FACTORS AFFECTING MATERIAL MANAGEMENT OF CONSTRUCTION PROJECTS IN GURAGE ZONE (CASE OF WOLKITE TOWN)

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SUFIYAN MUDESIR SANI

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FACTORS AFFECTING MATERIAL MANAGEMENT OF CONSTRUCTION PROJECTS IN GURAGE ZONE (CASE OF WOLKITE TOWN)

SUFIYAN MUDESIR SANI

MAJOR ADVISOR: - SINTAYEHU FISEHA (Ass. Prof)

CO-ADVISOR:- TAGAY FIRDE ABEBE (MBA)

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I, declare that this thesis entitled: **"**Factors affecting material management of construction projects in Gurage Zone in case of Wolkite town is outcome of my own effort and study and that all sources of materials used for the study have been fully acknowledged.

To the best of my knowledge, this study has not been submitted for any degree in this University or any other University. It is offered for the partial full filament of the degree of Masters of Business Administration.

By: Sufiyan Mudesir

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Therefore we recommend that the student has fulfilled the requirements

Sintayehu Fiseha (Assistant professor)	----------	----------
Major Advisor	Signature	Date
Tagay Firde	----------	---------
Co - advisor	Signature	Date

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As members of Board of Examiners of the MBA thesis open defence examination, we certify that we have read and evaluated the thesis prepared by **Sufiyan Mudesir Sani** in title **"**Factors affecting material management of construction projects in Gurage Zone in case of Wolkite town**"**, and examined the candidate. We recommended that the thesis be accepted as fulfilling the thesis requirement for the Degree of Master of Business Administration.

Approved by:-

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_BerhanuEndeshaw (Dr.)_____	 _____	_____
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ACORONYMS

ECWC = Ethiopian's Construction Works Corporation

FEDD = Finance & Economy Development Department

GDP = Gross Domestic Product

GTP = Growth and Transformation Plan

MBA = Master of Business Administration

MFED = Ministry of Finance & Economy Development

SNNPR= South Nation Nationalities Peoples Region

UDCD = Urban Development &Construction Department.

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Abstract

This study aimed to examine factors that affect material management of construction projects in Gurage zone case of Wolkite town. An explanatory research design was employed in this study. Only primary source of data was used and structured questionnaire was applied to collect the data. The study population includes all permanent workers of contractors, Urban Development & Construction Department officials& experts and client office. The data was collected and analysed by the use of- Statistical Package for Social Sciences (SPSS V.20) for inferential & descriptive technique. The findings of the study reveals that, purchasing procedure from the bid up to material kept in the store, budget readiness for material procurement and inventory control have significant relationship on material management of construction projects in the study area at 5% significance level. In this study other variables such as availability of materials, qualified personnel and construction facilities have no significant relation with dependent variable. The study recommended that, the government bodies and contractors improve the proper purchase, budget and inventory level in the study area. For these significant variables have to be responsive for their individual responsibility for better material management of construction projects in the study area.

Key words Material management, construction parties, Construction projects, Multiple Linear Regressions, Wolkite town

CHAPTER ONE

Introduction

1.1 Background of the study

Materials management is a tool to optimize performance in meeting customer service requirements at the same time adding to profitability by minimizing costs and making the best use of available resources (Keitany, 2014). The main reason for construction material to be so influential in a construction project is because the cost for material handling may range from 30 to 80% of total construction cost. Therefore in effective material management can cause inevitable loss for a construction project.

Material management can be considered as a prime uncertainty in a construction project. According to (Ahmed, 2017) defined materials management functions which include planning and material take off, vendor evaluation and selection, purchasing, expenditure, shipping, material receiving, ware housing & inventory and material distribution. As material management is interrelated to other processes and stages of the construction project and is dependent over various other factors it has high uncertainty. Especially the nature of construction project being fragment basis with unstructured communication and no clear responsibility between the parties, increase the challenge of implementing effective material management.

The concept of having one department responsible for the flow of materials, from supplier through production to consumer, is relatively new. Although many companies have adopted this type of organization, there are still a number that have not. If companies wish to minimize total costs in this area and provide a better level of customer service, they will move in this direction. The name usually given to this function is materials management. Other names include distribution planning and control and logistics management, but the one used in this text is materials management. A materials management department can improve this coordination by having overall responsibility for material.

Materials management is a coordinating function responsible for planning and controlling

materials flow. Its objectives are: maximize the use of the firm's resource & provide the required level of customer service. Materials management can do much to improve a company's profit.(J.R.Tony Arnold, 2012)

The construction industry in Ethiopia is the major sector where public and private sectors are investing huge amount of fund. The percentage share of the construction sector to GDP at constant basic price has increased from 4.3% in 1993E.C to 5.8% by 2002E.c. Expansion of economic infrastructure (railways, roads, telecom, power, irrigation) being critical towards achieving the country's Growth and Transformation Plan (GTP). Significant amount of the country's budget is allocated to economic development through financing infrastructures for development of educational and power projects, construction of rail ways and road projects which increased road network density, construction of health projects to increase access for water and sanitation infrastructure. Share of the Private sector in the value add of construction is also significant. The private sector is investing its capital for acquisition of various fixed assets such as acquiring new machinery and equipment and construction of new buildings and building maintenance activities. The construction industry of Ethiopia has contributed much in reduction of poverty, in increasing employment expansion through small and medium enterprise development and job creation through the construction of low cost houses in Addis Ababa which was subsequently replicated to other regions. Ethiopia has also issued successive public procurement reforms to adhere good governance principles, reform efforts were made in order to promote competitive tendering for the selection of suppliers and for effective deliver of projects with predictable cost and time.(Ministry of Urban Development and costruction, 2012)

According to (Donyavi, 2009)construction project depends upon having the right people with right skills and equipment that are able to deliver the project on time and on budget. Having the right materials in the right place at the right time is equally important, and having the cash flow and capital to procure the labour and materials is also important. The materials on a project can represent anything from30%to 70%ofthe cost of the work, yet materials management has not received a lot of attention from researchers.

MFEDE (2017/18) as cited by (Sirani, june 2019) in Ethiopia public construction projects are fast growing and highest recipient of government budget in terms of government development program. Public construction project consume an average of nearly 45% of annual government capital budget.

Gurage zone is one of the zone administrations of Southern Nation and Nationality of people state (SNNPR). It has four (4) towns and sixteen (16) Woreda administration and Wolkite is the capital of Gurage zone, it is 155km far from Addis Ababa to Jima road and 255km far from the capital city of SNNPRS Hawasa. Construction projects are growing in fastest rate in the whole administration of Gurage zone to full fill the needs of building for different purpose and road infrastructure construction.

Gurage Zone Urban & construction Department has a role on construction projects from design preparation up to final project hand over based on contractual agreement (Gurage zone 2010 repoert, 2010 E C.)Wolkite town is one of fast growing town in the SNNPR, and being the capital of Gurage zone admin creates an opportunity to get zonal construction projects in the town. In this 2012 Ethiopian's budget year from **27** active public construction projects which are managed by Gurage Zone UDCD 13 (48%) (Urban Development & construction Department, Hidar 2012 E.C)of them has been building in the town. Therefore the town has more construction projects which are consumes more construction materials than other Woreda or towns administration projects.

According to 2010 E.C annual report of Gurage zone construction department there were a total of 101 building under construction. The report emphasizes most of the constructions were not running based on their schedule, agreed budget and only (15%) of projects were completed in the year. Also from 2011E.c budget year started 26 construction projects only 12 (46%) among this 10(ten) projects were belongs to Wolkite town and from this 5 (five) projects only 5(50%) (Urban & construction Department, Sene 2011 E.c) were finished on their contractual agreement , the rest projects has been continuing yet ,also certain projects were started in 2007E.C. Because of inefficient performance of building construction project, they are forced to incur additional cost to provide service on rented office and leads to unplanned utilization of budget (Sirani, june 2019).

In this budget year (2012E.C) Gurage zone urban & construction Department has been building 27 Zonal construction projects including one hospital which is funded by SNNPR state and 1.8kmlong & 21 meter width double way asphalt road are building by now in the town(Urban Development & construction Department, Hidar 2012 E.C).

There fore the study was conducted on the cureent construction material management of construction projects in Gurage zone Welkite town in 2012 E.c budget year.

