To assess the operational challenges of these contractors and how they will improve the existing weak local construction performance.
- To comment the strategies and put forward recommendations on contributions and effect of the local SMME contractors on cost efficiency, quality road, and employment with respect to Labor base approach to road construction,

1.3 Importance of the study

It is generally accepted that the growth of a country is measured among others by the advances in its infrastructure particularly its road network accessibility to potential resource areas (ERA, 2008). The construction industry is therefore a vital component in the development of every nation on infrastructure development through capacity building of existing contractors',

formation of newly emerging contractors, establishment of small, medium and micro contractors. To this end, the study may serve as stepping-stone for further investigations, which may focus on similar topics and issues, related to small medium and micro enterprises in general and their contributions, impacts and challenges in particular.

Therefore, this research is expected to indicate the government and the policy makers to give attentions to SMME in producing excellent designs which include and gives clear programme objectives, especially coherence between short term and long term objectives within an integrated Labor Based Approaches framework; preparation of detail technical appraisals with good understanding and knowledge without financial and time constraints (which may leads to unrealistic programme targets), solutions to potential constraints and challenges and giving attentions to participation of beneficiary communities and local government institutions in programme design.

1.4 Scope of Study

There are different types of construction contractors in the construction business classified based on their size and specialization. The scope of the study will focuses on small, medium and micro enterprises involved in road construction/maintenance. It is needed to assess and evaluate the level of understanding on contributions and effects of SMME contractors specifically Universal Rural Road Access Programme / projects in Ethiopia.

The main reasons for selecting these SMMEs are as follows:

1. Mostly considered by the government as a significant source of direct employment than value creation like larger contractors. They are large in number in all regions and works at different remote geographical locations that might be unattractive to big firms or too costly for the big firms.
2. This category of contractors rarely referred as preferred vehicle of delivery of infrastructure to communities than any other form in Ethiopia. The different articles written or observed about these Small micro and medium enterprises are not comprehensive about their employment and value creation or contribution in fulfilling the ‘missing middle’ in provision of infrastructure and the existing challenges.

1.5 Organization of the Thesis

This thesis is organized to have five chapters presented the first chapter serves as an introduction, setting out the problems and the manner in which these are addressed. It provides insight into the nature of the topic and issues relating to contributions and effect of SMME contractors. The second chapter serves as the literature review section of the Thesis. The chapter provides an in-depth study of road sector development status, SMMEs in construction and Labor base approaches and SMMEs in general. The third chapter presents the methodology used for conducting this research. The fourth chapter presents the responses on the investigation of contributions and effects of SMME contractors in Ethiopia road development and provides the results of the study and discusses the implications thereof and the fifth chapter presents the conclusions and relevant recommendations of the study.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

It is well known that effective transport system is a basic means of development. In Ethiopia where 95% of transportation mode is on land or non-coastal, it is mandatory to develop transportation network, of which road is the major portion (ORA, 2008).

In line with this understanding, different countries have different approaches toward their establishment of the road sector to achieve this demand. These can be through an independent Authority to undertake planning, constructing and maintaining, through private contractors or through formations of small, medium and micro Roads Construction enterprises, which are the implementer body, as contractor to undertake Roads constructing and maintaining after completing contractual agreement with Roads Authority (ORA, 2008).

P. Larcher, (1998) stated that over the last fifty years many countries in Africa and Asia have gained independence. The governments of these newly independent countries saw an effective road network as a high priority for the development and expansion of their country's economy. They invested heavily in road construction with support from international funding agencies and bi and multilateral aid donors to produce a good quality road network. Unfortunately these governments did not allocate sufficient financial resources of their own to continue the investment in the maintenance of their networks and international funding agencies are not willing to assist in long term maintenance funding arrangements (Ibrahim Worku, 2011). This resulted in the new road networks deteriorating, sometimes into a series of muddy tracks, which are often barely passable even in the dry season.

These countries have traditionally relied upon state owned organizations to maintain their road network and carry out minor construction works. In many cases these organizations have proved to be inefficient due to different factors, which include the loss of high caliber staff to better paid jobs, funding shortages, political pressures, and bureaucratic mismanagement, lack of large number of competitive contractors, experience and technologies. The less competitive and expensive cost of construction and lack of researches and revisions of manuals to alleviate things to cope up problems on time are also great problems (ERA, 2008).

Although substantial progress is made in setting the appropriate private sector strategy in different African countries, it is becoming increasingly difficult to implement as problems associated with contracting procedures and the industry support framework are becoming more apparent to both contracting organizations and road agencies. Recently in Ethiopia interest grew in stimulating private sector involvement, on the grounds that these small private enterprises/contractors would be able to overcome the inefficiency problems of the large state owned organizations, thus improving the level of wealth distribution, job creation, cost efficiency, competitiveness and unemployment undertaken with the limited financial resources available (EEA, 2012).

This research will provide background information to determine if lessons can be drawn on experience of developing a private contracting sector in Africa and the established private sector in developed countries. There are 5 different types of contracting organization, which are capable of undertaking construction work (World Bank 1984 and Relf 1987).

1. Small builders and ‘jobbers’ - these are small generally one-man businesses who undertake building projects or work for other larger companies.
2. Communal and self help groups
3. State owned organizations
4. Private contracting companies/ enterprises
5. Foreign contractors

Traditionally in low income and emerging countries, the majority of civil engineering work, has been undertaken by large international contractors or state owned organizations. The indigenous private sector is usually dominated by a few large contractors who are able to compete against, or work in joint ventures with the international contractors. This handful of large contractors works alongside a surplus of small construction businesses. This situation has been referred to as the “missing middle” of the construction sector (Young, 1993) where small businesses appear unable to develop and expand their market share to become medium sized contractors and eventually, hopefully, become a large contractor able to undertake large infrastructure projects. These small contractors are therefore restricted, due to their size and resources, to undertaking small building work and occasional minor civil engineering work. Many of these businesses are often small enough to be ‘invisible’ to national construction statistics.

For road maintenance and construction to be efficiently carried out in a competitive market there is a need for contracting firms of all sizes to undertake various sized projects from minor maintenance work to large scale major road construction projects (P. Larcher, 1998). In order to achieve the full benefits of using the private sector and SMMEs there must firstly, be a contracted workload of adequate size. Secondly there must also be sufficient numbers of construction companies to create a demand for work and hence realistic competition with the associated competitive prices. Although no market can function without demand, merely creating a demand is not enough. It is also necessary to develop institutional capacity within the country to cope with executing work through a private contracting industry (A. Shiferaw, 2012).

2.2. The case of the Road Sector in General

Since 1993, the Ethiopian government has been implementing various reforms that have involved the processes of structural adjustment programs along with commercialization of agriculture, private sector development, and a number of related poverty alleviation programs (CSA, 2003). Successful implementation of the programs requires an efficient infrastructural system. In particular, road transport is supposed to create a network over a wide array of infrastructural facilities. In addition, the road transport sector is essential for developing countries for the reason that provision of other advanced means of transportation is expensive (Ibrahim Worku, 2011). For instance, Ibrahim Worku citing Fan and Rao (2003) indicated that public spending in rural infrastructure is one of the most powerful instruments that governments can use to promote economic growth and poverty reduction and among these services road transport sector is considered as the crucial one.

A well-developed road transport sector in developing countries is assumed to fuel up the growth process through a variety of activities of the development endeavors of a nation. Among these, creation of market access opportunities for agricultural products is the major one. The issue of market access is more relevant for a country like Ethiopia where rural population accounts for about 85% of the national population who are engaged in production for both the domestic and international market (CSA, 2003). Moreover, road transport facilities play a role in both the production and consumption decisions of every household in their day-to-day activities. Besides, road transport facilities are essential for expanding education, health service provision, trade facilitation – both within the country and the export market, and better public as well as private

service provisions, including banking and insurance services, to the destitute and marginalized rural dweller. Likewise, roads serve as key infrastructural units, which provide linkages to other modes of transportation like railways, shipping, and airways.

In Ethiopia road transport is the dominant mode and accounts for 90 to 95 percent of motorized inter-urban freight and passenger movements. However, because of its limited road network, provision of infrastructure has remained one of the formidable challenges for Ethiopia in its endeavor towards socio-economic development and poverty reduction (ERA, 2008). The Ethiopian Road Authority (ERA) investigated the link between the country's development plan and the road sector policy (ERA 2008). The study generally indicated that there is a well-established connection between the development plan of the nation "A Plan for Accelerated and Sustained Development to End Poverty, Ethiopia's version of Poverty Reduction Strategy" (PASDEP) and the road sector policy.

According to the World Bank report, 2005, the reason for the continued prevalence of poverty with such magnitude is generally associated with low growth, low productivity of subsistence agriculture and a reliance on rain-fed cultivation vulnerable to the variation of weather conditions. Problems are aggravated by the country's rugged terrain, its uneven geographic distribution of population and the predominance of isolated rural settlements with poor spatial integration. Isolation and unreliable or non-existent access to markets stifles economic activity and further adds to the rural poverty burden. Without a minimum of reliable and efficient access to locations of basic social and economic activities, rural life as a whole stagnates, local development prospects remain limited and the whole economy suffers. Drought adds a significant risk and can threaten to take the lives of millions of rural people (World Bank, January 2005)

Providing and maintaining a minimum level of basic access is therefore an essential element of any rural and economic development strategy. Improved logistics to support trade and communication, the location of services, and the provision of cost effective transport infrastructure and services are key. Approximately 64 per cent of the land area in Ethiopia lies more than 5 km from all weather roads. Some 48 million people in the rural areas of Ethiopia live further than 2 km away from the nearest all weather road. On average, households are often more than 10 kilometres away from a dry-weather road and 18 kilometres away from public

transport services. Communities are often left isolated and without access, particularly during periods of rains. This excludes them from exposure to new ideas and influences. Remoteness, isolation and lack of services increases vulnerability and severely constrain their ability to contribute to the economy and development of Ethiopia. Investment in transport, and particularly road transport, improves the well being of the poor.

Provision of all-weather roads according to World Bank, January 2005 improves,

- The quality of universal education – it makes it possible to recruit and retain qualified teachers and assistants;
- Access by the poor to human, natural, social and financial resources that they need to raise living standards and welfare;
- Provides opportunities for the poor to participate more fully in development opportunities
- It gives access to markets, jobs, schools, social and health facilities;
- Provides both short (road building) and long-term (road maintenance) employment opportunities; and
- Reduces the negative impacts of natural disasters and shocks and provides the links needed to manage it.

The greatest returns for agricultural productivity, food security and poverty reduction often come from appropriate investments in roads (World Bank, January 2005).

2.3 Overview of road sector policies in Ethiopia

There is a vision to transform Ethiopia from a least developed country into a middle-income country by 2028, by sustaining the two digits economic growth registered in the recent years (2003–2010/11). Achieving this Government vision requires sustainable growth of the Ethiopian economy, which in turn depends on the development of infrastructure in general and expansion and improvement of the road network of the country in particular (MOFED 2006).

The Ethiopian economy is highly dependent on agriculture, which accounts for around 50 percent of the gross domestic product (GDP). An estimated 85 percent of the population is directly or indirectly depending on the agricultural sector. More than 90 percent of export earning is generated from the agricultural sector. Second to the agricultural sector, services account for more than one-third of economic activity. The composition of service earnings has

shifted only slowly in response to economic liberalization, with recent slight growth in the construction, transport, and tourism sectors. Contribution of the construction industry to GDP at constant factor cost is about 6 percent for 2006/07 (Central Statistical Authority 2008). On the other hand, industry accounts for almost 12 percent of economic activity where most of the manufacturing firms are concentrated in Addis Ababa. However, these days it is also common to see manufacturing industries being established in some other cities and towns. Industrialization of towns outside of Addis Ababa obviously requires more road infrastructure and efficient transportation operation.

The road network of the country over the past five decades, compared to the year 1951, the total road network has increased with factor seven to reach the level in 2009. In 1951 the total stock of road network was only 6400 km; in 2009 that is 46,812 km (ERA, 2009). The rise in the length of road is due to the emphasis given to the sector. In particular, the current government, the Federal Democratic Republic of Ethiopia, has placed increased emphasis on improving the quality and size of the road infrastructure. To address the constraints in the road sector related to restricted road network coverage and low standards the Government originally formulated a 10-year Road Sector Development Program in 1997 (RSDP 1997-2007).

The first phase of the RSDP (1997-2002) focused on the restoration of the road network to an acceptable condition. Specifically, the program focused on (1) rehabilitation of main roads; (2) upgrading of main roads; (3) construction of new roads; and (4) regular maintenance on the network. Side by side, the program also considered major policy and institutional reforms.

The program was launched with a very significant donor support to create adequate capacity in the road sector and to facilitate the economic recovery process through the restoration of essential road network. The first five year of the program (RSDP I), 1997-2002, was officially launched in September 1997, and has been completed in June 2002. Accomplishment under RSDP II is rather encouraging. The total disbursement rate of investment on federal and regional roads for the 5 years of RSDP II is about 125% and 73%, respectively, whilst the corresponding physical accomplishment is 134% and 145% of the planned. Within the ten years period of the program, the total disbursement of projects planned for the execution amount 25.4 billion Birr (US\$ 2.9 billion). This would enhance the integration of domestic markets and the potential growth of exports in terms of volume and international competitiveness (ERA 2008b).

2.3.1 Road network

In 1951 the total stock of road network was only 6400 km of which 3400 km was asphalt and the remaining 3000 km was gravel road. This entire network was found only in urban areas. When the Imperial regime lost power, the network has reached to 9160 km in 1973. On average, the network has been growing at a rate of 2.05 percent per annum over the period 1951-1973. During the Derg regime, 1974-1991, the stock road increased to 19,017 km with a growth rate of 6.2 percent per annum. With the current regime, the road network has reached 46,812 km in 2009 with an average annual growth rate of 9.35 percent. Over the period 1991 to 2009, 28,731 km of new road network was constructed which is still lower compared to the middle income countries performance on road network development.

As it can clearly be seen from the trends, the development of road network is yet to go far. A large space in the country is networked with only a few roads. Though the development is yet needs hard to work, more construction is important for connecting the remote areas. Especially, the rural part of Ethiopia where large agricultural product of the nation is available and less networked with roads.

According to World Bank (2010), only 10 percent of the rural population lives within two kilometers of all weather roads. Thus, the remaining 90 percent of rural people live at a distance of more than two km from all weather roads. The underdevelopment of the road network has its implication for the development of the agricultural sector which is the mainstay of the rural people and the country in general.

2.3.2 Road density

The proper level of road network is assessed by road density, which is measured by road length per 1000 persons or by road length per 1000 km². In the three RSDP periods, there was a plan to increase the road density from 0.43 to 1.5 km per 1000 persons and from 21 to 116 km per 1000 km², starting 1997 through 2009. At the end of the first phase the road density has increased achieving the target of the government. In 2002 the road density was exactly at the aimed level, which is 0.49 km per 1000 persons whereas the road length per 1000 km² is more than the target level, 30.27 km per 1000 km². When the second phase of RSDP continued, the government has also targeted for higher levels, i.e. targeted road density of 0.5 km per 1000 persons and 30.7 km

per 1000 square km. At the end of RSDP II, road density has reached 0.55 km per 1000 persons and 38.6 km per 1000 km² in the year 2007. The accomplishment of the second phase was thus a success. However, the targeted figures were a bit high for the third phase, which could not be attained at the end of the period. This phase is the shortest period, which lasted only for two years. At the expiration of RSDP III, road density of Ethiopia has reached 0.57 km per 1000 persons and 42.6 km per 1000 km², where 1.5 km per 1000 persons and 116 km per 1000 km² were the targeted ones. Although road density has increased, it has not improved that much as planned. At the year 2009, the road density is still much below the average road density of Africa, that is, 60 km per 1000 km² (ERA 2008). Average road length per capita, km/ 1000 persons indicated in the table 2.1 below shows this.