1.2 Statement of the Problem

Construction materials contribute significantly to project cost. Several authors claim that this contribution may be up to 70% (Zairra Mat Jusoh1, 2018) of the project cost. This contribution varies according to the type of contract that is agreed upon in every construction project. Even though materials management is important, this area has received less attention from academician and researchers, as stressed by previous authors. Prominently, past studies do not sufficiently address the influential factors that contribute to effective materials management. (Zairra Mat Jusoh1, 2018)

Amongst the critical contributory factors of poor project performances, is the in effectiveness of materials management occurring in the construction sites. Indeed, materials management is a very important component for construction projects. Yet, there are only limited numbers of research available regarding this topic (Zairra Mat J. e., 2017). In Nigeria today, both the construction industry and public organizations are plagued with the problem of low productivity among the workers due to poor management of materials, lack of adequate and qualified staff personnel (IGBOJIAKU, 2007). One of the major problems in delaying construction projects is poor materials and equipment management.(Prof. Chetna M. Vyas, 2011)

On the small sites, materials are managed by individuals with little or no knowledge about the managements of materials. It is therefore prudent for construction firms to have a critical look on materials management, since it has a rippling effect on construction project(Getnet, 2017).According to the research done in Ethiopia the construction materials constitute 57 % of the total budget allocated for construction work. Since material cost of the project covers

large portion of the project cost, improvement on material management will result great improvement on the overall construction project. Previously done thesis's related to material management in Addis Ababa University is very few relative to its importance.(Abdu, 2015)

AS mentioned above in introduction part the performance of construction projects were below 50% for the last two consecutive years from 2010 - 2011E.C budget year. A research conducted on cause & effect of delay of building projects in Wolkite town concludes that contractors should plan effectively for the delivery of materials and equipment on time to avoid delay and cost increment because of miss management of materials &equipment and UDCD has to consider cost of material & equipment during design bill of quantity preparation(Sirani, june 2019).These all the above data shows that many construction projects are not completed on planned budget & time because of too many constructions project factors.

Based on field visit, a research report of Nesru Sirani (2019) & the report of Gurage zone Urban Development &construction department showed that there was a problem on timely supply and storage of local and industry material, lack of warehouse management, mismanagement of material in project site leads to construction project delay & project cost increment.

Therefore the study focused on factors affecting material management of construction projects in Gurage Zone in cause of Wolkite town.

1.3 Research Questions

- What is the effect of Market availability of materials on material management of construction projects in Gurage Zone Wolkite town?
- What is the effect of purchasing procedure of materials on material management of construction projects in Gurage Zone Wolkite town?
- What is the effect of budget on material management of construction projects in Gurage Zone in Wolkite town?
- What is the effect of inventory control on material management of construction projects in Wolkite town?
- What is qualified personnel effect on material management of construction project in Gurage Zone Wolkite town?
- Why construction facility affects the material management of construction projects in Gurage Zone Wolkite town?

1.4 Objective of the Study

The main objective of the study was to examine the factors affecting material management of construction projects in Gurage Zone in Wolkite town.

1.4.1 Specific Objective of the Study

- To examine the effects of market availability of materials on material management of construction projects in Gurage Zone Wolkite town
- To examine why purchasing procedures of materials affect material management of construction projects in Gurage Zone Wolkite town.
- To evaluate the effect of budget on the material management of construction projects in Gurage Zone Wolkite town.
- To determine effect of inventory controls at construction projects in Wolkite town.
- To evaluate effect of qualified personnel on material management of construction project in Gurage Zone Wolkite town.

- To measure effect of construction facility on material management of construction projects in Gurage Zone Wolkite town.

1.5 Scope of the study

The scope of the study was limited in Gurage Zone Wolkite town to examine factors affecting material management of construction projects. The data was collected by 5 point likert scale questionnaire and explanatory research design was incorporated for analysis to show effect of six identified explanatory variables on material management of construction projects.

In 2012 Ethiopian's budget year among 27 zonal construction projects majority 13(48%) have been building in the town. Therefore the scope of the study was active construction projects in Gurage Zone in Wolkite town in 2012E.c, which were managed by Gurage Zone Urban Development and Construction Department.

1.6 Significance of the study

The study helps to give general information about current construction material management practice and to identify main factors of material management of construction projects. It helps to construction parties to decide the optimum amount of construction material and equipment, which assist to reduce cost increment and decrease abandonment of construction projects.

Also the study report will help as a base for other researchers in the study area for further investigation around material management practice related issue.

1.7 Limitation of the Study

The study's Dependent variable material management is not supported by Secondary data because the data is not accessible, so the researcher enforced to use only the perception of respondents for analysis to measure material management. Therefore using only primary data was the main limitation of the study.

Chapter two

Theoretical Literature Review

2.1 Introduction to Material management

According to (Arnold, 2008) Materials management means all activities in the flow of materials from the supplier to the consumer. Such activities include physical supply, operations planning and control, and physical distribution. Other terms sometimes used in this area are business logistics and supply chain management. Also (Prof. Chetna M. Vyas, 2011) defined as: - materials management is a process for planning, executing and controlling field and office activities in construction. The goal of materials management is to insure that construction materials are available at their point of use when needed.

Construction material constitutes a major cost component in any construction project. The total cost of installed material may be 50% or more of the total cost. Efficient procurement of material represents a key role in the successful completion of the work. Materials management is a critical component of the construction industry. As such, organizations need to understand the effects of proper materials management techniques on the effectiveness of project execution. Extensive literature and reports deplore the lack of efficiency and productivity in the construction industry. Too often, construction projects suffer from delays, budget over runs, and claims. A properly implemented materials management program can achieve the timely flow of materials and equipment to the jobsite, and thus facilitate improved work face planning, increased labour productivity, better schedules, and lower project costs (Sabihuddin, 2015).

Materials are purchased and used to produce the final product and does not suggest that materials are the final product. In other words, materials are the parts used to produce the final product. Poor planning and control of materials, lack of materials when needed, poor identification of materials, re-handling and inadequate storage cause losses in labour productivity and overall delays that can indirectly increase total project costs. Effective management of construction materials techniques can reduce these costs and contribute

significantly to the success of the project. However, achieving success in project implementation process is the major function of materials management. Modern techniques of efficient material management were developed in USA during Second World War which helped them to make a spectacular progress in improving their productivity (Napoleon Kuebutornye D.K., 2018).

It is important for the contractor to consider that there may be significant difference in the date that the material was requested or date when the purchase order was made, and the time at which the material will be delivered, thus material management is a key of project management.“ Material management is the process to provide right material at right place at right time in right quantity so as to minimize the cost of project”. Material management is concerned with the planning, identification, procuring, storage, receiving and distribution of material. The responsibility of Material management department for the flow of material from the time the material is ordered, received, and stored until they are used is the basic responsibility of material management. Materials represent a major expense in construction, so minimizing procurement cost improves opportunities for reducing the overall project cost (Sabihuddin, 2015).

2.2 Importance of Material management to construction project

According to (Akinradewo B. T., 2016) efficient management of materials plays a key role in the successful completion of a project. The cost represented by materials fluctuates and may comprise between 20-70% of the total project cost and sometimes more. Sustainable materials management can have numerous benefits. United state environmental protection agency report (2013) informed that these benefits can be group into: Environmental benefits, Economic benefit and Performance benefits

Environmental Benefits: This includes the conservation of natural resources, reduction of energy consumption, conservation of landfill space and reduction of environmental impacts across the life cycle by decreasing the demand for virgin products

Economic Benefit: It includes reduction in disposal costs and may reduce material handling costs which leads to reducing overall project costs, reduction in purchasing costs since non-virgin materials are often less expensive than virgin resources, make contractors to be more competitive with their bids at reduced costs and it creates employment opportunities and economic activities in the reuse and recycling industries

Performance Benefits: This includes reclamation of materials, salvaged, and reused can perform as well as or better than virgin products in many applications, reduction in the overall costs of materials, better handling of materials, reduction in duplicated orders, materials will be on site when needed and in the quantities required, improvements in labour productivity, improvements in project schedule, quality control, better field material control, better relations with suppliers, reduction in materials surplus, reduce storage of materials on site, labour savings, stock reduction, purchase savings and better cash flow management to (Akinradewo B. T., 2016).

2.3 Material Management Process

Material management covers starting from material planning up to consumption of the material. The major processes of material management include material planning, purchasing, receiving, storing and transporting(Abdu, 2015).In related with this materials management processes involve the planning, procurement, handling, stock and waste control, and logistics surrounding materials on construction projects. A good materials management environment enables proper materials handling on construction sites. In order to better understand materials management the following processes are discussed: planning, procurement, receiving and transporting (Kasim, CIBW 107) .