Table 2.1 Performance of road infrastructure of African regions

Regions	1960-1975	1976-1985	1986-1997
Central	6.6	4.6	4.2
Eastern	3.3	2.8	2.2
Northern	3.8	2.9	2.4
Southern	7.1	6.3	5.6
Western	2.8	2.7	2.2

Source, International Road Federation Statistical Report (2006),

Also it can be observed from Table 2.2 below that both lower and middle-income countries have a developed road network system as reflected by road density per square kilometer. The current average road density per square kilometer of lower middle-income countries is 0.30 km/km². Ethiopia's current road density is only 0.0468 km/km² of the total land area. If we consider 80% of the land area to be populated, the country by now has 0.058 km/km² of road density. Clearly, one can easily observe that the Ethiopian Road Network compares poorly even with other low income countries – including some Sub-Saharan Africa. This indicates that a lot has to be done in expanding the road network.

Table 2.2 Shows Road densities of lower middle income countries

Lower Middle Income Countries	Road Density (km/Sq. km)	Lower Middle Income Countries	Road Density (km/Sq. km)
Algeria	0.05	Indonesia	0.19
Djibouti	0.12	Kiribati	0.92
Egypt	0.09	Micronesia	0.34
Iran	0.11	Philippines	0.67
Iraq	0.10	Samoa	0.82
Jordan	0.08	Thailand	0.11
Morocco	0.13	Tonga	0.91
Tunisia	0.12	Vanuatu	0.09
Bolivia	0.06	Albania	0.63
Brazil	0.20	Armenia	0.27
Colombia	0.10	Azerbaijan	0.68
Cuba	0.55	Belarus	0.45
El Salvador	0.48	Kazakhstan	0.03
Guatemala	0.13	Macedonia	0.34
Guyana	0.04	Moldova	0.39
Honduras	0.12	Serbia	0.16
Jamaica	1.94	Turkmenistan	0.05
Nicaragua	0.14	Ukraine	0.29
Paraguay	0.07	Angola	0.04
Peru	0.06	Cameron	0.11
Suriname	0.03	Cape Verde	0.25
China	0.20	Congo	0.05
Mean		0.30 km/Sq. km	

Source, International Road Federation Statistical Report (2006),

2.3.3 Road accessibility

Access refers to the opportunity to use or the right to or the ability to reach some destiny. Accessibility is measured as the percentage of population having access to all weather roads. The benefits of having access to a road network is measured in terms of reductions in monetary costs or time needed by beneficiaries to access output markets or key public social services like health and education.

The accepted theory, according to ERA's (2008b) study, is that accessibility has three elements: 1) the location of the individual; 2) the location of the supply, service, or facility to which the individual needs access; and 3) the link to bring the two together. The study used three approaches, namely, the random model approach, the graph theory approach, and the square grid approach to cover the country's network demand. This demand was estimated as such that all rural population could have access to all weather roads within a 5 km distance.

According to the ERA study the country is required to construct 200,000 km of optimum national road network, which is considered as a target road network on the assumption that it will give reasonably good accessibility. Whereas, for the country to be competitive enough and enter into middle income category, the targeted road density which secures the rural population to have access to all weather road is estimated to be 0.3 km/km^2 , the average road density of the lower middle countries. In this case the road transport network has to reach 330,000 km.

The same study defined the concept measured in terms of average distance from the road network and proportion of area farther than 5 km from all weather roads as lack of access, which deprives people from the opportunities to improve their lives. Access is composed of two elements: mobility, reflecting the ease or difficulty in traveling to a service or facility; and proximity of those services and facilities. The study considered access to be one key element in providing the opportunity for both social and economic development, and a key determinant of both poverty itself and opportunities to escape from the poverty trap.

When we look at the recent trend regarding society's access to the all weather road network, we find a slight improvement over the past seven years. However, only about 33% of the rural population had access to an all weather road within a distance of 5 km. Given the fact that around 80 million people are living in rural area, such a low rate exacerbates the problem of

poverty. Improving the current access rate should be a major concern of the country's road sector expansion program.

Similarly, African Development Indicators (ADI, 2008/09) data indicates that the country has made an effort to provide access to all weather roads, though it is not satisfactory. According to ADI, (2008/09) the problem of accessibility is resolved only very sluggishly. Within a period of seven years (2002 to 2008), an additional seven percent of the rural population is provided with access to all weather roads (from 26% to 33% of the rural population). ERA (2008b) study also indicates that with the recent construction of new roads, the average distance from a road has been reduced from 21km in 1997 to 11.7 km in 2009.

On the other hand, the proportion of area farther than 5 km from all weather roads, which was 79% in 1997, has been reduced to 65.3% in 2009. Therefore, the issue of accessibility calls for a kind of “big-push” approach in expanding all weather roads for the destitute rural poor. The problem of accessibility could also be addressed through a well-designed planning process coinciding with the parallel trends towards the decentralization of decision making and the concern to involve the local communities in the decision making process. The effort made so far towards the improvement of main roads and rural roads is a necessary but not sufficient measure to enhance rural accessibility.

2.4 The roles and characteristics of SMMEs

Kesper (2000) suggested that SMMEs are the real potential engines of wealth creation, value re-orientation, job creation and poverty eradication in developing countries of Africa. There are, therefore, sound economic and social reasons for promoting SMMEs:

- Micro enterprises are generally associated with more labor intensive production and are hence perceived to have a high labor-absorptive capacity
- From the economic point of view, it is generally believed that optimizing the contribution of micro enterprises to employment and economic development could be translated into the following broad objectives
 - ✓ *Raising the rate of formation of new micro enterprises with growth potential and increased contribution to investment, employment and income generation*

- ✓ *Increasing the rate of economic ownership; increasing the rate of graduation of micro enterprises into larger categories*
- ✓ *Raising the performance of existing micro enterprises with a view to increasing their competitiveness and*
- ✓ *Decreasing the undesirable mortality rate of micro enterprises”*

Endalkachew (2008) citing CSA (2003) in his research stated that small medium and Micro enterprises (SMMEs) are a special focus of the government, given that they comprise the largest share of total enterprises and employment in the nonagricultural sectors. Here the potential contribution of SMMEs to value creation, contribution to investment and economic development of the nation rarely stated. In recognition of the important role SMMEs have to play in creating income and employment opportunities and reducing poverty, the government drafted its first Micro and Small Enterprise Development Strategy in 1997.

Further Endalkachew citing the first Micro and Small Enterprise Development Strategy in 1997, micro enterprises are business enterprises with a paid-up capital of less than 20,000 birr, and excluding high tech consultancy firms and other technology establishments. Small enterprises are those business enterprises with a paid-up capital of above 20,000 birr and not exceeding 500,000 birr, and excluding high tech consultancy firms and other technology establishments. Large and medium enterprises, by default, are those with more than 500,000 birr in paid-up capital. According to the Central Statistical Authority (CSA, 2003) survey, there are almost 570,000 MSEs in Ethiopia, 99.4 percent of which are micro-enterprises with fewer than ten employees, accounting for 88.2 percent of private sector employment. The micro enterprises are very small. On average, they employ one and a half workers (this includes the owner and perhaps one occasional helper), and earn an annual operating surplus of 1,300 birr. Sole proprietors operated 82 percent of urban enterprises. Of the total employment in these urban micro-enterprises, family members accounted for 60 percent.

Beyond family members, apprentices constituted a large proportion of the remaining SMMEs work force (CSA, 2003). The average micro-enterprise has a capital of 3,528 birr, a yearly production value of 2,300 birr and an annual surplus of 1,300 birr. Although significantly more productive and profitable than micro-enterprises, small-scale industries are also very small, with an average of slightly more than three employees, 18,934 birr in annual operating surplus, capital of 38,554 birr, and production value of 68,800 birr.

USAID (2009) opined that in many countries, microenterprises - small, informally organized commercial operations constitute the majority of businesses. They account for a substantial share of total employment and gross domestic product (GDP) and they contribute significantly to poverty reduction. It is argued that these enterprises are a predominant source of income and employment for hundreds of millions of people worldwide. The SMME sector's influence on individuals, households and national economies is clear and profound. These contractors play a significant and critically important socio-economic role in developing countries. It is therefore important that SMME contractors be well equipped to effectively manage their construction enterprises from the perspective of the environment, health and safety, as well as from business sustainability, which contributes to the socio-economic development of local communities and society at large.

According to Rwelamila (2003), *"the dynamic roles of SMME contractors in developing countries cannot be overemphasized. Such enterprises have been identified as the means through which the rapid industrialization and other developmental goals of these countries can be realized"*. However, Rodrick (2010) in his research noted that some authors have contended that the job creating impact of SMME contractors is a statistical fault: it does not take into account offsetting factors that make the net impact more modest. It is argued that increase in employment within SMMEs is not always associated with increase in productivity. Nevertheless, the important role performed by these enterprises cannot be overlooked. SMME contractors have advantages over their large-scale competitors. They are able to adapt more easily to market conditions given the flexibility of their businesses.

2.5. SMME contractor development and their current barriers

The significance of the contribution of SMMEs to national development goals in general and to the local economy in particular, is being recognized increasingly in many developing countries. Therefore, closer attention is being paid to the factors that promote the growth and development of this sector. This being the fact, different studies indicate the sector faces a range of legal, regulatory and other constraints that can limit its role of creating new employment opportunities, poverty alleviation and fostering economic growth. Endalkachew (2008), citing Ishengoma and Kappel, (2006) categorized factors hindering the performance of Micro and small enterprises into three, namely internal, external and inter firm, which are explained in section 2.6.

Jensen (2004) argued that there are many barriers to the development and growth of SMME contractors. These include:

- Environment regulations;
- Inadequate infrastructure;
- Business regulations;
- Tax and labor; regulations
- Skills shortage,
- Corruption;
- Political interference;
- Choice of technology;
- Lack of collateral; and
- Keen competition for limited opportunities and unsteady supply of work.

These and other barriers are discussed in following sections.

2.5.1 Information technology

Sun and Howard (2004) claimed that information technology (IT) has enabled the globalization of the economy and facilitated competition. It has subsequently brought about large-scale change in the industrial nations. We have witnessed the rapid growth of some industries such as computer, communications, software and financial services by creating new services and enhancing efficiencies, while other more traditional industries have stalled or even contracted in comparison. As it is transforming the landscape, IT is enabling a major shift in the job market.

Many analysts have noted that for the modern workforce, IT literacy is becoming an essential requirement. Sun and Howard (2004) stated that IT application in the construction industry and communication technology has radically transformed the way we live, learn, work and play.

2.5.2 Ethics in construction

Thompson, Strickland and Gamble (2008) define business ethics as *“the application of ethical principles and standards to business behavior. Ethical principles in business are not different from ethical principles in general.”* According to the School of Ethical Relativism, *“different societal cultures and customs have divergent values and standards of right and wrong – what is ethical or unethical must be judged in the light of local customs and social morals and can vary*

from one culture or nation to another". According to the School of Universalism, *"the same standards of what's ethical and what's unethical resonate with peoples in most societies regardless of local traditions and cultural norms; hence, common ethical standards can be used to judge the conduct of personnel in companies operating in different societies, markets and cultural circumstances"*.

Ray, (2000) stated that *"the basic concern of ethics is the meaning and justification of utterances about the rightness and wrongdoing of the acts in particular: and/or means, the praise-worthiness of the acts themselves; ends, the positives or negatives or consequences to which they give rise to; and the character of the agents that perform them."* In today's construction industry, people working in the industry are affected by its moral climate but, at the same time, they mirror current societal morality in their behavior. For those working in the construction industry, much attention is concentrated on competitive tendering, a process whereby a sequence of promotion, pricing, product and distribution decisions take place; these are the contractor's core marketing function. The contractors need to market themselves and the pressures involved in winning the tender lead to the unethical practices. In this lies the value of studying the moral aspects of business behavior. Ray *et al.* (2000) further said that an understanding of the ethics of tendering can help codify, and finally simplify, one aspect of the very complex support system of contract bidding in construction.

2.5.3 Collusion

The Concise Oxford Dictionary (1982:184) defines collusion as *"fraudulent secret understanding, especially between ostensible opponents."* The Oxford Advanced Learner's (2000:217) defines collusion as *"secret agreement in order to do something dishonest or to deceive people."* Ray *et al.* (2000) stated that collusion tendering is done when a number of firms that have been invited to tender agree between themselves either not to tender, or to tender in such a manner so that they are not competitive with the other tenders.

Myers (2004) defined collusion as when firms agree to co-operate to raise profit. According to subjective evidence from several groups of post graduate students working in the industry, collusion is common practice in contractual agreements across the whole breadth of construction. This conduct is in direct breach of the National Construction Industry's tendering code. It is seen

to be a potential means of fixing, controlling, or maintaining prices that may have the effect of substantially lessening competition.

Ray *et al.* (2000) further cited the main reasons for this practice as being that it provides:

- an uneven distribution of work for all involved;
- a means of entering for what is apparently a bona fide bid; and
- a means for discussion and agreement over illicit profit making, such as amounts for covering secret fees or unsuccessful tender's fees.

The possibilities for the practice of collusion therefore play a role in several other issues related to ethical tendering. The problem with collusion is that it is contrary to the principles of free competition. It benefits only the parties involved in the agreement but at the expense of those outside the agreement. Gold stock (1990) identified four types of collusive bidding practices prevailing in the construction industry, especially for those amongst contractors who want to protect their existence:

- a) There is predatory bidding in which firms collusively agree to bid below prevailing market rates in order to drive out the competition. Once this is accomplished, the firms typically inflate the prices;
- b) There is what is known as “identical bidding”, in which firms agree not to bid competitively. This normally happens when there are very few contractors tendering or in selective procurement;
- c) Territorial bidding means that firms agree not to submit competitive bids in each other's territories this being established by geographical position of contractors or customer area;
- d) Rotational bidding exists when firms agree to take turns in obtaining contracts through low bidding. This practice is usually concealed through the use of complementary inflated bids submitted by other members involved in the contractor's “club”.

2.5.4 Prevalence of corruption and bribery in the construction industry

According to Ethiopian Anti-Corruption Commission (2012), there are three reasons for the existence of corruption and bribery. These include: Historical, Social and Economic.

On historical and social grounds, they claim that human nature has fallen into greed and a selfish attitude of “me first,” which has given rise to a culture of corruption and bribery. For economic reasons, Ethiopian Anti-Corruption Commission (2012) state that *“economic principles create a climate for corruption and bribery; the principles of exchange mean that people are paid for work they do.”* If wages are low people will be ready to earn extra money dishonestly to survive or to get extra. Limited resources and practical shortages force people to pay bribes to obtain things. The Lack of an open market system means that a few in powerful positions can demand payment for necessary commodities. Vee and Skitmore (2003) observed that to be termed “corrupt,” an action must satisfy two conditions:

- Firstly, the recipient of the corrupting object or device must consciously be disposed predictably to favor the interests of the benefactor; and
- Secondly, the corrupting object or device must be substantial enough to warrant reasonable worry that the recipient will favor the interest of the benefactor even when all else is equal.

There are several factors that cause corruption. Certain practices are generated within time-based or location political environments; others are caused by economic forces. Some are temporary and others are permanent. Economic growth is usually accompanied by a construction boom and *vice versa*. Notably, it is during periods of recession in the construction industry that corruption flourishes, possibly due to there being less work for contractors and intensified competition. As a result, contractors may do everything possible to obtain work in order to survive.

The construction industry has its own characteristic methods of project procurement which are different from other industries. Contractors obtain their work through open or selected tendering or by negotiation. These processes may also prove to be competitive insofar as contractors fear that their chances of being awarded a particular contract are almost zero. It is at this point that ideas of corrupting the tender-award/decision-making parties arise. *“Corruption inevitably results when individuals try to circumvent controls and regulations in order to take advantage of any loopholes inherent in their operating environments. Corruption flourishes in virtually all phases of the construction process and possible that participants at every level may engage in corrupt practice”* Vee and Skitmore (2003).

The MoWUD (2003) publication stated that the “Register of Contractors” was established as a risk mitigating instrument to assist public sector clients to select capable contractors to deliver public infrastructure. The Register grades and categorizes contractors according to their capability to carry out construction projects. Poor delivery and quality of work, as well as escalating costs of project failure, are part of the reasons for the government setting the “Register” in 2003.

2.5.5 Relationships with suppliers

Emerging contractors do not have good relationships with their suppliers. In a functioning relationship, the material supplier provides credit to the contractor (30 - 90 day term), contractor pays on time and the cycle gets repeated. In an emerging supplier relationship, the supplier requires cash up front and will not deliver the material until payment is made in full. The reason for this is if the supplier provides credit to the emerging contractor, the contractor is often unable to pay on time due to capacity or performance constraints (ORA, 2012). The reluctance by suppliers in the relationship with emerging contractors is caused by the following risk factors:

- ✓ History of emerging contractor’s failure to complete projects which is very high.
- ✓ Systematic contractor payment processing delays, especially for construction works commissioned by the public sector.
- ✓ The potential for material losses due to theft, lack of appropriate storage and mismanagement by emerging contractor (Gold stock 1990).

2.5.6 Constraints in project funding – financing and growth

Carson (2006) found out that SMME contractors working on labor-based projects often have limited access to formal financing services. Operating in a country where interest rate ceilings and collateral generate a gap between small businesses and banks, SMME contractors are bound to rely on informal and unplanned types of financial services. Within any developing country, skills transfer initiatives do not occur in a vacuum. The business environment has a key role to play in the development of the transport sector. The legal framework and policies around investment and bank lending are fundamental. Liberalized policies by banks and other financial institutions will only result from effective communication between the sector, government and the banking community.

According to Carson (2006), difficulties that SMME contractors have in attracting finance strongly affect the performance of their work. They lead to a variety of sub-optimal situations where construction operators delay construction, work with the wrong type of equipment and sometimes pull out because of sudden financial problems. SMME contractors tendering for construction contracts mostly use their own funds and family savings to invest in equipment. A large share of financial resources used for procurement comes from non-construction activity such as transport and trade. In a situation where an entrepreneur has insufficient funds to purchase new equipment, the contractor will obtain second-hand machinery and trucks on the local market.

Carson (2006) observed that supplier credit seems to be the most common source of external financing for equipment among SMME contractors. Competition on the supplier market defines whether equipment vendors sell on credit and what they charge in terms of down payment and interest. According to ILO (1987) in many rural areas, the demand for rentals exceeds supply, making it difficult for SMME contractors to rent appropriate and well maintained equipment. It is thus vital to briefly discuss the financing of the projects in some selected developing countries. Most agreed with the earlier observation that contractors face difficulties in financing construction projects due to financial problems; delay in progress payment, no or little advance payment and cash-flow problems. This stems from the fact that SMMEs have limited access to capital markets, partly because of the perception of: Higher risk, Informational barriers and the higher costs of intermediation for smaller firms.

As a result, SMMEs often cannot obtain long-term finance in the form of debt and equity. ILO (1987) identified access to finance as the major problem to SMME contractors, mainly due to their inability to fulfill collateral requirements. Fraser (1989) agreed with the observation that African black SMME contractors are regarded as falling into the high-risk category. Motlanthe (1990) argued that the consequences of limited access to finance tend to have a detrimental effect on the reputation of SMME contractors, who often resort to taking deposits for new contracts as a means of financing their current work. This tendency is partly a reaction to the contractual conditions governing payments, which often present great difficulties for SMME contractors. The biggest constraints were difficulty with finance from reluctant financial institutions, which generally classify them as high-risk clients regardless of their capabilities. Khoza (2008) opined

that the high risk nature of construction, as well as perceptions of banking institutions that emerging enterprises are a high credit risk, means that it is very difficult for contractors to access finance. In desperation, many contractors turn to “cession” agreements, which have a negative impact on their track record and CIDB grading.

2.5.7 Lack of work opportunities and limited new opportunities

It was identified by TACECA, 2003, in Tanzania that work is not “packaged” to promote SMME contractors. Furthermore, in many cases open invitations are issued to all registered contractors, even in the case of minor works that could be executed by SMME contractors. This does not allow for fair participation, as big, medium, small and emerging contractors are pitted together. There are not enough projects on an ongoing basis to ensure commercial viability of contractors. This causes problems such as the under utilization of equipment and difficulty in retaining good staff members. Direct contracts with government and donors are not forthcoming on a continuous basis and there is a perceived lack of policy aimed at promoting the engagement of SMME contractors as sub-contractors on larger projects.

This inability to sustain workflow impacts on their ability to achieve sustainable employment (job) creation and economic empowerment if this state of affairs persists. This could hamper the objective of the policies to reduce unemployment. This currently remains the chief concern for many countries and its economic planners with the result that employers were not in a position to retain excess labor, train or offer opportunities to young trainees.

2.5.8 Payment

Buys (2006) and Endalkachew (2008) indicated that SMME contractors suffer from erratic cash-flow problems and are often forced to delay or suspend works due to a delay in payment or non-payment, the government being the main defaulter in this respect. Contractors fail to meet their various obligations and works end up costing much more than the budget due to claims and interests. In the case of the labor-based contractor, delayed payment inevitably leads to strikes, unrest and serious disruptions. The issue of delay in payments by the government was identified as a major stumbling block that has impeded the growth of contractor growth. The Bolton Committee (2001:5) adds to the debate by reporting that a small business is vulnerable during a

period of “credit squeeze,” when larger enterprises or government bodies could use their greater power to delay payment to small enterprises.

Anderson (1987) examined the problem of late payment and suggested that the relationship between main contractor and consultants is determined by the conditions of standard contracts. The practical implementation of the relationship shows that payment is the primary stumbling block to peaceful co-existence within the industry. Quantity Surveyors do not perform evaluations on time. This may mean that the contractor receives payment for completed later than the expected date.

Motlanthe (1990) stated that in addition to the complaint that the initial “tender price” is often fixed by the client or Principal Agent, it is common that fairly long delays occur between the time that work is certified as completed and the time that cash is received, particularly in the case of public sector clients. Motlanthe further argues that many contractors complained of the problems in their subsequent financial relationship between the contractor and the sub-contractor. They include undue delays in payment, retention monies not being refunded and excessive penalties often being inflicted for absurd reasons.

2.5.9 Budget allocation

Roderick L. (2010) indicated that the experience and perception is that government, the largest employer of SMME contractors, will often for political reasons advertise tenders and even enter into contracts without having adequate financial budgets in place. The consequence is that payments are either delayed or simply not forthcoming. This frustrates and destabilizes the already cash-strapped contractors, especially those who have already mobilized and are on site. Another related problem concerning budgets, as perceived by contractors, is that there appears to be insufficient experience/knowledge among the client institutions or consultants when it comes to preparing realistic budgets for works.

2.5.10 Credit management

According to Broadmore (2006), where any form of payment is involved there is fear on the part of the paying party that there may be overpayment, followed closely by insolvency of the party who has received payment. Whilst SMME contractors may suffer because their debtors do not pay, they may benefit because they make late payments to their own suppliers. The Bolton

Committee (2001:3) claimed that “*many firms grant credit in a haphazard fashion and have slow and irregular collection of debts.*” They go further by stating that emerging businesses “*on occasion neglect for weeks on end to submit bills for work completed or goods delivered and fail to take advantage of discounts for prompt payment of accounts thus failing to appreciate the effect by paying a very high rate of interest for the credit they are taking.*” Continuing the argument from the perspective of emerging SMME contractors in the United Kingdom that this is still happening today, it further argued that suppliers have no efficient invoicing system, nor do they check credit worthiness of the clients. This can be seen in their lack of clearly established and agreed-upon credit terms prior to sales in order to monitor payment patterns.

2.5.11 Legal constraints in micro-enterprise development and growth

Uriyo *et al.* (2004) in stating that, with regard to legal barriers, a commonly perceived constraint of micro enterprises is the labor and taxation laws which are said to raise the cost of employment, artificially prolong corrective action and do not allow for adequate flexibility, especially in wage settings and the arrangement of working time. As a result, enterprises feel a profit squeeze and this impact on the willingness to create jobs.

2.5.12 High cost of tenders

Tendering can prove to be costly, especially in a small-scale building contractor’s organization which finds difficulty in employing resources vital to sustaining its operations, for example:

- The cost of purchasing tender documents;
- Transport and phone bills to get quotations from the suppliers, time taken for the estimator to price the tender document;
- Tender guarantees or letter of intent payments; and
- Postage cost of tender documents for opening.

This situation worsens if the small contractor carries on tendering without winning a contract. As a result, the contractor may resort to offering bribes to corrupt consultants, developers or owners of building projects. The cost of tendering is recognized as a large expense to SMME contractors and represents a large proportion of operating overheads. Larger Contractors believe this cost to be fixed and part of their business but SMME contractors do not have enough resources to allocate funding for submitting a competitive tender in a selective/invited tendering process.

2.5.13 Guarantees or sureties, insurance bonds, performance bonds etc

A Development Bank of Southern Africa (DBSA) Construction and Development Series number one (1) (1993) reported that financial support is difficult to come by for SMME contractors. The summary below tells it all:

They have found that “the involvement of SMME contractors is in fact a process of involving entrepreneurs with no capital in a capitalist system. Invariably these contractors do not have the facilities to provide guarantees or sureties and it is pointless to make these aspects conditions of tendering as they only serve to exclude potential contractors from the process. In our opinion every opportunity should be afforded to anyone to tender. His only qualification needs to be his willingness to tender and his enthusiasm for the project.”

In addition Shakantu (2007) cited Watermeyer (2001) who argued that the requirement for a performance bond presents a significant financial hurdle for micro enterprises. Moreover, because of their greater surety risk factor, micro enterprises are forced to obtain their performance bonds at significantly higher rates than well established enterprises. Even the reduction of the bond amount to between 2.5 percent and 10 percent depending on the risk classification of a contract, has not significantly reduced this problem in South Africa. This becomes a barrier as SMME contractors are unable to raise millions as a performance guarantee.

2.5.14 Equipment and technology

In order for construction works to be carried out, there is need for availability and/or access to required plant and equipment which most SMME contractors cannot afford.” It is difficult for SMMEs in gaining access to appropriate technologies and information on available techniques. It is believed that this limits innovation and SMME competitiveness. Besides that, other constraints include capital and labor, as well as uncertainty surrounding new technologies. Motlanthe (1990) argued that the SMME contractors do not usually use larger plant such as concrete mixers and bomag rollers until they start undertaking large contracts. Most of them are capable of operating with basic tools, like wheel barrows. This tendency to utilize manual, rather than mechanical methods of building might be due to SMME contractors’ inability to access the required equipment. It also depends on whether its productivity would improve sufficiently to justify the expense. Consultants might insist on the use of a certain construction method that might require

the use of hired equipment. This as well might pose problems for the contractor, since the hire charges may be high.

2.5.15 Domestic demand and unsteady work-flow

Research by Quartey (2000) drew the conclusion that business environment varied markedly among SMMEs in Ghana and Malawi, reflecting different demand constraints after adjustment. There were varying levels of uncertainty caused by macro economic instability and different levels of government commitment to private sector development.

Quartey (2000) argued that recent economic policies have led to a decline in the role of the state in productive activity, while renewed private investment has created new opportunities for SMMEs. Nonetheless, limited access to public contracts and subcontracts arising from cumbersome bidding procedures and/or lack of information, inhibit SMME participation in these markets. Uriyo et al. (2004) posited that demand constraints limited the growth of SMMEs in many developing countries ranked by the International Monetary Fund.

Cattell (1993) and Uriyo *et al.* (2004) stated that SMME contractors tend to experience perpetual difficulty in obtaining work on a steady basis. Indeed, so do larger contractors, but SMME contractors are particularly vulnerable to demand fluctuations. Furthermore, the absence of national policies on the allocation of work for SMME contractors tends to exacerbate the case. Public work is usually issued on a pre-qualification system, which categorizes and restricts contractors to maximum projects that they are permitted to undertake.

2.5.16 Managerial constraints - lack of entrepreneurial and business management skills

Myers (2004) suggested that management expertise is one of the scarcest resources in the construction industry. He stated that lack of managerial know-how places significant constraints on SMME development. Even though SMMEs tend to attract motivated managers, they can hardly compete with larger firms. The lack of support services or their relatively higher unit cost can hamper SMME effort to improve their management because consulting firms are often not equipped with appropriate cost effective management solutions for SMMEs. Furthermore, absence of information and/or time to take advantage of existing services result in weak demand for them.

One universal problem facing SMME contractors is the inability to estimate cost, compile tenders and assess the effects of inflation; this clearly reflects the lack of training and experience in business and financial management. In the absence of this experience, SMME contractors tend to rely on intuition based on previous experience. They also overestimate labour productivity and material transport costs. These vary from one contract to another. Fraser (1989:5) gives an overview of the situation as:

“The lack of costing skills has led to the under-pricing of contracts. An African Builder also faces heavy financial losses at the end of the project by virtue of the fact that he fails to incorporate costs associated with the overheads and contingencies in compiling and quoting for tenders. What most African contractors do, and are very confident of, is the use of the standard rate per m² as a means of estimating. This is reinforced by the popular census as to what constitutes an acceptable township rate and the willingness of the competitors to undercut any contractor who tries to increase his rate. This method of pricing leads to most contractors ending-up with under-pricing, since they tend to use the same rate in all their projects, irrespective of the finishes, structure, allocation of resources and the nature of the foundations. To mention the worst part, “township rates” in some cases have remained unchanged for the past five years, irrespective of inflation prevailing today and the real value of the cost in the economy.”

Griffin (1990) advocated that the apparent lack of understanding of inflation and the escalation in the cost of building material clearly present an imposing barrier to black SMME contractors wishing to compete in the formal home-building market. Building societies in South Africa are reluctant to allow their home-buying clients from increasing original agreed costs. However, this essentially forces the contractors to estimate price increases in advance and include in an amount for this in their tender. Griffin (1990) clarifies this and suggests that it means that, the contractor would have to assess and cover the risk of price increases. Merrifield (1992) noted that black SMME contractors are generally unable to manage business risks. Kagari (1994) proposed a framework for monitoring the development of SMME contractors in Atlanta and deduced that many people started constructing business without construction education background, market experience or managerial talent needed to run a construction operation. Some of the skills badly needed are:

- Estimating knowledge;

- Ability to read drawings and specifications;
- Ability to schedule construction activities; and
- Proper accounting/book-keeping skills essential to keep track of the job and performance cost and profit.

Smallwood (2008) undertook an empirical study to assess the capacity of emerging civil engineering contractors in the Nelson Mandela Bay Metropole and found that SMME contractors lack the sophistication of large contractors. SMME contractors lack the sophistication of large contractors. This is particularly evident in their inability to use the conditions of the contracts to their advantage. Clients almost invariably alter the basis of the original contract through variation orders and instructions. A thorough understanding of contracts is vital to the successful negotiation of rates for variation where considerable financial gains stand to be made. It is, however, frequently the case that SMME contractors lose money due to poor preparation and poor negotiation of claims against contract variations. Few of these contractors seem to recognize the positive role that accurate cash-flow, for example, could play in trying to raise working capital from the institutions.

2.5.17 Training in the construction industry

Moss (2007) observed that training is a form of teaching or education that transfers knowledge. In the process, the trainer has certain responsibilities. The trainer must not only have exceptional communication skills so that learners understand the content of the training, but should be aware of the learners needs so as to be sensitive to their issues.

The trainer's role may include

- Presenting;
- Demonstrating;
- Guiding; and
- Administration.

The training sessions are designed ahead of time to ensure that the outcome of the intended training is achieved. The components of training design should include:

- *Time;*
- *Activity being taught;*
- *Activity link to specific objectives;*

- *Resources and materials needed for activity, and*
- *How learning skills will be assessed.*

Various programmes have been put in place to enhance basic literacy and life skills in construction through training being conducted by Capacity Building. SMME contractors can benefit greatly through participation in these programmes, since they are designed to address the contractor's shortfalls. The purpose and the rationale of the qualification is that *"Qualifying learners are able to start and manage their own construction contracting business. In addition, the qualifying learner will demonstrate competence in 1 of the 3 areas of specialization. The qualified learner is able to competently fulfill SMME construction contracts safely and in a professional manner, to ensure that industry standards are maintained."* SAQA (2007)

SAQA (2007) believes that this qualification has been developed to assist with standardization across the construction industry. This will allow one to register as a construction contractor and lay a foundation for future career advancement across similar SMME programmes in other sectors, as well as to access supervisory and management qualifications within the construction sector. As a result of past legacies, many practitioners within the construction industry were denied career advancement and possible recognition as qualified contractors. According to SAQA (2007), poor educational opportunities at some schools deprived them of entry to formal training institutions. The introduction of a National Certificate in Construction Contracting, based on unit standards, will allow learners to reach their full potential for advancement. Formal education will no longer be a barrier and now allow for the recognition of prior learning.