2.3.1 Planning of Material

Companies may have two major levels in planning that is micro and macro level. Time, cost, material and labour are the four major types of planning undertaken on sites. The planning should be revised as frequently as possible in order to monitor whether work is progressing as planned. During the planning prices, detailing the project in terms of its outcome, team

members' roles and responsibilities, schedules, resources, scope and costs are needed. At the end of this phase, a project management plan is produced, which is a document that details how your project will be executed, monitored and controlled, and closed. Burt (1996) observed that planning and programming of work should include strategies, tactics, and tools for managing the design and construction delivery processes and for controlling key factor to ensure the client receives a facility that matches their expectations and function as it is intended to function. Materials requirement planning is technique used to determine the quantity and timing requirements of dependent demand "materials used in the construction operation"(Akinradewo B. T., 2016).

2.3.2 Purchasing or procurement

Purchasing is the "process of buying." Many assume purchasing is solely the responsibility of the purchasing department. However, the function is much broader and, if it is carried out effectively, all departments in the company are involved. Obtaining the right material, in the right quantities, with the right delivery (time and place), from the right source, and at the right price are all purchasing functions. Choosing the right material requires input from the marketing, engineering, manufacturing, and purchasing departments. Quantities and delivery of finished goods are established by the needs of the marketplace. However, manufacturing planning and control (MPC) must decide when to order which raw materials so that marketplace demands can be satisfied. Purchasing is then responsible for placing the orders and for ensuring that the goods arrive on time. The purchasing department has the major responsibility for locating suitable sources of supply and for negotiating prices. Input from other departments is required in finding and evaluating sources of supply and to help the purchasing department in price negotiation. Environmental responsibility is becoming a major consideration in business due to potential costs and consumer demand. Purchasing departments are in a position to take the lead role in reducing a company's environmental impact since they are familiar with all materials purchased and they have excellent contacts with suppliers for product information. Purchasing, in its broad sense, is everyone's business. Purchasing is responsible for establishing the flow of materials into the firm, following up with the supplier, and expediting delivery. Missed deliveries can create disorder for

manufacturing and sales, but purchasing can reduce problems for both areas, further adding to the profit (J.R.Tony Arnold, 2012).

2.3.3 Receiving

At its most fundamental level, receiving is the process of confirming that you received what you ordered. When you consider that the average warehouse receives, counts, and inspects thousands of items of varying shapes and sizes from hundreds of vendors whose picking, packing, and shipping practices are all different, it is not surprising that receiving can be one of the most complicated functions and warehouse processes. Errors in receiving, unlike most other errors in your warehouse, have a ripple effect. If you can't get your receiving process working smoothly, you'll run into near-future scenarios where product will be sitting on your receiving dock, or on pallets in a corner. Your pickers will waste time looking for them.If you think my emphasis on the importance of receiving smacks of hyperbole, consider this: data from your receiving department determines what your accounting department pays vendors. If receiving doesn't highlight when pallets are missing a few cartons, you will overpay for the actual goods received as well as incur backorders. If the received items differ from what was expected, you'll unnecessarily expend time and money to correct the problem.(Turn™, 2014)

2.3.4 Storing

As described earlier one of the objective of material management is to deliver the right quality of material with the right quantity at the right time. In order to fulfil this objective we need storage to deliver material when needed. The purchased material should be stored before some duration before needed or the work to keep the continuity of the work. We should keep balance between the storage cost and stock out cost. If we purchase too much material and stock it, in addition to capital tie up or cash flow disturbance there will be storage, protection, obsolescence and some other risk costs. On other way if we keep the inventory level low or null, there will be idle and delay cost because the labor and equipment stop work since they get shortage of material to do the work. While we store material proper attention should be given according to the type of material. For example first in material should be first out by proper space area arrangement, cement should not be placed directly on the floor to escape the moisture from the floor, rebar should be placed moisture free area to keep from corrosion,

Some material like water heater need to be placed by keeping the upside up, thin material like glass, ceramic, terrazzo, etc. should be place vertically to keep from easy breakage.(Abdu, 2015)

2.3.5 Transporting

Transportation is an essential ingredient in the economic development of any area. It brings together raw materials for production of marketable commodities and distributes the products of industry to the marketplace (Arnold, 2008). And also according to (Abdu, 2015) Material transportation is the process of moving material from one place to other place through different transportation mechanism like vehicle, ship, plane, etc. The construction material should be transferred to the construction site as per the planned time safely with a reasonable cost. In order to transport the material safely we should follow the material handling information because if the delivered material is broken or rotten it is similar to material undelivered because the progress of the work stopped due to shortage of material.

2.4 Problems of Material Management

According to (Kasim January 2008) as sited by (Getnet, 2017):-

Organization Structure:- The coordination and communication between estimating department, research and development department, purchasing department, and plant and machineries department should be maintained at highest level main issues in organization structure:- undefined scope, lack of communication between parties involved, incomplete drawings plans are not completed and details are missing, lack of conformance to requirements non-standard specifications that are not commonly used, incomplete/ ineffective/ meetings, difference between plans and specifications and don't communicate exactly.

Procurement problem:- Unavailability of material, unavailability of quantity, price reduction to match competitor's price, late deliveries, materials are not delivered as per schedule, late or in correct submittals, poor communication between parties, lack of conformance to requirement, unrealistic delivery dates, re handling of materials storage areas are limited or are far from working area, theft or damaging during handling or other

conditions.

2.5 Factors Affecting Material Management

According to (R Kokila1, 2018) factors affecting effective material management are Plan and design complexity ,Fund availability for payment, Price fluctuations, Lack of storage, Poor communication, Site conditions, Wrong handling of materials, Weather condition, Wastage and existence of unnecessary materials on site.

2.6 Empirical Review

2.6.1 Previous studies Related to the material Management

A research which is conducted by (Ahmed, 2017) identified top 3 root causes of ineffective material management were identified as matching price to competitor's price; time spent investigating non-qualified suppliers and availability of material.

In related way a study conducted in Malaysia by (Zairra Mat J. e., 2017) sorted the salient influential factors and categorized them based on their specific group. Out of 47 factors identified, they are classified into 8 groups. They are (1) site condition;(2) planning and handling on site; (3) management; (4) materials;(5) supplier and manufacturer default;(6) transportation;(7) contractual; and (8) governmental interferences. In conclusion, this study contends that by identifying the influential factors affecting materials management, it will help construction players to avoid the occurrence of those factors and will minimize the negative impacts on the overall performance of construction projects. Also another study in Kenya analysed in correlation and regression analysis, and hence hypothesis testing, he concluded that inadequate materials management has resulted in the poor level of materials attributes on construction sites. The problem was found to be more severe on informal sites than on formal sites.(EBOLE, 2005)

A research conducted in Owerri in Nigeria concludes the use of effective materials management in a building construction site is most important. Material management leads to

effective cost control and materials control, reduces failure of a project and also reduces the incidence of project abandonment.(Okorocha, Volume 2)

A research conducted by(Pauline JerutoKeitany, 2014) in Kenya as the data collected from 7 different departments which directly deal with materials ofa company were evaluated through descriptive statistics such as mean, median, standard deviation and percentages. The study established that there was a positive and significant relationship between inventory control system and lead time on organizational performance. This shows that through inventory control systems and lead time in materials management, an organization can achieve the benefits of effective use of labour, providing system flexibility, increasing productivity, decreasing lead times, reduction in wastes, reduction in production costs, increased product quality are achieved.

A research conducted in Nigeria Ondo state by(Festus, 20216) showed that that purchasing of materials, material planning method and transportation of materials are the most common practices of materials Management. The most severe problem militating against materials management was lack of proper work planning and scheduling while other problems include inadequate cash flow to contractors due to delayed payments, burglary, theft and vandalism.

A research conducted on Factors affecting material management in construction industry which aimed to identify and rank the most significant factors related to material management by (Dr.C.Venkatasubramanian, 2017)concluded that major factors for effective material management were material requirements planning, proper cash flow control, identifying and selecting suppliers, organizing and scheduling the procurement, skilled negotiation with suppliers, non-delay of payments, skill and experience of material management team, planning delivery of materials to site, proper inspection and documentation of materials and site location and layout. A research by (Kang, 2018) showed delays and cost overruns increased in the construction of a private residential project in Kuwait due to three main factors: were contractor-related problems, material related problems, and owners' financial constraints.