According to CIDB (2008b), training courses have to be carefully designed following the Training Needs Assessment and Training Impact Assessment Survey. Contractors and members of the construction industry evaluated whether the training conducted has made any impact on the industry and the training gaps that the construction industry is facing. CIDB (2008b) addressed the challenge of skills development through its Construction Industry Performance Unit and the National Contractor Development Programme. There is an indisputable link between the quality of projects delivered by contractors and skills. It also believes that formal education and skills development is the key to a better construction industry.

Quartey (2000:15) observed that *"....despite the numerous institutions providing training and advisory services, there is still a skills gap in the SMME sector as a whole."* According to

Daniels and Ngwira (1993), about 88 percent of Malawian SMMEs desired training in various skills but as of 1992, less than 6 percent have actually received it. In Ghana, a lot has actually been achieved in this regard, though there is still room for improvement.

2.5.18 Targeted procurement – SMME contractors

Rodrick in his research (2010) citing Shakantu (2007) noted that efforts to promote SMME contractors through targeted programmes such as the preferential/affirmative procurement policies have had some limited success. There is need for improving the effectiveness of the programmes. It also claims that it is possible to harness the potential of SMME contractors to improve construction competitiveness and infrastructure delivery, in addition to creating jobs and alleviation of poverty through smart production processes.

2.5.19 Institutional constraints - associations and collective action

The World Bank (1992) stated that the lack of cohesiveness and the wide range of SMME interests limit their capacity to defend their collective interests and their effective participation in civil society. Associations providing a voice for the interests of SMMEs in the policy-making process have had a limited role compared to those of larger firms. Many of the entrepreneur associations have yet to complete the transition of their goals from protectionism to competitiveness

2.6. Constraints faced by SMME contractors in general

According to Buys (2006), one of the biggest problems in the construction industry is that of the endless disputes between the client, the professional team and the building contractors regarding the valuation and payment of the monthly interim certificates. Harris (2000) noted that resolving disputes has been part of routine management function of project participants. He stated that the most significant issues facing the construction manager before litigation or arbitration is invoked are the pricing of variations, disputes regarding payment certificates and the repudiation or cancellation of the contract.

Edmond and Miles (1994) investigated the role that SMME contractors play in the construction industry in developing countries. The growth of a country is linked to an increase in productivity of SMME contractors in the construction market. Specific areas where SMME contractors could improve their efficiency and profitability, for example, site organization were identified. A key

constraint was the need for up-grading the managerial and technical competencies of the contractors. The first step would be to appraise the contractors of skills gaps in their workmen. This would be followed by a properly planned programme to meet the identified training needs which is still a problem in developing countries like Ethiopia. The dominance of foreign contractors creates what is referred to as the “Missing Middle” of the contracting business. There is therefore an opportunity for SMME contractors to develop their market share and to become medium size. They would however have to improve to compete with large foreign contractors. ILO (2006) proposed a set of guidelines for the development of SMME contractors in developing countries. The study not only acknowledged the potential contribution of SMME contractors to the growth and efficiency of the local economy, but also identified major constraints facing the construction industry sector. The constraints were classified as difficulties presented by:

- A particular market and the business environment in which the contractor is operating (for example steady availability of work, material and labor);
- Client/consultants (for example incomplete design information and delayed payment);
- Shortcomings and inadequacies of the contractor (for example, knowledge and familiarity with technical, legal, financial and managerial issues).

The ILO (2006) study highlights deficiencies in planning and management skills as the greatest stumbling block among SMME contractors and advocates simple planning and record keeping tools which make a marked difference in the success of SMME contractors. Mentor (1985) investigated the usefulness and the empirical application of project planning and control techniques to SMME contractors in South Africa. Among Mentor’s important findings are that SMME contractors do not:

- Pay sufficient attention to formal planning and control of operations;
- Keep proper records of the progress of jobs; and
- Record important duties and instructions in writing.

While Mentor (1985) indicated that small businesses do not have the resources and time to install and maintain extensive record keeping facilities, he insisted that managers of SMME contractors should plan their operations thoroughly. The survey also revealed personnel problems as most prominent, followed by poor administration, lack of management experience and issues relating to clients and the suppliers of material. KK Chitkara (2003) maintains that inadequate

documentation is a source of much dissatisfaction in the construction industry, mainly because existing contracts are biased in favor of the client and professionals. Rodrick (2010), in his research also examined the construction industry in developing countries and concluded that highly developed managerial and supervisory skills are crucial for the efficient execution of construction projects. KK Chitkara (2003) listed the basic skills that a successful contractor should have as:

- Ability to read and interpret drawings;
- Ability to understand the complexity of tendering and contractual procedures;
- Knowledge of insurance, bond and other legal necessities; and
- Having secure, sufficient working capital and material credit to finance projects, whether payment by clients is delayed or not.

ILO (1987) regards deficiencies in planning and management skills as being probably the greatest single stumbling block among SMME contractors. Common examples of these deficiencies manifest in the inability to compile a material procurement schedule, include productivity checks during a contract, anticipate possible delays and plan transport requirements. SMME contractors clearly do not need the sophisticated management tools that large contractors commonly use. However, the need for planning techniques is critical at the SMME contractor's level, since profits are usually small and consequently margins for errors are small.

ILO (1987) reported that SMME contractors often have to contend with problems originating from the client (for example, incomplete drawings and specifications) because most clients assumptions made are that the contractor knows what to do. This often results in important cost information being left out of the tender document. In addition, inexperienced clients tend not to be sophistic about accuracy and quality of workmanship. Consequently SMME contractors often find that they have to do a costly remedial work when less expensive solutions could possibly have been utilized. This tendency presents a serious constraint to the development of a domestic contracting industry.

ILO (1987) observed that SMME contractors, especially in developing countries, are frequently experiencing problems when dealing with professionals. This is because professionals tend to expect higher levels of quality in the work and services from the contractor than what the contractor can actually deliver. When the work is condemned, it is the contractor that has to re-

do the work as instructed by the Engineer in order to obtain the expected standard. For instance, the client does not make payments within the agreed period the contractor might blame it on the consultants who are responsible for promptly notifying the client about the payment issues. Sometimes there might be disagreements with the valuation of work in progress. In such instances the quantity surveyor has to physically re-measure the work done on site to reach agreement on the quantity of work to be certified.

ILO (1987) noted that in developing countries, contractors are criticized for their tendency to produce poor quality work, failure to meet deadlines, inability to undertake remedial work and not meeting completion on time. Further observed that this is a matter of concern to most contractors because they tend to think that they are reasonably competent contractors hence professionals often expect more than what SMME contractors can deliver. According to Cattell (1993), the ability of an individual to market themselves, as well as their firm, was found to be another common factor of success.

A report of contractor development undertaken by the Tanzania Civil Engineering Contractors Association (TACECA, 2003) noted that current business conditions in Tanzania do not favor the participation of SMME contractors in the country. For example, local contractors are usually not paid the same rate as foreign contractors and there is, understandably, little support at present from these foreign contractors in developing local contractor capacity the same is true in Ethiopia. The situation is aggravated by limited access to dependable construction equipment and working capital. According to TACECA, 2003, due to bureaucratic and budgetary constraints, the government has thus far been unable to provide a sustainable environment of continuous work flow for the SMME contractors. The problem is worsened by an inefficient payment process in which payment is delayed for months and this is seen as normal. The deficiencies in contracting and managing contracts are due to:

- Lack of technical skills;
- Lack of experience in preparation of contract documents;
- Poor site organization;
- Poor programme design and construction practice;
- Many variation orders;
- Poor equipment; and

- Poor project management.

A need assessment carried out by TACECA (2003) identified the major constraints faced by SMME contractors in Tanzania. These are:

- Lack of capital;
- Lack of equipment;
- Inadequate training;
- Inadequate access to appropriate technology;
- Inadequate technical and business skills;
- Policy and advocacy issues; and
- Inadequate co-operation among stakeholder

According to Rodrick (2010), citing in a report by the Construction Industry Development Board (CIDB) of South Africa, without an on-going supply of skills the industry would not be able to meet all of the country's long-term infrastructure development. If the projected growth in demand for skills in the building and engineering sectors reach 10 percent a year over the next five years, there would be a demand for large number of key management, supervisory and engineering staff. The report comments on the skills strategy that is in place at the moment which requires significant changes in the current form of Further Education and Training to ensure that graduates, be they artisans, technicians or technologists, are able to meet world class standards. To restore the skills pipeline, the report recommended interventions by the education department to increase the number of mathematics and science graduates. It also recommends ongoing interventions by the Department of Public Works to improve the quality and relevance of current training programmes.

Rwelamila (2002) agreed that the SMME sector in the African construction industry needs the support of the relevant industry stakeholders such as government, training and research organizations. According to Rwelamila (2002), estimates show that foreign contractors and consultants hold 70 percent of the construction market in the Southern African Region as an example. In many Southern African Countries, governments have expressed frustration at the poor returns on their investment in improvement programmes, for example, granting tendering preference to SMME contractors. As early as the 1960s, the forces of globalization began to make their presence felt in Africa in the form of international financial institutions, mainly the

World Bank and the International Monetary Fund. The arrival of these institutions in Southern Africa opened the gates for foreign contractors to operate in these countries. The same is true in most African nation leading to a 'missing middle'. It also commented that many Zambian contractors have over time found it very difficult to take advantage of economic opportunities due to highly controversial participation schemes which do not favor local SMME contractors. A cursory look at the history of the Zambian construction economy during the 1960s and 1970s testifies to the fact that many African countries have a lengthy history of problems in their industry. The market share of Zambian contractors in road construction projects is a mere 17 percent; the rest is in the hands of foreign contractors. The Zambian experience highlights the critical role that government and other industry stakeholders should play in assisting contractor development. Rwelamila (2002) stated that much of the contractor development effort in South Africa and in other African countries focuses on providing work opportunities to as many contractors as possible, instead of assisting a limited number of contractors to build long-term sustainability. Much of this effort is also characterized by *unplanned* development interventions that do not promote a culture of continuous improvement and long-term growth of contractors. However, some medium-sized and large construction enterprises in South Africa have been competing successfully in the global markets for some time. Within a period of less than ten years, these contractors have increased their share of external revenue from less than 10 percent to between 30-50 percent of their total revenue.

Khoza (2008) suggested that inconsistent procurement and delivery practices and policy environment by clients and consultants also impede the development of contractors. These include:

- Poor designs;
- Flawed tendering procedures;
- Processing of interim and final payments;
- Cash flow and ultimately sustainability of contractors;
- Poor client procurement practices also include focus on lowest price, undermining project delivery and the performance of contractors; and
- The practice of promoting the lowest price is further encouraged by tough competition due to an oversupply of contractors.
- Lack of access to appropriate technology;

- The existence of entrepreneurial oppressive laws;
- Regulations and rules that impede the development of the sector;
- Weak institutional capacity; and
- Lack of management skills and training.

The National Construction Council of Zambia (NCCZ) 2003) observed that some foreign contractors, mostly from mainland China, often turn out to have insufficient experience and/or capacity. They tender for projects and are often, awarded contracts based on low prices with no relation to actual costs. In lean times medium-to-large contractors “down-plunge” to secure contracts which would normally not be of interest to them. Although they can hardly be expected to profit from such works due to their higher fixed costs in relation to the typical SMME contractor, they consider even partial cover of the overheads advantageous. This tendency damages the prospects and growth of the SMME contractors.

NCCZ (2003) stated that the so-called “brief-case” contractors, often with the “right connections”, but without proper training or commitment to invest in staff and equipment may register as a contractor and bid for works with the intention of hiring both staff and equipment on a needs-basis. More often than not, they may not even be committed to finishing the work, even after having been granted an advance payment. This tarnishes the image of the SMME contractor.

Khoza (2008) citing the National Audit Office Report (2001) and The Construction Task Force Report (1998) in Myers (2004) reported four sets of problems that the construction industry in the developed country is facing. These are:

- The industry demonstrated a poor safety record and inability to recruit good staff;
- There appeared to be no real culture of learning from previous projects, and no organized career structure to develop supervisory and management grades;
- A concern was expressed about the poor level of research and development that restricted the industry’s ability to innovate; and
- Technology was not widely used across the construction industry.

2.7 The roles and Characteristics of Technologies used by SMMEs contractors

Poverty and underdevelopment are closely correlated with lack of functional infrastructure and underemployment (ILO, 2010). Infrastructure, including social and economic infrastructure, helps to build the conditions for economic growth and poverty reduction. In addition, the use of Labor Based Approaches (LBAs) to build and maintain infrastructures is currently recognized as playing a way to promote pro-poor growth through job creation, transfer of income to the poor, and creation of useful infrastructure. Further, LBAs produce ‘second round effects’ which include income multipliers generated by spending of wages, impacts on local labor markets, micro-enterprise development, capacity building, as well as enhanced employability of workers after the programme finishes (OECD, 2005). Equipment based and labor-intensive approaches constitute the two most frequently chosen policy options in the delivery and maintenance of publically-funded infrastructure. Despite their potential contributions to pro-poor growth, labor-based approaches have not been widely used in the delivery and maintenance of infrastructure. There are three main reasons for this. First, education and training of engineers and project planners is often biased towards equipment intensive approaches. Second, donor support tends to be tied to equipment based approaches and pre-empts the choice of technology. Third, political interests are often more easily served by capital intensive approaches, especially when politicians are keen to get programmers’ quickly off the ground. Thus, these factors undermine not only the use of labor-based approaches but also opportunities for pro poor growth.

2.7.1 Policy options: equipment based and labor-intensive approaches

A key consideration in the delivery and maintenance of infrastructure is whether it will contribute to poverty reduction and pro-poor growth through long-term employment and transfer of income to the poor, micro-enterprise development, capacity building and the creation of quality infrastructure. Equipment-based approach relies significantly on the use of machines supported by a relatively small amount of labor, optimized to construct and maintain quality infrastructure in a cost-effective manner (ILO, 2010). The approach is usually delivered by multinational companies or their affiliates, with limited use of local resources. In contrast, labor intensive approach is premised on the maximization of labor in order to create maximum short-term employment, usually as a response to a crisis or for social welfare purposes (ILO, 2010).

A key weakness of both approaches is that they fail to address the underlying problems of poor infrastructure, unemployment, poverty and underdevelopment. Use of equipment-based approaches does not contribute to reducing high levels of unemployment in developing countries. On the other way, labor intensive approaches invariably pay low wages for self-targeting reasons (ILO, 2010). Low wages make it impossible for poor people to earn their way out of poverty, and consequently undermine the global call for ‘decent wages’ (ILO, 2004). But perhaps more importantly, labor intensive approaches provide short-term unskilled employment to the poor, which make little impact on structural unemployment and underemployment. The approach is often criticized for lower quality and sustainability of the infrastructure being created. The limitations of equipment-based and labor-intensive approaches led to a re-think of policy for infrastructure delivery and maintenance Labor-based approaches, when good practices are followed are now regarded as effectively contributing to pro-poor growth and undermine its value creation.

2.7.2 Policy instrument: labor based approaches

Defined operationally, labor-based approaches refers to the optimum and flexible use of local labor and locally available materials, skills and capacities, supported by the use of appropriate equipment, where technically and economically feasible (ILO 2004; 2010). Broadly, the approach is aimed at creating employment (i.e., short- and long-term) and the development, rehabilitation and maintenance of infrastructure that underpins pro poor growth. Labor based approaches prioritize the *quality* of employment rather than the quantity of the labor force, and emphasizes on local capacity building, through skills training, and local participation. Therefore, it can contribute to sustainable pro-poor growth outcomes, both directly and indirectly. Direct impacts entail employment creation, opportunities for income generation, micro-enterprise development, and capacity development, while indirect impacts relate to ‘second round’, long term multiplier effects derived from employment, income and the infrastructure created.