A research done by hypothesis testing calculated t= 7.388 and t tabulated t was 2.015 which is less than t tabulated due to this he concluded that inventory control has a significant effect on

the success level in achieving effective materials management(Cosmas Obiajuru Igbojiaku, 2007).Similarly a study by Nasir (2013), as cited by(Gurmu, 2018) stated materials purchasing procedure was found to be one of the significant practices for increasing the productivity of infrastructure projects in the US. Certain researches conducted in Ethiopia which are related to material management in Addis Ababa city shows that, the most significant factors causing construction waste on building construction projects are:- Design and documentation factors **,**Operation (on site, equipment) factors, Site supervisor factors, Site management and practices factors, Materials handling and storage factors and Policy, manual and document factors respectively(Getnet, 2017). In addition to this (Abdu, 2015)identifies the usability, importance and practicality of theselected26 performance measures for material management on building projects in Addis Ababa. Based on this research the top three important performance measures are material availability, material wastage and construction time lost and the top three practical performance measures are total surplus, materials receipt problems and procurement lead – time. From the selected 26 performance measures only 4 performance measures used on building projects in Addis Ababa.

2.7 Research Gap

Nowadays construction industry has been growing fast as national level. The literatures show that construction material covers around 30 - 70 %(Donyavi, 2009) the total cost of construction projects. However, certain researches were conducted as country level and in Addis Ababa city, and as the researcher knowledge it is too difficult to get a research conducted on construction material management in the study area. From 2010E.c budget year construction projects only 15 % were finished on their contractual agreement. From 2011E.c budget year out of 26 only 12 (46%) among this 10(ten) projects were belongs to Wolkite town & from this only 5(50%) were finished on their contractual agreement , the rest projects has been continuing yet ,also certain projects which are started back in 2007E.c. (Urban & construction Department, Sene 2011 E.c). Also (Sirani, june 2019)concluded that contractors should plan effectively for the delivery of materials and equipment on time to avoid delay and cost increment because of miss management of materials &equipment. Materials management is a significant component for construction projects. And as mentioned above the construction

project performance in the study area in the last two consecutive years were 50% & below. So construction material management at construction projects is one of main problem in the study area.

2.8 Conceptual Framework

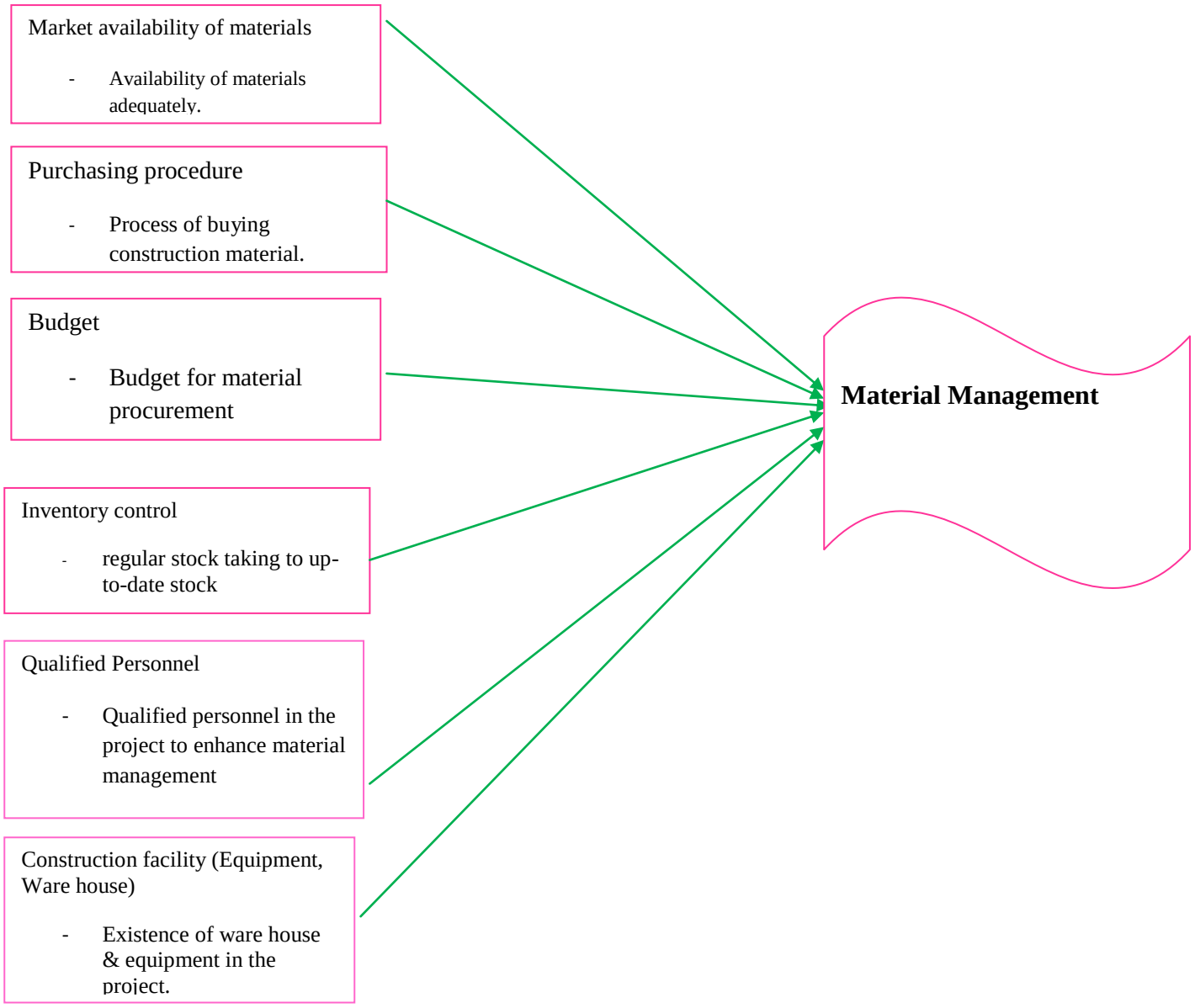


Figure 1 Conceptual framework

Based on (Anwaredin Elias, 2019) after reviewing different literature

CHAPTER THREE

Research Methodology

3.1 Introduction

Under this chapter, the researcher tried to outline the design of the research approach of the study, the sampling design, sampling technique, data sources, tools used for data collection and method of data analysis.

3.2 Description of the study Area

Gurage zone is one of 16 zones of Southern Nation's Nationalities and Peoples, Regional State (SNNPRS). It is located 255km North of Southern Nation Nationalities and Peoples, regional state capital city Hawasa and 155km South of Addis Ababa. Gurage zone is bordered in the North, Northwest, Northeast and East by Oromia region, in the West by Yem special Woreda, in the South by Hadiya zone, and in the Southeast by Silte zone.

Gurage zone is structured into sixteen woreds and four town administration. On the other hand, Gurage zone contains 437 rural Kebeles and fifteen municipal towns. According to central statistical Agency (2009), the total population of Gurage zone is 1,724,324.From the total population of the zone, the number of male population 836,896 and that of female is 887,426. The percentage share of female population in the zone is 51.5%.

According to Gurage zone finance and economic development (2009E.c) abstract report, from the total population 210,956 (12.2%) is live in the urban area of the zone, from the total population of urban areas 69,598 is lives in Wolkite town, which covers 40% of the urban population in the zone.

3.3 Research Design

The researcher used explanatory research design to look for an answer why &what problems in the study. Explanatory analysis used to show the relationship between the dependent and independent variables. The frequency distribution of an event analysed, appropriate

summaries, tables, and graphs were made to present study results. So this study examines the factors affecting material management of construction projects in Gurage zone in case of Wolkite town.

3.4 Research Approach

The researcher used quantitative approach for the study which is a means for testing objective of the research by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures.

3.5 Source of Data

The data for the research collected only from primary source which includes the actual data that was collected from individuals who have a role in construction projects and material management department in the study area.

3.6 Population of the Study

The populations of the study were:-

- Gurage zone urban development & construction department construction division employee 20,which are 14 engineers, 2 higher official, 2 planning, feedback & follow up experts, 2 finance and budget experts .
- 32 permanent workers of Ethiopia's construction Works Corporation's Wolkite asphalt project.
- 35 permanent workers of Yohanis Haile's construction PLC at Wolkite General Hospital building project.
- The rest 11 medium projects permanent and which are stay up to project delivery 55 worker
- Client 9 governmental sectors who have capital budget for construction in 2012E.C budget year.