2.7.3 The contribution of labor based approaches to pro-poor growth

Experience in Africa, Asia and Latin America has shown that labor based approaches have several benefits. These include:

- *Creation of jobs,*

Particularly for the unskilled and poor people over long time periods, For example, a southern Africa study indicated that labor-based road construction projects generated approximately 75,000 full-time jobs in Zimbabwe, accounting for 6.6% of total formal sector employment in 1995, and 8,271 in Lesotho which was equivalent to 18% of total formal sector employment during the same year (ILO, 2010).

- ***Increases in savings, investments and consumption.***

Injection of cash income into a local economy boosts the level of economic activity, as income earned is actively spent on goods (e.g., food, clothes, and mobile phones) and services (e.g., health education and rural financial services) thereby generating income and profit for others. Further, savings earned from infrastructure projects can be used as start-up or working capital for business ventures, such as petty trading. Indirect employment generated by labour based approaches has been estimated to range from 1.5 to 3 times the number of directly generated jobs.

- ***Positive gender impacts***

As substantial numbers of employees in labor-based infrastructure projects are women. An increase in household income, especially among women, is closely associated with improved household nutrition, access to educational and health services, which benefits the poor. More importantly, effective targeting provides capacity building and economic opportunity to poor women by ensuring their priority access to training and supervisory roles.

- ***Stimulating local entrepreneurship, community participation and promote the development of micro-enterprises,*** which helps in the expansion of local industries through back-and forward-linkages with other sectors of the economy. For example, in Cambodia, the promotion of small scale contractors in road construction programmes stimulated the domestic construction industry and the transport sector, especially in the sourcing and transportation of gravel materials (ILO, 2010).

- ***Develop skills and capacity of local labor*** that can be used in other income generating activities as well as in subsequent maintenance works.

- ***Provide durable infrastructure*** which can stimulate pro-poor growth. However, the nature and extent of growth is a function of its output effects which most of the time undermined by policy makers. Physical, economic and social infrastructures have distinct impacts on poverty and economic growth. Although labor-based approaches can play an important role in the delivery

and maintenance of public infrastructure and in stimulating pro-poor growth, there is scope for negative impacts. For example, increased participation of women in public infrastructure projects may add extra heavy manual labor requirements to already overworked women. Further, women's participation in infrastructure projects has also been viewed as adversely affecting their reproduction, the quality of care they can give to their children, and even indirectly leading to child labor as children take over women's work (ILO, 2010).

2.7.4 Challenges in Implementing LBAs

The adverse impacts of LBAs are inextricably linked to problems in programme design and implementation which may undermine the contributions of LBA to poverty reduction, employment and growth (ILO, 2010). Frequent design problems include unclear programme objectives, especially incoherence between short term and long term objectives within an integrated LBA framework; hastily prepared technical appraisals due to financial or time constraints (which may leads to unrealistic programme targets and underestimation of potential constraints discussed) and the lack of participation of beneficiary communities and local government institutions in programme design. In addition, the assessment of social viability, suitability of projects for local resource based implementation, and the range of available implementing modalities (e.g., use of force account, micro-enterprises, established contractors and community organizations), and assessment of institutional capacity of local government and beneficiary groups, have been neglected at the design stage (OECD, 2005). Yet such a broad analysis is vital to assess whether delivering an infrastructure project using LBA will be appropriate. Experience from Africa and Asia has shown that five factors constitute the key challenges in implementing LBA. These include:

- Lack of participation of key stakeholders,
- Inappropriate administrative systems and procedures,
- Lack of capacity and skills required for successfully implementing LBAs in public and private sectors as well as among NGOs and community groups,
- Ineffective systems for procurement and management of contracts, and
- Ineffective monitoring and evaluation to ensure that standards are met and objectives are attained.

Labor-based approaches have both positive and negative effects, but the contributions that the approach makes to pro-poor growth outweigh its adverse impacts (OECD, 2005). However, there are important challenges to identify and to address when one wants to use labor based approaches. The key issues to take into account when considering labor-based approaches include;

- **Context:** there is need to pay attention to social, economic, and institutional factors as well as an analysis of the extent to which local resources can be used.
- **The choice of infrastructure** is important when seeking the greatest pro-poor growth impact.
- **Employment:** Labor-based approaches are suitable for both short and long term employment. Stimulating long term employment needs to focus on the quality of employment and assets created rather than on its quantity.
- **Availability of sufficient technical capacity, funding and adequate monitoring and evaluation** to ensure successful implementation of public infrastructure projects
- **Effective programme design and implementation of LBA** should be based, at first instance, on clearly stated objectives, and the ways in which these could be achieved through effective work organization, stakeholder participation, targeting of the poor, capacity building of different stakeholders, and improved management of contracts.

2.7.5. Designs in labor based approaches in infrastructure delivery and management projects

Given the importance of labor-based approaches to pro-poor growth, several key principles should guide their design and implementation (ILO, 2010). These include:

2.7.5.1 Supportive policy framework

There is a need for governments and donors to make deliberate policy choices that support the use of labor-based approaches on infrastructure projects. Donors should untie support to developing countries to allow them to build infrastructure using labor-based approaches. Governments may institutionalize labor-based approaches in their national programmes and policies. For instance, under the Presidential Order 94 of 1991, the Philippines Government made its government policy to utilize labor-based approaches in infrastructure programs and projects, including foreign-funded projects, whenever possible and feasible(OCED, 2005).

Appropriate policies and legislation are vital in providing an environment conducive for the adoption of labor based approaches, optimizing impact of infrastructure investments on employment creation and poverty reduction. Governments and donors should support the integration of labor-based approaches in development plans and programmes at national and sub-national level. For instance, the Government of Tanzania put labor-based approaches and technologies at the heart of its plans, notably in the road sector (ILO, 2010). In all road works, priority was given to labor based technologies wherever technically feasible and financially efficient. Further, in Tanzania, the use of labor-based technology was consistent with the poverty reduction and agricultural and rural development strategies as well as the national transport policy and the construction policy (Government of Tanzania cited in ILO, 2010:11). Thus, macroeconomic, sectoral and cross-cutting policies should complement each other to ensure that the policy framework is supportive of LBAs' contribution to employment creation and pro-poor growth. These are rarely seen in different construction sectors of Ethiopia during planning stage.

2.7.5.2 Institutional framework

Policymakers should develop an effective institutional framework that support the use of labor-based approaches, preferably by strengthening existing institutions in terms of capacity development and reform or the adaptation of existing systems and procedures. This can be achieved through a policy coordination unit that seeks to support labor-based approaches by assessing the employment potential of public infrastructure investments, appraising technology options of infrastructure projects, and monitoring policy coherence and application (ILO, 2010). Ideally such a unit should be located within government structures to ensure legitimacy and sustainability. The institutional framework should enable the private sector, community groups, and microenterprises to contribute to both policy processes and the delivery and maintenance of public infrastructure. According to ILO, 2010 capacity building is essential for successful adoption and implementation of labor based approaches, and this has to be conducted across all sectors (e.g., private sector, community groups, government and non-governmental organizations) and at national and sub national levels. For instance, small contractors should be trained in labor-based techniques to bid for, and successfully execute, small to medium-sized public infrastructure programmes using labor based approaches. For instance, the Roads Training School in Zambia has been responsible for training private small-scale routine maintenance

contractors since 1995 (OECD, 2005). Equally important is the need to build capacity of the public sector to delegate infrastructure execution to small contractors and for public sector to play a contract management role. Contract system for public infrastructure programmes should be suitable for small contractors. The modification may include the unbundling of infrastructure projects from multi-million dollar contracts into contracts. Further, modifications of the contract system can be used to enforce decent working conditions to workforce employed by small-contractors, and to promote women's access to work, and on national minimum wage standards.

2.7.5.3 Infrastructures that serve the poor

According to ILO, (2010) donors and governments should support labor-based infrastructure projects that enable the largest possible number of people to engage in productive activities and improve their access to social services. Sectors that have potential for increased use of labor based approaches, and benefit the largest proportion of people include, water and sanitation; irrigation; transport; housing; slum upgrading; forestry and environmental interventions.

2.7.5.4 Gender sensitivity in infrastructure delivery

Given the adverse impacts that the delivery and maintenance of public infrastructure have on women, it can be suggested that the provision of seasonal work on infrastructure projects, for instance, after the agricultural season, may lessen women's workload (ILO, 2010). Further, the construction of crèches in areas where infrastructure projects are being implemented, provide women with an opportunity to take up formal employment on infrastructure projects without undermining the quality of care they give to their children. For instance, in India and Botswana, the provision of work after the agricultural season boosted the participation of women as was the provision of crèches. More importantly, there is need to introduce gender sensitive employment policies in infrastructure projects, which ensures the employment of women at levels, including technical and managerial levels of in infrastructure projects. For example, in Jamaica, the Women's Construction Collective was set up in 1983 to equip low-income women with building skills, as well as to assist them in finding employment help women find employment in construction industry (OECD, 2005).

2.7.5.5 Targeting the poor

A key aspect of publicly funded infrastructure projects is that the benefits should reach the poor (ILO, 2004). As such, an effective strategy aimed at targeting the poor should meet both the

short term needs of the poor, and long term poverty reduction goals. Short term needs of the poor can be met by the provision of immediate relief through wages, set in line with industry-specific national minimum wage or other remunerations, such as food. Given the inherent weaknesses of paying low wages to ensure the effective targeting of the poor, other targeting mechanisms such as ‘means testing’ (i.e., beneficiaries are selected on the basis of a set of agreed indicators, such as lack of livestock, lack of household assets), job rotation, and community-based targeting (where community members actively identify the poor amongst themselves) (ILO, 2004). However, the latter is vulnerable to local social and political dynamics to the extent that selection of the ‘poor’ might reflect political and cultural differences. In the long run, LBA will effectively contribute to poverty reduction if it can guarantee the quality and sustainability of assets created, as well as develop skills and capacities of the poor (OECD, 2005).

2.7.5.6 Monitoring and evaluation

A strategy for monitoring, evaluation and assessment of impact is vital in the implementation of labor-based approaches (OECD, 2005). Since infrastructure projects delivered through labor based approaches are designed to meet specific social and economic objectives in addition to the delivery and maintenance of public infrastructure which is mostly undermined, these aspects must be monitored and evaluated too. Aspects to be monitored and evaluated include, inter alia, acquisition and use of materials, technology used, quality of infrastructure created, direct and indirect job creation, wage rates, and private sector and small business involvement. Findings from such evaluations and impact assessment can be communicated to shape policy, planning and implementation processes and to ensure the replication and expansion of labor-based approaches (OCED, 2005).

2.7.5.7 Sustainability:

According to ILO, (2010) to ensure sustainability of both labor-based approaches and the infrastructure itself, there is need to:

- Obtain political commitment and support from government, policymakers and local communities;
- Strengthen existing institutions to accept or implement labor-based approaches at national and local levels, rather than by setting up entirely new institutions;

- Emphasize improvement of operations and maintenance of public infrastructure through use of locally available resources and skills, affordable fees that takes into account people's ability to pay for operations and maintenance of infrastructure created.

2.8. The construction industry in Ethiopia and other developing countries

The construction industry in developing countries has the same institutional requirements to those of developed countries (P. Larcher, 1998). The primary stakeholders are also the same however; the 'balance of power' is significantly different to that in developed countries. The points to note are that firstly in developing countries the client is predominately the government while in developed countries the client can often be from the private sector. The lack of resources and experience of contractors in developing countries places them in a much weaker position than the government and client. Under the traditional contracting system they are therefore forced to accept a proportionally greater contractual risk than they are able to bear when compared with their counterparts in developed countries (Young, 1993). Finally, in developed countries, the majority of contract administration work is undertaken by consulting engineering firms. In developing countries, the consulting profession is almost nonexistent in developing and emerging countries.

P. Larcher, (1998) also stated that the support framework in developing countries is also very weak. While organizations may exist in the majority of the categories discussed above there is often only one or two in each category, which have limited resources to provide a high level of support. In developed countries, many of the organizations in the support framework are financed by the three stakeholders. Within developing countries this financial resource is not available as the engineering profession is virtually nonexistent, contractors have very limited financial resources and the government budgets are unable to meet the requirements of the road construction and maintenance budget, without supporting the industry framework which carries out the work.

Training of construction personnel at all levels from engineers and construction managers to artisans and labor is one of the primary functions of the support framework. Studies undertaken by the World Bank (Auerhan, 1985) highlighted that while a lack of funding was a major problem with the poor education system in Sub-Saharan Africa, it was not the only cause. The study highlighted that a lack of resource management and planning within the education system

was also a cause. In addition the reputation of management topics within the education system is low, which results in a lack of qualified staff and specialists in these areas. This situation has a number of knock on effects to those receiving training on construction related activities. While they are able to receive education on the 'hard engineering' skills there is poor education provided for the 'soft engineering' skills of construction and business management. It also stated the lack of physical infrastructure and centralization of education facilities, usually in the capital city results in poor training in the provinces. Finally, the lack of information resources within the education sector contributes to the general lack of information resources within the construction sector.

Within developing countries the tripartite system does not work as the consulting engineering profession is virtually nonexistent (P. Larcher, 1998). This situation requires a different mode of operation for the industry where the client takes on the main roles of the engineer. This means that the government departments must undertake the design work and then prepare, tender and supervise the contracts for work that they require to be undertaken. Within the existing state owned enterprise system there is in general the capacity within the road authority to undertake the design work. The outputs from the design group were passed to the labor gangs to execute the work and to ensure that it was constructed to agreed standards. This, results in little experience and capability to prepare and administer contract documents, supervise independent contractors and measure and certify work completed for monthly payments.

There are therefore two distinct institutional problems, which must be addressed by countries who are attempting to utilise the private sector to undertake road construction and maintenance (P. Larcher, 1998).

- The lack of a consulting engineering profession
- The poor capacity within the support framework to assist the contracting sector.

In addressing the first item the long term objective may be to develop the engineering profession; however this is likely to take many years or even decades in some cases before the sector has sufficient capacity to undertake the roles which would be demanded from it. As a design capacity exists in the government agencies the most appropriate solution in the short to medium term will be to develop the government agencies capacity to prepare, award and administer contracts. The contracting sector is generally under developed however; this primarily can be attributed to the

lack of the support framework for the industry. It will not be possible in the short to medium term to develop an extensive support structure however, a lower level of support, which addresses the core needs, must be provided.

2.9. Conclusive remarks

It is clear from the literature review that there are many vital and important contributions of SMME contractors to the economic development of a country. There are also immense challenges and constraints both on the public sectors as well as on SMMEs in the process of operations and development. Many researchers have attempted to highlight them. More or less, the literature review also shows that much reports has been conducted on the contributions and effects by SMMEs in infrastructure development in other countries, but no comprehensive study has been carried out in Ethiopia in addition to their challenges. This review shows that the contributions and effect of SMMEs ranges from employment creation, income distribution, and useful infrastructure creation to value reorientation with all their existing constraints and challenges. The next chapter presents the methodology used for conducting the research.

CHAPTER 3: RESEARCH METHODOLOGY

3.0 Introduction

The aim and purpose of this chapter is to outline the research methodology utilized in the study, to comment on how the research was controlled and monitored, and to ensure validity and

reliability of the research data and procedures associated with the subsequent analysis and presentation of the data.

3.1 Philosophical orientations

Prior to discussing relative to research methodologies, it is important to understand the underlying philosophical background of the investigation. This will help clarify research designs and indicate the kind of evidence required, and data captured and interpretation.

3.1.1 Choice of research methods

Welman et al. (2005) argue that research could follow any paradigm based on the following centrism: phenomenology, positivism or triangulation paradigm. For this research Logical positivists is appropriate which believe that observation of the empirical world – through their senses – provides the only foundation for knowledge. Their version of empiricism entails the claim that such observation can be neutral, value free and objective. Welma et al. (2005:192) observes that while the positivists aim at uncovering general laws of relationships and/or causality that apply to all people at all times. They require that a research design is completed before data collection. The anti-positivists usually favor emergent designs. “This means the researcher may adapt data collection procedures during the study to benefit from unknown data that only comes to light during research process”. Therefore, given the nature of this problem, the research described in this thesis took the position of logical positivists. In this regard the research methodology adopted must be able to generate data that is objective, quantitative, and descriptive of the effects by SMME contractors.