So, all construction parties 'staff members who have been working in Wolkite town construction projects were included in this study. The total study participants were151 (one hundred fifty one**)** engaged. So the researcher was take the total population151 (one hundred fifty one) or census were incorporated for the study.

3.7 Method of Data Collection

Among different tools or techniques of data gathering method the researcher used structured questionnaire to collect data from respondents.

Questionnaire: is the instrument to collect primary data, which contains close ended question and it adapted from (Eyad Abed Elqadir, 2017)similar literatures and developed in English and translated into Amharic language to make it easier for the respondents. It is convenient to secure answers to questions by using a form what the respondents responds. The questionnaire prepared by five point likert scale. All **151** respondents were engaged in questionnaire.

3.8 Validity and Reliability of Research Instrument

3.8.1 Validity

The validity of an instrument refers to the extent to which it measures what was intended to measure. The validity of the scales utilized in this study was assessed for content and construct (convergent) validity.(Charles.A(PhD), 2012) To ascertain the validity of the questionnaire pilot test was carried out. The content validity of the research instrument evaluated through the actual administration of the pilot group from construction project & office in the town.

3.8.2 Pilot test

Whether it is a structured interview where the questions are posed to the respondent in a predetermined order, or a questionnaire that is used in a survey, it is important to pre-test the instrument to ensure that the questions are understood by the respondents (i.e., there is no ambiguity in the questions) and that there are no problems with the wording or measurement. Pretesting involves the use of a small number of respondents to test the

appropriateness of the questions and their comprehension. This helps to rectify any inadequacies, in time, before administering the instrument orally or through a questionnaire to respondents, and thus reduce biases. It would be good to debrief the results of the pre-test and obtain additional information from the small group of participants (who would serve the role of a focus group) on their general reactions to the questionnaire and how they felt about completing the instrument.(Sekaran, 2003)

For the study the pilot test of the questionnaire is achieved by a survey sample, which consists of 30questionnaires. These questionnaires were distributed to Gurage Zone Urban Development& Construction Department 20 experts and for 10 ECWC Wolkite Asphalt project's Workman Ships to give their comment on the questions and then after to fill in the questionnaire. The following items are summary of comments obtained from pilot study:

- Missed general information was added such as Workman ship& purchaser.
- There are redundant questions, or has questions of the same concept.
- There are few technical defects, such as punctuations, missing letters, etc.
- It is well prepared and organized.

After making some amendments according to their comments cronbach alpha was checked to see the consistency of items that, how closely related as a set of items in the questionnaire to deal with the objective the study.

3.8.3 Reliability

The reliability of instruments measures the consistency of instruments. The reliability of the instruments as the degree of consistency that the instruments or procedure demonstrates. The reliability of a standardized test is usually expressed as a correlation coefficient, which measures the strength of association between variables.

In this study each item or question was rated on a 5 point likert-scale response which includes strongly agree, agree, undecided, disagree and strongly disagree. The construction of likert scale is rooted into the aim to understand about the opinions/perceptions/ of participants related with single 'latent' variable (phenomenon of interest). Based on this an internal

consistency reliability test was conducted. Instruments were developed based on research questions and objectives of the study.

Table 1Summary of reliability test

No	Variables	Cronbach alpha	Cronbach alpha based on standardized item	Number of items
1	Availability of Materials	0.761	0.761	7
2	Inventory Control	0.854	0.854	7
3	Purchasing	0.861	0.860	7
4	Budget	0.810	0.805	7
5	Qualified personnel	0.879	0.879	7
6	Construction facility	0.860	0.857	7
*	Material Management practice (Independent variable	0.837	0.832	10

Table 2 Reliability Statistics

Cronbach's Alpha	N of Items
.972	52

Here in the above table1showed that the reliability test results for all variables individually. When alpha value is $0.7 \leq \alpha \leq 1.0$ it is acceptable and it shows high consistency of the items in the questionnaire to measure the variables. And table 2shows that the reliability test result for all 52 items 0.974, which implied that highest consistency of all items to measure material management of construction projects.

3.9 . Method of Data Analysis

Data from the field was edited and coded appropriately to make meaning out of them. Editing was done to correct errors, check for non-responses, accuracy and corrects answers. Coding was done to facilitate data entering and a comprehensive analysis. Computer software latest version of SPSS 20was incorporated to analyse the data. The existence & degree of relationship between of dependent and independent variables were conducted by using

Multiple Linear regression and correlation test. Frequency distribution & its percentage were analysed to show the perception of respondents on material management of the construction projects in the study area.

3.9.1 Multiple Linear Regression Model

Multiple Linear regression analysis is concerned with describing and evaluating the relationship between a given variable (explained or dependent) and one or more other variables (explanatory or independent variable). Explained variable denoted by 'Y' and explanatory variable by $X_{1,}$ X2….X_k.(G.S.MADDALA, 1992)

In this research material management is dependent variable and Availability of materials, purchasing, Budget, Inventory control, qualified personnel in the project and construction facility (equipment & ware house), are independent variables. So the researcher had used the model for more predicting & explaining dependent variable from other independent/explanatory variables.

The researcher would conduct the management practice by Multiple linear regression models as:-

$$Yi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + ei$$

Where Yi is dependent variable

$\beta_0 =$ it is constant term which is when all independent variables are absent or zero.

$\beta_{1,}$ β2, β_3, $\beta_{4,}$ β5, β_6 are coefficient associated with each independent variable

$X_1 =$ Market availability of materials

$X_2 =$ Purchasing procedures

X_3= Budget

X_4 =Inventory control

X_5 = Qualified personnel in construction project

X_6 = Construction Facility are mentioned independent variables.

E_i = error term

3.9 Ethical Consideration

Understanding of respondent especially contractors & their workers education level helps in identifying and determining the questionnaire development approaches to be followed. In order to get the respondents full willingness and to get the intended data all parties/respondents/were informed the aim of data collection before starting the distribution of the questionnaire. And the right to privacy of the respondents, the study was maintained the confidentiality of the identity of all participants.

Chapter four

Data Analysis and Interpretation

4.1 Introduction

This chapter contains the findings from data analysis and result interpretation. To present findings and discussions about the perception of respondents on factors affecting material management of construction projects in Gurage Zone in case of Wolkite town at different construction projects; the researcher used different tables and figures and quantitative analysis has used in prose. The data analysis intends to accomplish the objectives of the study and answer the research questions.

First part this chapter mainly designed to present the general information about the respondents who participate in the survey questionnaire. It shows the background information of respondents which includes gender distribution, area of work organization, and educational background, work experience, job type of the respondent and return rate of the questionnaire, the 2nd part descriptive analysis and the 3rdpart was linear regression result & its interpretation.

For13 construction projects a total of 151 questionnaires were distributed to collect data from respondents. 131 out of 151 questionnaires were collected and usable for comprehensive analysis and 86.7 % was returned

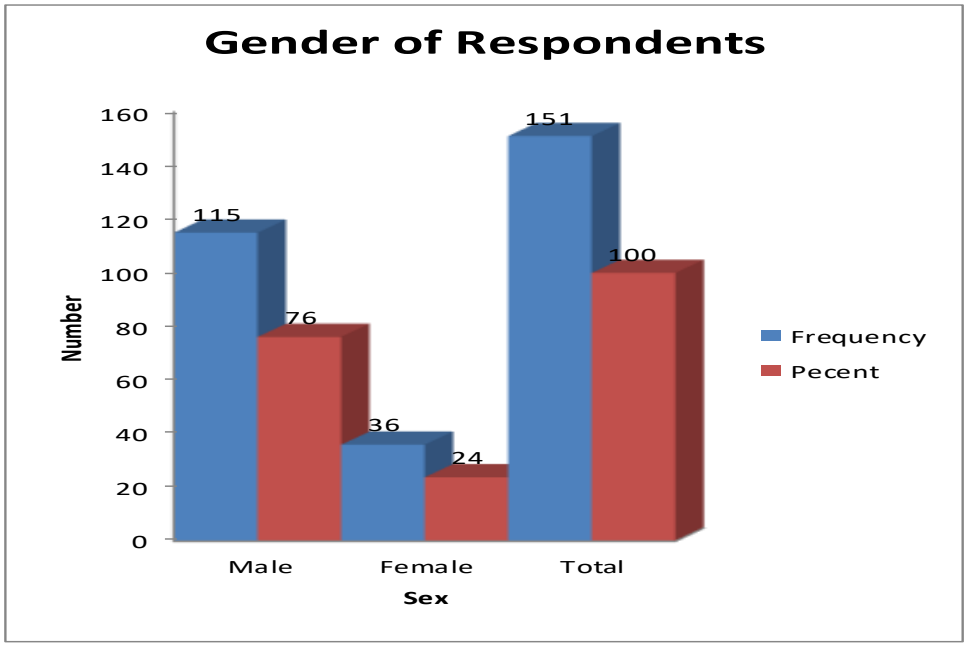


Figure2Gender of Respondents

Source Survey data (220)

From the total population of the respondent 115 (76%) were male and 36 (24%) of them were female. This implied that, the share of female in the construction parties staff members were relatively less than that of male participants as indicated in fig. 2.

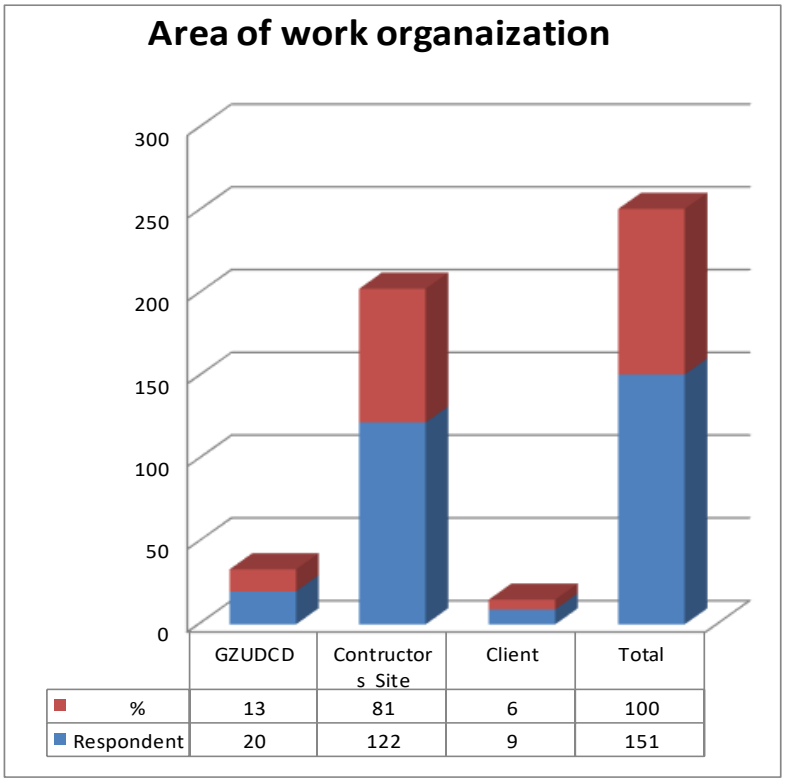


Figure 3 Distribution of respondents by their organization

Source Survey data (220)

The work area or organization of the respondents 20(13%) higher official, consultants /experts/, finance & planning team were from Gurage Zone Urban Development & construction Department, 122 (81%)from contractors side which includes contractor itself, site manager, store/warehouse managers & workmanship and 9(6%)were Wolkite town governmental offices which had capital project budget in 2012 Ethiopian's budget year. The highest share of respondents were from contractors side which had more time to expend on construction materials activity which helps relatively to get more real material management practice data from site as shown in fig 3.

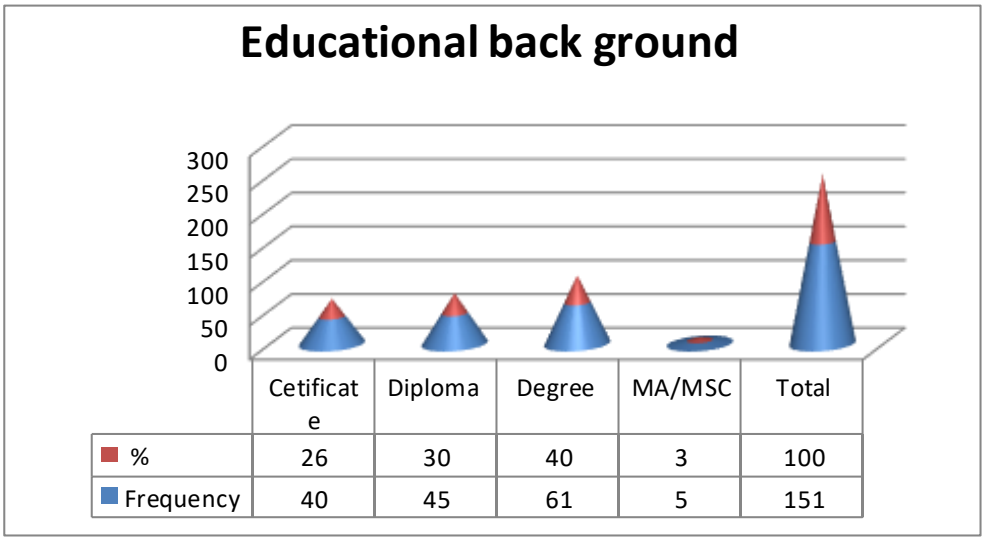


Figure 4 Educational Back ground

Source Survey data, 2020

Educational background of the respondent certificate 40(26%), diploma holders 45(30%) first degree 61 (40) Second degree 5(3%) were participated. It implied capability of respondents to fill the questionnaire &to collect theintended data for the research.

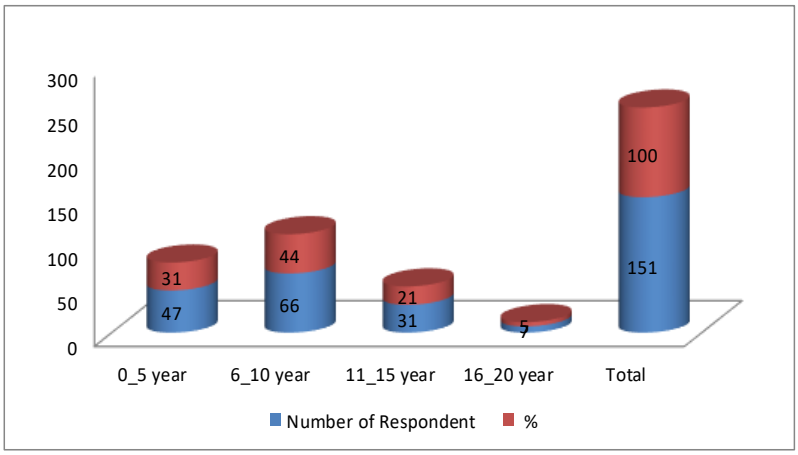


Figure 5 work experience of respondents.

Source Survey data (2020)

As the above figure shows work experience of the respondent on the work were from 0-5 years 47(31%), from 6-10 year 66 (44%), and the rest 7 (5%) of the respondents have 16-20 year work experience. It implied that the majority of respondents were experienced in construction works; hence their long experience helps to get practical way of material management performance of construction projects.

Table 3 Job type of Respondents

Job type	No of Respondent	%
Higher Officials of UDCD	2	1
Quality control	5	3
Design & Control	5	3
Regulatory	3	2
Planning & follow up officers	2	1
purchasers& finance	10	7
Store managers	15	10
Contractor	13	9
Site manager	13	9
Client Office	9	6
Workmanship	74	49
Total	151	100

The above table 3 showed that the job type of respondents which are higher official of UDCD 2(1%), quality, design control & regulatory experts 13 (8%),planning &follow up officers 2 (1%), purchasers &finance team 10(7%), store managers 15(10%),contractor 13(9%) client office 9(6%) and 74 (49%) were workman ship in the construction site. The distributions of respondents were relatively from all concerned bodies of material management to a given project. Due to this the data for the research can be collected from individuals who have direct role in construction material management activity of construction projects.