Shakantu (2005) argues that each research method has strengths and weaknesses. Some research methods are more appropriate for investigation of particular concepts than others. In order to select the most appropriate research method, it is necessary to eliminate as far as possible those research methods that are not appropriate. Shakantu, (2005) states that although there are wide and varied pool of methods that could be adopted, they can be significantly reduced. Table 3.1 demonstrates a distribution of appropriate research methods according to the nature of the research problem being addressed.

Table 3.1 Framework for research methods

Approach to	Direct observation	People’s perception of
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knowledge generation	of object reality	object reality
Logical positivist /Empiricist	(A) Field study Field experiments	(B) Structured interviewing Survey research
Imperative	(C) Action research Case studies	(D) Historical analysis Delphi/Expert panel Intensive interviewing Introspective reflection

Source: Shakantu (2005:171) citing Meredith (1989)

The logic of preceding sections now allows the elimination of inappropriate research methods without having to investigate their validity further. It is therefore a prerequisite that the research method needs to be objective, representative, generalisable and quantitative. Therefore, methods listed in quadrants (C) and (D) (Table 3.1) are inappropriate for this study since they require a degree of interpretism detrimental to the objectivity of this study. In addition, the literature examined in Chapter 2 demonstrates that contributions by SMME contractors can be directly observed. This indicates that the methods that appear in quadrant (A) of Table 3.1 can be eliminated.

By eliminating methods that appear in quadrants (A), (C) and (D) leaves a relatively limited set of methods that are appropriate for this study. A structured interview or survey research is appropriate to this study. Further analysis of the nature of the problem creates avenues for extensive consideration of these possibilities. The objective of the research was to establish the effects of SMMEs contractors in road construction projects in Ethiopia. Structured interviews that require considerable involvement of the respondents is not convenient in terms of availability of resources. Due to resource constraints, it was established that the most appropriate primary research method is the survey research.

3.2 The sampling procedure

According to Fellows and Liu (1997), sampling is necessary, it is almost impossible to examine the entire population. In order to obtain a good representation of the respondents, it is possible to use a sample of the population, which is much smaller than the total population, but sized and

structured to be statistically representative. Clearly, the results from such sampling will not be exactly the same as if the whole population had been consulted, but the result is adequate for the purpose for which the information is required. Fellows and Liu (1997) assert that population parameters and sampling procedures are vital in the success of a study.

3.2.1 Sampling frame and method

Fellows and Liu (2007) give the following procedures of sampling:

- **Random sampling** – Is a sampling procedure where the sample is derived by randomization process from a homogenous or homogenous conglomerate texture population.
- **Systematic sampling** – This form of sampling procedure, as the name implies, is a systematic selection of certain items according to a predetermined criterion.
- **Stratified sampling** – This sampling procedure essentially uses stratified population instead of homogenous population.
- **Cluster or area sampling** – This sampling procedure entails sampling into groups of a large population which is spread over a large area.

Fellows and Liu (1997), argue that if there is no evidence of variation in the population structure, or if there is no reason to ignore the structure then random sampling procedure is appropriate. Random sampling procedure is chosen for this study because there is no evidence of variation in the effects of SMME contractors in road construction projects in the nation.

3.2.1.1 Target population

The sampling frame is the list of respondents from which the samples were drawn. It provides a complete listing of the whole population. The focus population consists of SMME contractors, SMME consultants, ERA engineers working on Universal Rural Road Access Programme, Regional Road Authority Managers and URRAP Experts, private construction and consulting Firms involved in the construction industry within Ethiopia. The sample consisted of the following distribution of construction clients, consultants and contractors:

Table 3.2 List of Respondents

Respondents	Target Respondents	Questionnaires distributed	Number Responded	% of total respondents

SMME contractors	45	40	34	45.33
SMME consultants	10	10	7	9.33
ERA	10	8	7	9.33
Regional Road Authorities	30	26	19	25.33
MOWUD and CSA experts	6	6	2	2.67
Private construction	5	5	3	4.00
Private consultants	5	5	3	4.00
Total	111	100	75	100

This represented a sample size of 111 of which 75 have responded. This is statistically a large response rate, as the size exceeds 50 percent as recommended.

3.2.2 The Data Utilized

The data for this research consists of two types, namely primary and secondary data explained as follow.

3.2.2.1 Primary Data

The primary data consists of information obtained from questionnaires and the responses conducted with targeted population. These persons are in a position of authority to reflect on the actual situation, which enables proper and accurate comparisons to be made. The aim was to design a simple, clear questionnaire with limited open-ended questions and using a series of check boxes. The assumption was that this could easily be completed by busy executives.

In the specific projected treatment of each problem the data required was stated and in how the data was secured, the respondents did not have to disclose their identity when responding to the questionnaire. All the responses were treated as strictly confidential.

3.2.2.2 Secondary data

Mullins (1994:23) defines secondary data as “already published data collected for purposes other than the specific research at hand.” The secondary data was obtained through a review of existing material such as journal publications, dissertations, newspapers, unpublished theses, books, and internet and conference papers. Secondary data was selected according to its relevance to the research. The main criterion for the selection of secondary data was that it had to be relevant to the particular sub-problems and to test hypotheses.

3.2.3 Ethical considerations

A declaration form was signed by the researcher attesting that the work submitted in this thesis is all his, except for secondary sources which have been acknowledged, as listed in the bibliography.

3.2.4 Contractor and Consultant sample

In selecting contractors, an attempt was made to be as representative as possible. The same principle was used in the selection of the sampling frame. The SMME contractors selected were members of the universal rural road contractor categories. The consultants selected were mostly those registered in URRAP with respective professional bodies and included those with substantial experience in the construction industry. Data was collected from SMME contractors and consultants in four regions of Ethiopia, namely the Oromiya, Amahara and Southern regions and Tigray. For clarification interviews were carried with some of the clients and contractors.

3.2.5 Questionnaire design

According to Desta (2006), a research design should ensure that the evidence collected addresses the research questions and is essential to ensure coherence and strictness. It is necessary because it is the questionnaire that will provide the data to test the validity of the problem statement and in order to acquire relevant data the appropriate question must be asked.

The questionnaire was designed with the aim of gathering information relevant to each problem. The questionnaire consisted of section 1 through Section 6. One questionnaire was designed for SMME contractors and consultants. Simple, clear and unambiguous language was used. The design was done by using input from the literature review. The draft questionnaire was commented and pretested.

Table 3.3 List of questionnaire designed

SECTIONS	SECTION NAME	SUB-PROBLEM ADDRESSED
1	General information to	Used to introduce the objectives,

	respondent	contact etc
2	About the Firm of the respondent	Position, Experience, sector etc
3	About the Road network distribution and Maintenance	Fairness, Density, Lack of access and SMMEs vs Road network Distribution
4	Existing Challenge and problems of SMMEs	Access to finance, late payment, inflexible credit term from supplier
5	Client specific URRAP related questions	License restriction, Sustainability of URRAP, capacitating SMMEs etc
6	Choice of technology	In employment, quality, income creation and maintenance improvement etc

Source: Author

3.2.6 Testing of questionnaire – Pilot study

The questionnaire was quality tested by the research supervisor for precision of expression, question duplication, objectivity, suitability to problem situation and probability of favorable reception and return. Walliman (2001) recommends that questions should be pre-tested on a small population or pilot study. In accordance with the above recommendation, a draft questionnaire was sent to three URRAP contractors to obtain their comments regarding any items that they had difficulty in understanding and to determine the time it takes to complete the document. The pilot study indicated that the consultants and contractors took eight (8) minutes to complete the questionnaire.

3.2.7 Sample method

A short list of all practices and SMME contractors that met the sample requirements was used for random sampling. The contact details were recorded and telephonic contact was made to request the participation of the stakeholders in the research. Gay and Airasan (2005) have the following guidelines for the identification of a sufficient sample:

- The small population – less than 100 people – there is no need for sampling;
- If the population size is around 500, 50 percent of the population should be sampled;
- If the population is around 1500, 20 percent of the population should be sampled; and
- Beyond a certain point – at about 5000 units or more, a sample of 400 people is adequate.

Based on the information above, the target population for the survey did not require sampling, as the focus population consists of only SMME contractors, SMME consultants, ERA engineers working on Universal Rural Road Access Programme, Regional Road Authority Managers and URRAP Experts, private construction and consulting Firms involved in the construction industry within Ethiopia.

3.2.8 Questionnaire administration

The structured questionnaire consisted of sections 1 to 6. There were 8 questions in section A and 5 questions for sections B to F. Telephonic contact with the respondents was made twice, on the day of delivery and two days before collection to ensure that the survey was completed on time. Once the completed questionnaires were received a table was drawn representing each question and its subsequent results were tabulated. The results were mainly on percentage comparisons and structured roughly around the main themes of the identified problems.

3.2.9 Limitations

A number of potential constraints have been identified which could impede the smooth performance with regard to field work of which the response to questionnaires the main one;

3.2.10 Bias

Leedy (1993) defines bias as any influence, condition or set of conditions that may singly or together distort the data from what may have been obtained under the conditions of pure chance. The researcher made every effort to eliminate the likelihood of obtaining biased data.

3.2.11 The treatment and interpretation of Data

The quantitative data collected through the questionnaires was statistically analyzed and interpreted to establish the research problems. The data from the completed questionnaires was captured and summarized according to each question. A summary sheet, containing all the questions as listed in the questionnaire, was completed based on the responses of each individual contractors, consultants and professional. The data gathered was statistically interpreted and various ratios, percentages and relationships were established which were used to write up the analysis. The ratios and percentages are discussed in detail with the aim of ultimately arriving at a point where conclusions can be drawn and the hypotheses can be tested. The purpose of this presentation was to facilitate the effective analysis of data. The amount of detail and accuracy

was such that it enabled an analysis that would provide sufficient information to solve each research problem. The information obtained from the related literature was utilized to strengthen any arguments for or against the research problems. The qualitative data was interpreted deductively through logical reasoning.

3.3 Summary

The objective in this chapter was to outline the methodology used in this study. The data collected was used to identify contributions and effects pertaining to SMME contractors in road construction projects in Ethiopia and has also been used to test hypotheses projected. The results from the data collected in the survey are presented in the next chapter.

CHAPTER 4: RESULTS, DATA ANALYSIS AND INTERPRETATION

4.0 Introduction

This chapter presents an analysis of the contributions and effects of Small, Medium and Micro Enterprise contractors on road construction projects in Ethiopia. It is systematically designed to effectively evaluate data in order to relate to research method chosen for the study. The main statistics calculated in the data analysis are the mean, variance and frequency scores. Castellan (1988) stated that the variance test is appropriate for detecting variation within a sample.

Questionnaires were sent to 40 SMME contractor members (general manager and material engineer), 10 SMME Consultant members (general manager and material engineer), 8 Ethiopian Roads authority workers at different positions, 26 Regional Roads Authorities workers at different positions, 6 Ministry of works and Urban Development experts, 5 Private Contractor's general manager and experts and 5 Private Consultant's general manager and experts.

By 6th May, 2013, 75 responses were received out of the 100 targeted respondents, which can be categorized under a big response rate (75 %). The relatively high response rate can be attributed to the collection procedures, namely personal administration, reminder and personal collection wherever possible.

Table 4.1 Sample Breakdown of questioner distribution

Classification	Questionnaire distribution	Personal deliveries	Email
SMME contractors	40	27	13
SMME Consultants	10	10	0
Ethiopian Roads authority	8	8	0
Regional Roads Authorities	26	21	5
Ministry of works and Urban Development	6	6	0
Private Contractors	5	5	
Private Consultants	5	5	
Total	100	82	18

Source: Author

This is statistically a large sample, as the size exceeds 30 percent as recommended by (Wisniewski 1994).

4.1 Responses

The questionnaires were distributed to 100 randomly selected respondents, of which 75 were completed and returned. Overall a response rate of 75 percent is very good. As for the 25 percent unreturned questionnaires, this can be attributed to the inability of respondents to timely complete and return them by 6th May 2013. Another reason suggested for the lack of responses is the increasingly negative attitude of potential respondents to the perceived task of having to complete questionnaires to a poor attitude towards research.

Table 4.2 Response Rate of the respondents

Classification	Questionnaire Distribution	Number of responses	Percentage of responses against Distribution (%)
SMME contractors	40	34	45.33
SMME consultants	10	7	9.33
Ethiopian Road Authority	8	7	9.33
Regional Road Authorities	26	19	25.33
MOWUD and CSA experts	6	2	2.67
Private construction	5	3	4.00
Private consultants	5	3	4.00
Total	100	75	100

Source: Author

4.2 Analysis of data

The data was analyzed by using quantitative techniques. It is imperative that the reliability and validity of the data be taken into consideration when conducting research. The validity of data is defined in terms of whether or not the data measures what it is supposed to measure. According to Bloise (2001:39), “data reliability on the other hand can be defined as whether or not data measures a representative fraction of the target group.”

4.3 Demographic Background

The demographic background data collected included respondents position in the organization, area of specialization, discipline engaged in, the average years for which respondents and the firms have been practicing.

4.3.1 Position of respondent in the Organization

It is very important to have in-depth knowledge of a work that one undertakes. With such in-depth knowledge, it is easy to manage its work and respond to any question raised rather than working on trial and error. Table 4.3 indicates that:

The greater percentage of respondents (65.4 percent) fell within higher management position like, General manager, Deputy General manager, Planning head, Engineering head, finance head etc; followed by those who fell within higher experts like counter parts URRAP supervisors , material engineers of the contractor and consultant etc representing (34.67 percent); and

This could indicate that those filling in the questionnaires do have sufficient insight into the industry and their management analysis could not be doubted.

Table 4.3 Breakdown of respondents' position in the Organization

Position in the organization	Number of Respondents	Percentage of respondents against total (%)
General Manager /includes contractors and consultants/ Deputy General manager Planning, Finance, Engineering Heads	49	65.33
URRAP Experts, Counter parts Material Engineers of URRAP	26	34.67
Total	75	100

Source: Author

4.3.2 Area of specialization

This section indicates the form of involvement and specialization in the construction industry.

Table 4.4 Area of specialization of the respondent

Sector	Number of Respondents	Percentage of respondents against total
Highway	63	84.00
Building	5	6.67
Water	3	4.00
All infrastructure	4	5.33
Total	75	100

Source: Author

As it can be seen from the above table 4.4, the area of specialization of most respondents (84%) is highway which is specific to the research.

4.3.3 Personnel status

Table 4.5 indicates the form of involvement in the construction industry.

Table 4.5 Personnel Status of the respondent

Classification	Targeted Population	Number of Questionnaires Distributed	Number of Respondents	Percentage of respondents against total
Client	46	40	28	37.33
Consultant	15	15	10	13.33
Contractor	50	45	37	49.34
Total	111	100	75	100

Source: Author

4.3.4 Experience of the Respondent in construction industry

The level of experience of the organization and respondents is of great importance to the credibility of the feedback and the reliability of the research as a whole. Table 4.6 shows

experience in the industry. Table 4.6 shows that 53.33 percent of the respondents have an experience in the industry between 6-10 years and 29.33 percent had between 0-5 years of construction experience. The majority of respondents fall in the category of 6-10 years of experience. This could indicate that those filling questionnaires had relatively reasonable experience in the industry and their responses could be trusted.

Table 4.6 Experience in the Construction Industry

Number of years	Number of Respondents	Percentage of respondents against total
0-5	22	29.33
6-10	40	53.33
11-15	8	10.67
16-20	3	4.00
21+	2	2.67
Total	75	100

Source: Author's

4.4 Research data

4.4.1 Analysis and problems experienced

The study sets out to assess the contributions and effects of small, medium and micro contractors on road construction projects in Ethiopia. It attempts to determine contributions of these micro contractors on huge network expansion plan, improvement on maintenance backlogs, improvement of the few local construction industry, cost efficiency, employment creation and investigate the barrier to their performance and development. The research, finally, comments and suggests the possible strategies that can be used to enhance the performance and development of small, medium and micro contractor in road construction project based on the survey data.

4.4.2 Road Network distribution and the SMMEs

This section discusses the results of the response given by the respondents toward the network distribution of our country /on its fairness and realistic distribution/, the contribution of SMMEs

on road network expansion plan and maintenance backlog improvement. Based on the results of both questionnaires distributed and interviews conducted to the respondents, the following areas of interest for discussion have been identified. These include the road net work distribution of the country, contributions and effect of SMMEs on road net work expansion and Contributions to maintenance back log improvement

4.4.2.1 Network distribution of the country

As per this study concerning fairness and realistic road network distribution question raised for the clients, contractors and consultants, more than half (58%) of the respondents answered, network distribution of our country is not fair but realistic. Unfair and unrealistic is considered as the second (29.4%) and some responded (12.6%) as fair and realistic.

Respondents were also asked to express their opinion concerning which part urban or rural do they think is favored for. Accordingly, it was reported by 83.5% of the respondents that the urban people are favored than the rural area with higher population and productivity and it is not fairly seen concerning the road network distribution. Some of the respondents (26.7%) give their opinion that those towns and cities connecting the federal city were favored. Out of 15,937 kebeles in Ethiopia, only 5903 kebeles (37%) are connected to the all weather road or have access all the time. They gave their opinion that the rural community with 85% of the population and providing almost the entire agricultural product are not favored, implies there are unfair road net work distribution between the rural and urban area, but the provision of the road network whether to the rural or urban is realistic as the density of both area are below the standard targeted. The response rate of the client, consultant and contractors has no significant variation.

They were also asked to express for the case/ reason of unfair distribution created and accordingly it was responded by (53.7%) that the lack of SMMEs is the major issue which created the 'missing middle' in the construction sector of road construction. Lack of large number of competitive contractors is the second (33.5%) and (12.8%) reported that the lack of experience and lack of using intermediate technologies are the cases.

4.4.2.2 Contributions and effect of SMMEs on road network expansion

Respondents were asked to give their opinion that SMMEs could contribute to the large network expansion plan and improvement works to considerable extent. Almost all of the respondents

(89%) gave their response that SMMEs are powerful instruments in road network expansion and to any other infrastructure works. They also indicated that SMME contractors can perform small projects at different and remote geographical locations that might be unattractive to big firms or too costly for the big firms; they also stated that low overheads enable small contractors to work at more competitive prices,

Respondents were also asked to express their opinion concerning the extent that the SMMEs could contribute to the net work expansion. Accordingly, it was reported from most road authority and URRAP consultants and contractors that from the point of view of URRAP it was intended to construct 71,523km all weather roads in five years or 14,305km per year, in the rural areas. However, 14,305km is expected per year, after one year and half preparation for implementation by the authorities, so far 9,582km in the year 2012 and 9,748 km in the year 2012/2013 have been completed which is a big change and contribution in road net work expansion plan as compared to the past performance without SMMEs/URRAP contractors. The Ethiopian Roads Authority yearly constructs a new road on an average 800km of higher standard roads and the Regional Roads Authorities construct on an average 1300km per year. This implies the two together contributes 2100km to the road net work expansion plan per year. (Source: ERA report, 1997-2012) No significant variation on the response to the question among the parties.

4.4.2.3 Contributions to maintenance backlog improvement

Respondents were asked to give their opinion that SMMEs could contribute to the large maintenance backlogs and improvement works to considerable extent. Almost all of the respondents (91%) gave their response that small, medium and micro enterprises (SMME's) are best contracting firms to overcome Road maintenance backlogs and improvement activities.

They were also asked to give their opinion on how and to what extent these SMMEs could solve the problem. Almost all (91%) reported that as maintenance activity needs labor-intensive or small plant intensive, friendly to nature and needs lesser overheads compared to larger contractors, therefore; creates ideal opportunities for SMMEs to employ labor and empower themselves with lower entry barriers. For the question raised what mechanisms and technologies can solve maintenance problems, all responded that labor intensive and intermediate technologies with sustained employment creation has much better viability if the whole life cycle

of roads is considered versus a narrow focus on new construction and further restricted to labor-intensive methods only.

4.4.3 Existing scenario of URRAP Contractors

Based on the responses of questioner collected and interviews carried out, this section discusses the results of the response given by the clients and consultants toward the restrictions of license to only one region, capacity building of SMMEs to solve state and private contractors problems, sustainability and accommodating SMMEs on job creation in the future, professional stability and shortages and finally on knowledge transfer of these URRAP contractors at zonal and wereda level. Based on the results of both questionnaires distributed and interviews conducted to the respondents, the following areas of interest for discussion have been identified.

a) Restriction of URRAP license to only one region

Respondents/ clients were asked on their opinion on the restriction of license to only one region. Accordingly, almost all 96% of the respondents (93.65% consultant and 98% of client) gave their opinion that as far as the contractors get sustainable work or projects, equipment by lease and fund by the region, restricting the license is acceptable. But when enough work and project as well as fund are not available by the region the restriction shall have negative impact on the development of the contractors.

b) Capacity building of SMMEs to solve state and private contractor problem

As per this study, for majority of the informants (93%) from the clients responded that it was the government's policy to fill the gap and capacitate these contractors to larger contractor to fill the existing few and weak local construction firms. The respondents also gave their thought of the existing difficult scenario and stages of development with respect to different challenges like provision of working capital, budget deficit/ late payment, weak and incapable equipments with no spare parts given by manufacturing industries and weak know how of the clients at different level, especially the weredas and zones may not make the SMMEs development easy.

c) Sustainability and accommodating SMMEs on job creation in the future

A significant number of respondents (88%) replied that accommodating the existing SMMEs with respect to the existing road net work expansion plan followed by maintenance, rehabilitation and upgrading work on the constructed one by itself give sustainable work

opportunity. As per many of the respondents opinion, sustainability shall be true provided, the contracts shall unavoidably packaged in such a way as to include SMME contractors, adequate training and approach and sufficient knowledge, time and experience required for the whole process of finding work is given, once found, sufficient understanding of the contract documentation and the preparation and submission of tenders exist and payments are effected on time.

4.4.4 SMMEs challenges and constraints in improving the Construction industry

4.4.4.1 Lack of Access to finance

An analysis of table 4.7 reveals the level of agreement by the respondents to various questions: Values ranged between 1, (strongly disagree), and 5, (strongly agree). Respondents strongly agree that, late payment by clients is a major problem with a mean of 4.40 whilst difficulties in obtaining advance working capital second with a mean of 3.96. Difficulties in accessing finance, inflexible credit terms from suppliers and difficulties in obtaining loans are ranked third, with a mean of 3.85, followed by problems in obtaining guarantees, insurance bonds and sureties with a mean of 3.47. Inflexible credit term from banks is ranked fifth with a mean of 3.36.

Table 4.7 indicates that SMME contractors run into problems due to late payments by the clients. A problem arises when the local woreda/zone roads authority runs into budget difficulties and is unable to pay.

Table 4.7 Response given to Lack of access to finance of SMMEs

1= Strongly disagree 2= Disagree 3=Not Agree 4=Agree 5=Strongly agree							
Frequency							
Category	1	2	3	4	5	Mean	Remark
Access to finance	4	7	12	25	27	3.85	3
Inflexible credit terms from suppliers	4	7	12	25	27	3.85	3
Guarantee bonds, sureties and insurance	3	14	21	19	18	3.47	4
Late payments	0	0	8	29	38	4.40	1

High tendering costs	7	14	27	14	13	3.16	6
Advance working capital	0	7	15	26	26	3.96	2
Loans	4	7	12	25	27	3.85	3
Inflexible credit terms banks	4	14	24	17	16	3.36	5

Source: Compiled by the author

This results in the supplier to require cash up front and will not deliver the material or equipment until payment is made in full. This in turn gives rise to many undesirable problems in their development to higher grade and improving the few local and national contractors, it also results in bad relationships with their suppliers, banks, quality of work, time, and unrest on site and abandonment of work among others. The findings were confirmed in studies by Endalkachewu, (2008), CIDB (2005) and Roderick, (2010) and also agreed with the findings and literature stated that access to finance remained a dominant constraint to SMME development to improve the weak local and international contractors.

4.4.4.2 Lack of experience and management skills

Values ranged between 1, (strongly disagree), and 5, (strongly agree). An analysis of Table 4.8 shows the level of agreement by respondents to questions:

- Problems in financial control is ranked highest with a mean of 4.19;
- The Lack of cash-flow management skills is ranked the second with a mean of 4.07;
- Problems in financial management skills are ranked third with a mean of 3.99;
- Contract administration and credit management problems come fourth, followed by lack of book-keeping skills both with a mean of 3.81;
- Ranked fifth is contract document interpretation skills, with a mean of 3.71; and
- Lack of leadership and communication skills and lack of site management skills are both ranked lowest, with a mean of 3.60.

These all show that SMME contractors lack management skills in running their firms. The results were confirmed in studies by Fraser (1989); Griffin (1990); and Merrifield (1990) which stated that SMME contractors lack construction management skills. It also showed that there was

lack of appropriate criteria during a selection process to capture those with the proper drive, passion, profession and ability to work as contractors; this brings wrong people in the programs and drives them easily on the way; the required academic qualification is not properly iterated and seen or no prior technical and managerial skills or experience in construction related fields are properly given by skilled and experienced professionals;

Table 4.8 Response given to Lack of management skills of SMMEs

1=Strongly disagree 2=disagree 3=Not sure 4=Agree 5=Strongly agree Frequency							
Category	1	2	3	4	5	Mean	Remark
Book-keeping	5	10	19	27	14	3.47	7
Contract administration	4	8	14	21	28	3.81	4
Leadership and communication	5	3	27	22	18	3.60	6
Financial management	4	6	10	22	33	3.99	3
Site management	5	10	19	27	14	3.47	7
Contract document interpretation	3	9	16	26	21	3.71	5
Financial control	1	4	12	21	37	4.19	1
Cash-flow management	2	5	14	19	35	4.07	2
Credit management	4	8	14	21	28	3.81	4

Source: Compiled by the author

4.4.4.3 Ethics among SMME contractors

Values ranged between 1, (strongly disagree), and 5, (strongly agree). Respondent's response to the questioner shows that clients and consultants seeking bribes from the contractor are ranked first, with mean of 4.28. Secondly, clients influence in awarding or self fixing of rates by the client is ranked second, with a mean of 4.24. Consultants favoring some contractors are ranked third, with mean of 3.99. Table 4.9 indicates the prevalence of unethical conduct on the part of

stakeholders. The results confirm the findings of studies by CIDB (2009) and observations by Goldstock (1990) all of which highlight the existence of unethical conduct in the construction industry of developing countries like Ethiopia. As per response of the clients only, consultant seeking bribes come first with a mean of 4.23, self fixing of the rate ranked second with a mean of 4.01 and bribes by client ranked third with a mean value of 3.96, which confirm the findings by CIDB(2009) that some clients conduct unethically in the construction industry.

Table 4.9 Response given to Lack of ethics in the SMMEs construction process

1=Strongly disagree 2=disagree 3=Not sure 4=Agree 5=Strongly agree							
Frequency							
Category	1	2	3	4	5	Mean	Remark
Colluding of tenders	2	2	23	25	23	3.87	4
Client influence in awarding contracts or self fixing of rates by the client	0	4	9	27	35	4.24	2
Bid rigging (influencing tender results using corrupt ways) by large contractors	2	2	23	25	23	3.87	4
Consultants favoring some contractors	0	7	14	27	27	3.99	3
Consultants seeking bribes from contractors	0	4	9	24	38	4.28	1
Clients seeking bribes from contractors	0	4	9	24	38	4.28	1

Source: Compiled by the author

4.4.5. Choice of technologies used by SMME Contractors

Analysis of Table 4.10 shows the level of agreement by respondents to the questions raised toward policy options on labor base approach on the following questions: As per the analysis, short term job creation is ranked first with a mean of 4.24. Secondly, transfer of income to the poor, and improvement of maintenance coverage are ranked second with a mean of 4.19. Long

term employment creation and skill transfer to the wereda and zones ranked third with a mean of 3.87 and cost efficiency with a mean of 3.77 fourth. This shows that the approach is more aimed at creating employment (i.e., short- and long-term), income transfer to the poor that emphasize the reduction of poverty. It also shows the contributions to the rehabilitation and maintenance coverage of road through employment creation. The findings were confirmed in studies by ILO (2004; 2010), Thwala and Mvubu (2008).

Table 4.10 Response given to Choice of technologies and its effect

1=Strongly disagree 2=disagree 3=Not sure 4=Agree 5=Strongly agree							
Frequency							
Category	1	2	3	4	5	Mean	Remarks
Long term Employment Creation	2	5	7	33	28	4.07	3
Short term Job Creation	0	2	11	29	33	4.24	1
Transfer of income to the poor	0	4	9	31	31	4.19	2
Quality road constructions	5	8	21	27	14	3.49	5
Cost efficiency	2	11	11	29	22	3.77	4
Skill transfer to Wereda / Zone	0	4	9	31	31	4.19	2
Improvement of maintenance coverage through enterprise formations and skill transfer	2	5	7	33	28	4.07	3

Source: Compiled by the author

4.4.7 Summary and interpretation

Sections from 4.4.1-4.4.3 list on road network distribution, contributions and effects of SMMEs on huge road network expansion and maintenance backlogs improvement, and sustainability of SMME contractors. Section 4.4.4 and 4.4.5 through tables 4.7-4.10 list finance problems, lack of management skills, unethical conduct among some stakeholders and choice of appropriate technologies to SMMEs.

Respondents indicated which business skills are lacking, the prevalence of unethical conduct among some stakeholders and the labor base approaches as appropriate technology to the SMMEs in their growth and development through job and employment creation.

The demographic data indicates that the majority of respondents were those working on highway in the construction sector, whilst most respondents fell within 6-10 years of experience in the construction industry. The data also revealed that respondents had limited experience in the construction management specifically financial and cash flow management.

In terms of research data, this reveals that there is a need to work on the network distribution to the rural area with 80% of the population and which supply almost all agricultural productivity. It also reveals the needs to give training and capacity building on construction management and administration of financial cases. Further it showed that SMME contractors have huge effects in our country on road network expansion contributions and shall have huge maintenance improvement in the country.

Respondents strongly agree that payment is made late and further agree that they are faced with shortages of advance working capital, inflexible credit terms from suppliers and banks. It is agreed that loans are difficult to obtain from banks and obtaining guarantees, insurance bonds and surety is a major barrier to get enough working capital.

Lack of construction management skills has been recognized as a major barrier by the respondents, strongly agreeing that finance and cash-flow management skills are ranking high. Respondents further agree that the lack of contract administration, leadership and communication, financial control and credit management skills are among the many challenges faced by SMME contractors.

It is strongly agreed by respondents that self fixing of rates by clients which do not considered the market situation is a major problem; clients and consultants do seek bribes from contractors is also a great problem and indeed. It is further agreed that consultants friendly favour some contractors. The prevalence of unethical conduct among the stakeholder and SMME contractors in carrying out their work is evident.

Respondents strongly agree that the policy option to use labor base approach is highly used to create short and long term job creation, for transfer of income to the poor and transfer of knowledge to the zones and wereda workers.

4.6 Conclusive remarks

Although, it is clear that the hypotheses were well supported by the findings emanating from the survey and by the literature, there is a great concern with respect to the contributions and effects of SMMEs in employment and value creation in the road network development plan. There is also a concern on the existing problems and challenges in the development of the SMMEs with respect to late payments and other stated problems. The next chapter will present the conclusions and recommendations resulting from the study.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The literature study suggested that SMME contractors have contributions and effects to infrastructure development, maintenance work improvement, employment creation through labor base approaches, income and knowledge transfer and sustainable job creation. The literature study further suggested that SMME contractors face a number of problems ranging from those caused by clients, consultants, institutional weaknesses to corruption. The study was conducted to investigate the SMMEs contribution and effect on huge road network expansion, contributions to maintenance work, employment creation, value reorientation and existing problems of these SMMEs.