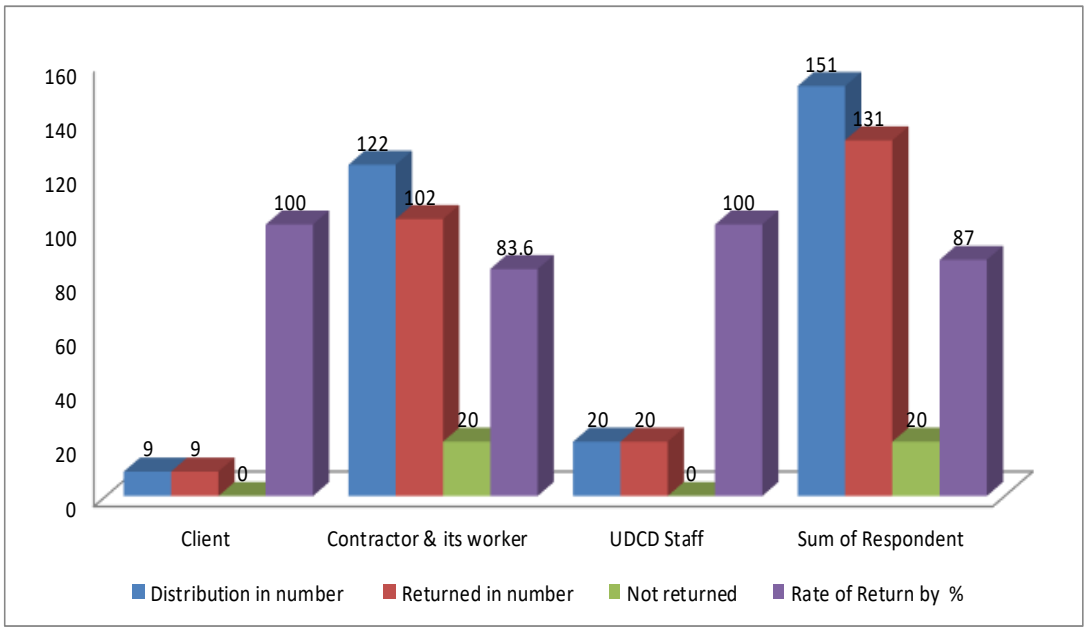


Figure 6 Questionnaire Return Rate.

Source Survey data 2020

From the summery of the questionnaire the above figure shows that the response rate of the total respondents. From a total of 151 questionnaire, client 9 (100%), contractor and its worker 102(83.6%), Gurage Zone Urban Development & construction Department 20(100) and from the total 131(87%) of questionnaire were returned, and according to Mugenda (1999), stipulation as cited by (Taye, 2017)it was excellent rate of return.

4.2 Description of Variables

Material management Dependent variable

Table 4 Material management

Variable	Category	Frequency	%
Material Management	strongly disagree & disagree	69	52.7
	Neutral	27	20.6
	Strongly Agree& Agree	35	26.7
	Total	131	100.0

Material management was the dependent factors for the study; it was measured by five point likert scale with ten items. As the table shows the response result According to Zaidaton & Bagheri (2009)the overall mean (M) score between 4.21-5.00 is considered as the respondents strongly agreed (SA), if the respondents score between 3.41-4.20 means they agreed (A), the score between 2.61-3.40 is considered as the respondents are neutral (N), the respondents score between 1.81-2.60 shows that they disagreed and if the respondents score between 1-1.80shows that they strongly disagreed as indicated in table 4.

After categorizing the likert scale result of 10 items or questions as above to compute material management of construction projects, frequency distribution of respondents were 69(52.7%) respondents were replied disagree & strongly disagree, 35(26.7%) were agree and strongly agree and the rest 27 (20.6%) were neutral perception .According to respondents replay it indicated that there was material management carry out problem at all construction projects in the study area.

The result consistent with research which was conducted in Nigeria concluded that, the success rate of 67.9% in achieving effective materials management in the construction industry is considered unsatisfactory because materials account for about 70% of construction cost. Therefore a greater degree of efficiency and effectiveness is required in the management of construction materials(OBI0AJURU, 2007).Similarly a study conducted in Nairobi of all the sites studied, 67.4% of the sites scored level of materials management which can be considered to be below average(Asienga, 2005).

Similarly according to (Tadesse, 2016) the finding of a recent study at the London School of Economics (LSE) in UK that reported the management practice in Africa is poor as compared to Europe and North America. According to this report, Ethiopia is the second from the last followed by Mozambique which indicates that the management practice in Ethiopia is even far behind from those poor performing developing countries in Africa.

For independent factors which affect material management of construction projects, percentage of frequency distribution was used to compute each seven items response for each individual independent variable as shown in the table below.

Table5 Description of Availability of materials effect on material management

S/n	Item	Response	Response rate	
			Frequency	Percent
1	Local construction materials are available at your construction project adequately.	Strongly disagree	17	13
		Disagree	24	18.3
		Neutral	21	16
		Agree	54	41.2
		Strongly Agree	15	11.5
		Total	131	100
2	Accessibility of road infrastructure from project site to local material production site is safe.	Strongly disagree	15	11.5
		Disagree	27	20.6
		Neutral	35	26.7
		Agree	46	35.1
		Strongly Agree	8	6.1
		Total	131	100
3	Local construction materials are easily affordable to the project.	Strongly disagree	15	11.5
		Disagree	32	24.4
		Neutral	27	20.6
		Agree	52	39.7
		Strongly Agree	5	3.8
		Total	131	100
4	Industry produced materials to the project are accessible.	Strongly disagree	17	13
		Disagree	37	28.2
		Neutral	32	24.4
		Agree	41	31.3
		Strongly Agree	4	3.1
		Total	131	100
5	Materials to the project are acquired With well consideration of stock and waste.	Strongly disagree	14	10.7
		Disagree	35	26.7
		Neutral	34	26.0
		Agree	39	29.8

		Strongly Agree	9	6.9
		Total	131	100
6	Determination of what & when materials are needed in the project is tried to be well accurate.	Strongly disagree	12	9.2
		Disagree	26	19.8
		Neutral	18	13.7
		Agree	60	45.8
		Strongly Agree	15	11.5
		Total	131	100
7	There is better information sharing between material supplier & authorized person of the project.	Strongly disagree	12	9.2
		Disagree	22	16.8
		Neutral	24	18.3
		Agree	56	42.7
		Strongly Agree	17	13
		Total	131	100

In the above table5, to measure the availability of material to the first item for "local construction material are available at your construction project adequately", 41 (31%) were replied disagree and strongly disagree, 69 (52.7%) were replied agree and strongly agree, the rest 21(16%) of the respondents were neutral. Therefore it implies the presence of local construction material for the projects in the study area.

For "accessibility of road infrastructure from project site to local materials production site ", 42 (32.5%) respondents disagree and strongly disagree, 52(41.2%) agree and strongly agree, whereas 35(26.7%) were indifferent. This implies the presence of road accessibility from project site to production site.

For an item "industry produced materials accessibility", 54(42.2%) respondents replied disagree and strongly disagree and 45(34.4%) were replied agree and above, the rest 32(24.4%) respondents were undecided. Therefore it implied problem of accessibility industry produced construction materials for the projects.

For the affordability of local construction materials 45(35.9%) were replied disagree and above, 57(43.5%) were replied agree and strongly agree, the rest 27(20.6%) was undecided. This indicates that relatively affordability of local construction materials for the projects.

Determination of what and when materials are needed for in the project is tried to be well was replied 38(29%) were disagree and below it, 75(57.2%) has confirmed what and when need of

material in the project is tried to be well and the rest 18(13.7%) are indifferent. So this shows presence of decision making to determine what & when materials are needed. For an item for the presence of better information sharing between material supply and delegated person of the project 34(26%) were disagree & strongly disagree, 73(55%) agree & strongly agree which confirmed that, the presence of better information sharing between material supply and delegated person of the project.

"Materials to the project are acquired with well consideration of stock and waste" 49(37.4%) replied disagree and below, 45(35%) respondents laid on agree and strongly agree, the rest 34(26%) were undecided on the item. This higher percentage share showed that acquiring of materials is by considering the present stock in the store. In sum for this variable among seven variables, five of measuring items results were showed availability of construction materials for construction projects in the study area.