The literature study investigated the approach taken by South Africa, Swaziland, Tanzania, Malawi, Zambia and India on SMME contractors. These are done through their different institutions, for example, NCCT, CIDB, NCCZ and other organizations. An empirical study was carried out to test the validity of the hypothesis. One set of the questionnaires was prepared for SMME contractors', consultants, clients and professionals. The results were tabulated based on data gathered. The research methodology used and how the data for the report was attained are detailed in Chapter 3.

The results of the survey are given in Chapter 4, with input from the construction clients, SMME consultants and contractors, private contractors and consultants. The empirical investigation revealed the different contributions, effects and challenges of SMMEs on road infrastructure development, improvement of maintenance backlogs, value re-orientation, job creation and poverty eradication in Ethiopia. In the same manner constraints on access to finance, lack of business and management skills are the existing problems. The study further investigated the ethics among stakeholders, revealing that some stakeholders conduct their business in an unethical manner. These unethical conducts constrains the development of these SMMEs.

5.1 Conclusions

From the findings of the research, the following conclusions can be made with regard to the contributions and effects of SMME contractors on the road network development and maintenance improvement:

1. SMME contractors in Ethiopia like any other developing countries by virtue of their size, location, capital investment and their capacity has a great contribution to the road network development and maintenance works.
2. SMMEs contractors are instruments to generate greater employment and powerful propellant effect for rapid economic growth in the infrastructure development.
3. They improve the local construction contractors' performance by creating efficient competitive market where there is a need for contracting firms of all sizes to undertake various sized projects from minor maintenance work to large scale major road construction projects with different professionals, over heads, geographic locations, policy options and strategies.
4. It is thus being concluded that the contributions and effects of small, medium and micro enterprises are immense and in summary it can be concluded that SMME contractors are potential engines to ensure rural road access and further to improve and fill the gap of existing weak performance of private contractors.

Based on the findings from the research with regard to 'finance problem', the following conclusion can be made. All aspects on investigating financing problems were rated high with late payment by clients' results in bad relation with their supplier rated the highest. The suppliers require cash up front and will not deliver the equipments until payment is made in full. The reason for this is the late payment by clients due to budget deficit and the contractor is lacks working capital to pay on time. In summary, it can be concluded that:

1. SMME contractors face financing problems. This is mostly due to late payment by clients and lack of advance working capital. This problem must be solved as it deters growth and development through capacity building of existing micro financing and building up of financial and non financial institutions separately.

From the findings of the research, the following conclusions can be made regarding experience in financial and construction management skills. All aspects related to investigating business

management skills were rated high, with lack of cash-flow management skills being rated the highest. In summary, it can be concluded that:

1. Most SMME contractors lack cash flow management and business management skills in the construction management works. These skill gaps directly affect and results inefficiency and ineffective working, delay, extra cost of the project (K.K Chitkara, 2003).

Following the findings from the research, the following conclusions can be made with regard to ethics among SMME contractors, consultants and clients. The mean score obtained by the respondents for clients and consultants seeking bribes from the contractor ratings was high enough. Therefore, it is vital to address the problem as well. All problems rooted in ethics problems were rated high, with client's influences in awarding contracts for one contractor and not for the other with his own simple evaluation and self fixing of rates by the client which did not considered the real market cost. It is thus concluded that:

1. The need to address ethics as a problem is immense. All aspects should be of equal importance when addressing them and
2. Some SMME contractors, consultants and stockholders conduct their work in an unethical manner.

From the findings of the research, the following conclusions can be made regarding Choice of technology. All aspects related to investigating choice of technology in employment creation and other second round effect were rated high, with short term job creation being rated the highest. In summary, it can be concluded that:

1. The impacts of labor based infrastructure development are immense in short and long term employment creation, skill transfer to the Wereda, Zone etc. It is a function of its scale, value of income transferred to workers, the extent of micro-enterprises developed and supported, and the type of infrastructure created.

5.2 Recommendations

From the research findings, it is clear that small, medium and micro enterprises (SMME's) seen as an essential input to the road network development and maintenance work of the road construction sector. It also reveals that there is a tremendous need for capacity building in the construction management in the Ethiopian construction industry. Added to this, the study

highlights strongly the lack of business management skills. It further recognizes the financing constraints SMME contractors are facing and SMME contractors conduct their business in an unethical manner. The following are suggested to address contractors' problem in the construction industry and the research recommends

1. A strong and dynamic promotion of well structured SMME contractor development programmes. Given the necessary support from stakeholders, programmes and models could make a remarkable difference in easing the plight of SMME contractors, as well as that of the construction industry, in Ethiopia.
2. The development of SMME contractors needs strong institutional framework with a combination of financial and non-financial services delivered by separate institutions in close co-operation as part of a national strategy; targeted finance programmes i.e. strong sector based schemes with focused assistance e.g. machinery, factory premises, raw materials, training programmes- and technology.
3. Contractor development programmes and models should be implemented urgently to develop a culture of continuous improvement and implement supportive legislation to create an enabling environment for SMME contractors to grow in the construction market.
4. Education should contribute to knowledge creation and knowledge sharing on labor base approaches tied to the national strategies. Mostly education and training of SMMEs, engineers and project planners is often biased towards equipment intensive approaches. There must be comprehensive training given to these professionals by experienced experts or institutions.
5. It is recommendable to work on proposals that make donor support tends to be tied to labor based approaches from focusing only on machine intensive and not to pre-empt the choice of technology.
6. Programmes for developing SMME contractors should be implemented with a clear and supportive policy framework which encourages co-operation through joint ventures, partnering, discussion forums and subcontracting which encourages exploitation between contractors of different sizes.

Generally, survival, growth and expansion of the SMMEs are essential for economic growth, road infrastructure development and job creation in Ethiopia, it is important and a priority to address the issue of access to finance, shortage of skills and adequate support from government.

5.3 Directions for further research

There are needs for further research. This will help identify the many effects and contributions of SMME contractors on infrastructure development, similar research will be conducted at all level to analyze all the contributions by SMME contractors in Ethiopia and their critical problems as well. In addition to that construction industry stakeholders were informed of the findings of this study in order for them to take an initiative to address these issues. The areas include:

- (i) Impacts of SMME in the construction industry as a whole in Ethiopia.
- (ii) Direct and Indirect impact of URRAP contractors on poverty reduction
- (iii) Ways to improve or promote SMMEs in the construction industry
- (iv) Construction approaches versus their employment type /short or long /
- (v) Impact of URRAP Road construction in Ethiopia

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APPENDICES

APPENDIX A: LETTER

Dear participant,

I am currently working on a research on contributions of small, medium and Micro enterprise contractors on road construction projects in Ethiopia, as a partial fulfillment for my M.Sc study in Construction technology and management at the Addis Ababa University. This research is aimed to assesses and investigate the Contributions by small, medium and micro enterprise (SMME) specifically URRAP contractors on road construction projects in Ethiopia and their challenges.

To successfully conduct this research, it is mandatory to look into the issues from different perspectives by involving different stakeholders and professionals. In this respect, you are the one who can give the correct information; hence I kindly request you to respond to the questions.

I would like to confirm you that your response will be kept strictly confidential and it will be used exclusively for the purpose of this research. Besides, your quick response is vitally important in order to finalize the research timely and I would appreciate if you complete and return it within one week of your receipt of same.

Thank you very much for your time and cooperation, and looking forward to receiving your response.

Yours faithfully,

Addisu Mosissa

Addis Ababa University,

School of Graduate Studies

Institute of Technology

School of Civil and Environmental Engineering

My Address

Tel: 0911857504

E-mail: addisumosissa@gmail.com

APPENDIX B: QUESTIONNAIRE

SECTION ONE - GENERAL

- You are not obliged to answer any of the questions which you do not want to.
- If you have any query on this survey, you are kindly requested to contact me directly on tel. 0911-85 75 04.
- Since this survey is required for academic research, your prompt response is highly appreciable.

Specific Objectives

The following are the specific objectives of the study,

- Assessing the contributions and effect of SMME contractors on huge road network expansion plan and improvement of maintenance needs
- Assess the operational challenges of these contractors and how they will improve the existing weak local construction performance.
- Comment the strategies and put forward recommendations on contributions and effect of the local SMME contractors on cost efficiency, quality road, and employment with respect to Labor base approach to road construction,

SECTION TWO – ABOUT THE FIRM

1. Your position in the organization?
2. Your area of specialization in the construction sector (for contractor, consultants, employers)
 - . Building sector
 - . Water sector
 - . Other, specify
 - . Highway sector
 - . All infrastructure works
3. On what discipline is your company engaged for in the construction sector?
 - . Contractor
 - . Employer
 - . Other, specify _____
 - . Consultant
 - . Professional institutions
4. For how long does your organization engaged in the construction sector?
 - . Less than 5 years
 - . 10-15 year's
 - . 6-10 years
 - . 15-20 years

. More than 20 years, specify _____

SECTION THREE - Questions Related with Road network

1. What do you think on the Road network distribution of our country?

. Fairly distributed

. May not be fair but realistic

. Fair and realistic

. Unfair and unrealistic

. Others, state _____

If not fair/realistic which part urban or rural do you think is favored for?

Why? State the unfair distributions that you believe are unfair?

If unfair, unbalanced and unrealistic distribution, do you think which could be the case? Lack of

☐ Large number of competitive contractors

☐ Small, medium and micro contractors

. Expensive cost of construction

. Experience and technologies

. If All or others

specify _____

2. Do you think that small, medium and micro enterprise contractors could contribute to the large network expansion and improvement plan to considerable extent?

. Yes, how and to what extent?

What mechanism and technologies do they think will solve for such work?

. No, state reasons _____

3. Do you think that small, medium and micro enterprise contractors could contribute to the large maintenance backlogs and improvement plan?

. Yes, how and to what extent?

What mechanism and technologies do they think will solve for such work?

No, state reasons _____

SECTION FOUR - Questions Related with problems of Small, Medium and Micro Enterprise Contractors

To what extent do you agree the following constraints and challenges faced by small, medium and micro contractors' could challenge their contribution and effect on improving the existing weak local construction industry, few national and international contractors on cost efficiency, quality road, employment with respect to Labor base approach to road construction?

In terms of SMME contractors how would you rate financing problems as faced by SMME contractors with regard to the following aspects?

Note

1 Strongly disagree

2 Disagree

3 Neutral/Not sure

4 Agree

5 Strongly agree

No,		1	2	3	4	5
1	Access to finance					
2	Inflexible credit terms from suppliers					
3	Problems in obtaining guarantee bonds, sureties and insurance bonds					
4	Late payments by clients					
5	High tendering costs					
6	Problems in obtaining advance working capital/client's payment advance					
7	Problems in obtaining loans to finance projects					
8	Inflexible credit terms from banks					

To what extent do you agree that small, medium and micro-enterprise contractors lack business management skills?

In terms of SMME contractors how would you rate lack of business management skills in running their businesses with regard to the following aspects?

Note

1 Strongly disagree

2 Disagree

3 Neutral/Not sure

4 Agree

5 Strongly agree

No,		1	2	3	4	5
1	Book-keeping					
2	Contract administrations					
3	Leadership and communication					
4	Finance management					
5	Site management					
6	Contract documents interpretation					
7	Financial controls					
8	Cash-flow management					
9	Credit Management					

The following statements are related to lack of ethics in contract bidding and administration To what extent do you agree that the following lead to unethical behavior and to the development of SMME contractors to improve the local weak construction industry and cost of construction?

In terms of SMME contractors how would you rate the lack of ethics with regard to the following aspects?

Note

1 Strongly disagree

2 Disagree

3 Neutral/Not sure

4 Agree

5 Strongly agree

No,		1	2	3	4	5
1	Colluding of tenders					
2	Client influences in awarding contracts or self fixing of rates by the client					
3	Bid rigging (influencing tender results using corrupt ways) by larger contractors					
4	Consultants favoring some contractors					
5	Consultants seeking bribes from contractors					
6	Clients seeking bribes from contractors					

SECTION FIVE - Client Related questions on Universal rural road access programme

In terms of SMME contractors how would you see?

- a) Restriction of given License to URRAP only in one region?

- b) Capacitating and developing the URRAP contractors to larger category contractors in order to solve state owned and private contractor's problem?

- c) Sustainability of job creation and accommodating all the contractors

?

- d) Professional (technical personnel) instability/shortage in government and non government institutions due to URRAP program me in terms of recruitment of inexperienced and none specific professionals to the shortage areas?

- e) Do you think that the shortage of these professionals encourage the government to graduate many civil engineering professionals? State also the impact if any?

SECTION SIX - Questions Related with Chose of technologies

To what extent do you agree the policy option on labor base approach which is the policy instrument to optimum and flexible use of local labor, locally available material, skills and capacity with respect to following aspects in road construction?

In terms of SMME contractors how would you rate the Labor Based Approaches with regard to the following aspects?

Note

1 Strongly disagree

2 Disagree

3 Neutral/Not sure

4 Agree

5 Strongly agree

No,		1	2	3	4	5
1	Employment Creation /Long term employment/					
2	Job Creation and short term employment					
3	Transfer of income to the poor					
4	Quality road constructions					
5	Cost efficiency					
6	Skill transfer to Wereda / Zone					
7	Improvement in the maintenance coverage through enterprise formations and skill transfer					

Appendix c:**Summary of Responses for Hypothesized Questions on challenges and constraints of SMMEs Contractors**

1=Strongly disagree 2=disagree 3=Not sure 4=Agree 5=Strongly agree

Access to Finance

Frequency							
Category	1	2	3	4	5	Mean	rank
Access to finance	4	7	12	25	27	3.85	3
Inflexible credit terms from suppliers	4	7	12	25	27	3.85	3
Guarantee bonds, sureties and insurance bonds	3	14	21	19	18	3.47	4
Late payments	0	0	8	29	38	4.40	1
High tendering costs	7	14	27	14	13	3.16	6
Advance working capital	0	7	15	26	26	3.96	2
Loans	4	7	12	25	27	3.85	3
Inflexible credit terms from banks	4	14	24	17	16	3.36	5

Management Skill

1=Strongly disagree 2=disagree 3=Not sure 4=Agree 5=Strongly agree							
Frequency							
Category	1	2	3	4	5	Mean	rank
Book-keeping	5	10	19	27	14	3.47	7
Contract administration	4	8	14	21	28	3.81	4
Leadership and communication	5	3	27	22	18	3.60	6
Financial management	4	8	17	22	24	3.72	3
Site management	5	10	19	27	14	3.47	7
Contract document interpretation	3	9	16	26	21	3.71	5
Financial control	1	4	12	21	37	4.19	1
Cash-flow management	2	5	14	19	35	4.07	2
Credit management	4	8	14	21	28	3.81	4

Ethics in construction

1=Strongly disagree 2=disagree 3=Not sure 4=Agree 5=Strongly agree							
Frequency							
Category	1	2	3	4	5	Mean	rank
Colluding of tenders	2	2	23	25	23	3.87	4
Client influence in awarding contracts or self fixing of rates by the client	0	4	9	27	35	4.24	2
Bid rigging (influencing tender results using corrupt ways) by large contractors	2	2	23	25	23	3.87	4
Consultants favoring some contractors	0	7	14	27	27	3.99	3
Consultants seeking bribes from contractors	0	4	9	24	38	4.28	1
Clients seeking bribes from contractors	0	4	9	24	38	4.28	1

Chose of construction technology

1=Strongly disagree 2=disagree 3=Not sure 4=Agree 5=Strongly agree							
Frequency							
Category	1	2	3	4	5	Mean	rank
Long term Employment Creation	2	10	7	33	23	3.87	3
Short term Job Creation	0	2	11	29	33	4.24	1
Improvement in the maintenance coverage through enterprise formations and skill transfer	0	4	9	31	31	4.19	2
Quality road constructions	5	8	21	27	14	3.49	5
Cost efficiency	2	11	11	29	22	3.77	4
Skill transfer to Wereda / Zone	0	4	9	31	31	4.19	2
Transfer of income to the poor	2	10	7	33	23	3.87	3