Table 6 Description of purchasing procedure effect on material management

S/n	Item	Response	Response rate	
			Frequency	Percent
1	There is timely procurement of local and industry material for the project.	Strongly disagree	16	12.2
		Disagree	47	36
		Neutral	9	7
		Agree	48	36.6
		Strongly Agree	11	8.4
		Total	131	100
2	Procurement of material is based on clear specification	Strongly disagree	8	6.1
		Disagree	59	45
		Neutral	9	7
		Agree	41	31
		Strongly Agree	14	10.7
		Total	131	100
	Always Appropriate quality of materials &equipment are purchased for the project.	Strongly disagree	13	9.9
		Disagree	22	16.8

3		Neutral	34	26.0
		Agree	41	31.3
		Strongly Agree	21	16.0
		Total	131	100
4	Construction materials are purchased at reasonable price to the project.	Strongly disagree	8	6.1
		Disagree	25	19.1
		Neutral	29	22.1
		Agree	47	35.9
		Strongly Agree	22	16.8
		Total	131	100
5	Material receiving and verification is safely handled in the project.	Strongly disagree	7	5.3
		Disagree	21	16
		Neutral	34	26
		Agree	51	38.9
		Strongly Agree	18	13.7
		Total	131	100
6	Materials and equipment are purchased to the project from legal &certified sources to construction project.	Strongly disagree	13	9.9
		Disagree	54	41
		Neutral	9	7
		Agree	29	22
		Strongly Agree	26	19.8
		Total	131	100
7	There is adequate amount of material purchasing & continuous supply without any interruption to the project building.	Strongly disagree	11	8.4
		Disagree	53	40
		Neutral	8	6
		Agree	43	32.8
		Strongly Agree	16	12.2
		Total	131	100

As the above table 6 showed for an item timely procurement of local and industry materials, 63(48%) replied disagree and strongly disagree, 59(45%) were agree strongly agree and 9(7%)

respondents were undecided. This indicated that, there was no timely procurement of materials for the construction project.

For an item “procurement of material is based on clear specification, 67(51%) respondents replied disagree and strongly disagree, 55(42%) replied agree and above, the rest 9 (7%) neither agree nor disagree. This shows as majority of them disagreed on an item, materials were procured based on clear specification. Purchasing of materials at reasonable price for the project, 33(25.2%) were answered disagree and strongly disagree, 63(48.1%) answered agree & above, and the rest 29(22.1%) were indifferent. So this implied that, materials for the project were purchased at reasonable price.

To an item, safely handling of material, receiving and verification in the project, 28(21.4%) respondents were replied disagree and strongly disagree, 69(52.6%) were agreed up on the item, the rest 34(26%) were undecided on the item. These showed materials were received and verified safely handling in the projects.

Materials and equipment are purchased to the project from legal &certified sources to construction project. For this item 67(51%) were replied disagree and strongly disagree, 55(41%) were replied agree and strongly agree and 9(7%) were undecided. This showed that certified and legal sources were not always the supplier of materials for the projects.

For an item “adequate amount of materials purchasing and continuous supply without any interruption to the project, 64(49.5%) replied disagree and strongly disagree, 59(45%) were replied agree and above & 8(6%) were indifferent. Here, even if certain number of the respondents were agreed up on the execution, majority of respondents were replied disagree & strongly disagree, which indicated the interruption of continuous purchase &supply of material. From above seven items the majority respondents on majority items reply showed that existence of how much purchasing related problems at the construction projects in study area.

Table 7Description of Budget effect on material management

S/n	Item	Response	Response rate	
			Frequency	Percent
1	Building of the project is based on planned budget for material purchasing.	Strongly disagree	11	8.4
		Disagree	42	32.1
		Neutral	27	20.6
		Agree	40	30.5
		Strongly Agree	11	8.4
		Total	131	100
2	Price increment of construction materials is managed by timely released of budget.	Strongly disagree	20	15.3
		Disagree	45	34.4
		Neutral	25	19.1
		Agree	25	19.1
		Strongly Agree	16	12.2
		Total	131	100
3	Approval of payment certificate and timely payment to suppliers in order to sustain material flow.	Strongly disagree	19	14.5
		Disagree	38	29.0
		Neutral	30	22.9
		Agree	37	28.2
		Strongly Agree	7	5.3
		Total	131	100
4	There is adequate readiness to overcome Shortage of cash to material purchase.	Strongly disagree	25	19.1
		Disagree	33	25.2
		Neutral	28	21.4
		Agree	41	31.3
		Strongly Agree	4	3.1
		Total	131	100
5	There is sufficient budget source for material procurement to the project.	Strongly disagree	12	9.2
		Disagree	51	38.9
		Neutral	26	19.8
		Agree	34	26.0
		Strongly Agree	8	6.1
		Total	131	100
6	The project's financial management capacity keeps	Strongly disagree	12	9.2
		Disagree	41	31.3

	material flow consistency in the project.	Neutral	37	28.2
		Agree	32	24.4
		Strongly Agree	9	6.9
		Total	131	100
7	There is planned budget for every phase 0f timely material procurement need of the project up to delivery.	Strongly disagree	18	13.7
		Disagree	42	32.1
		Neutral	24	18.3
		Agree	42	32.1
		Strongly Agree	5	3.8
		Total	131	100

Budget is one of the factor which affects material management of construction of projects. In this study an item to measure its effect was as follows:-

Construction of the project is based on planned budget for material purchasing were replied 53(40.4%) disagree and strongly disagree, 51(38.9%) agree and above, and 27(20.6%) were neutral. This showed budget for materials purchasing were not accomplished as planned budget.

For an item “price increment of construction materials is managed by timely released of budget were replied, 65(50%) disagree and strongly disagree, 41(31.0%) agree and above, 25(19%) were undecided. The result showed that the problem of timely releasing of budget which affects timely procurement of construction material for the projects.

Related with this item for approval of payment certification and timely payment to supplies in order to sustain material flow 57(43.5%) replied strongly disagree and disagree 44(33.6%) agree and above, and 30(22.9%) were neutral. This implies incremental of construction material purchasing cost due to untimely released budget for material purchasing.

There is adequate readiness to overcome shortage of cash to material purchase, item respondents replied, 58(44.3%) strongly disagree and disagree 45(34.4%) agree and strongly agree, and 28(21.4%) were undecided. In related with this for an item “there is sufficient budget source for material procurement to the project, 63(48.1%) replied disagree and strongly disagree, 42(32.1%) agree and above, 26(19.8%) were indifferent. These two items response

indicated how much material management faces cash readiness and budget shortage problem to procure material. Also an answer for an item "there is planned budget for every phase of timely procurement need of the project up to delivery relatively the same magnitude of reply. In sum for all seven items which measure the dependent variable budget the respondents replied 50% and above disagree and strongly disagree for all items which indicated how much budget problem, affects material management of construction projects in the study area as summarized in table 7.

Table 8 Description of Inventory control effect on material management

S/n	Item	Response	Response rate	
			Frequency	Percent
1	There is stock taking of materials regularly in the project in order to update the stock.	Strongly disagree	24	18.3
		Disagree	48	36.6
		Neutral	34	26.0
		Agree	15	11.5
		Strongly Agree	10	7.6
		Total	131	100
2	There is well documented stock accounting or balance recording in the project.	Strongly disagree	13	9.9
		Disagree	49	37.4
		Neutral	26	19.8
		Agree	23	17.6
		Strongly Agree	20	15.3
		Total	131	100
3	Classification of inventory in the store is in a controllable way.	Strongly disagree	16	12.2
		Disagree	47	35.9
		Neutral	23	17.6
		Agree	24	18.3
		Strongly Agree	21	16.0
		Total	131	100
4	Receipt issues, losses and adjustment of material is correctly recorded in the project.	Strongly disagree	18	13.7
		Disagree	42	32.1
		Neutral	32	24.4
		Agree	20	15.3
		Strongly Agree	19	14.5

		Total	131	100
5	There is an authorized body for controlling of inventory.	Strongly disagree	13	9.9
		Disagree	18	13.7
		Neutral	35	26.7
		Agree	38	29.0
		Strongly Agree	27	20.6
		Total	131	100
6	Forman in the construction site regularly verifies the inventory & keeps track of materials used.	Strongly disagree	11	8.4
		Disagree	33	25
		Neutral	30	23
		Agree	40	30.5
		Strongly Agree	17	13
		Total	131	100
7	The risk of construction material shortage can be reduced by holding safety or buffer stock in the project.	Strongly disagree	22	17
		Disagree	42	32
		Neutral	23	17.5
		Agree	35	27
		Strongly Agree	9	6.9
		Total	131	100

Inventory control was one of independent factor for material management, as table 8 showed that 72(55) of the respondents replied disagree and below, 25(19%) were agree and strongly agreed to an item, presence of stock taking of materials regularly to update the stock whereas 34(26%) were undecided. This implied that, absence of regular stock taking in order to update the project's material stock.

To an item, the presence of well documented stock accounting or balance recording in the project were 62(47.5%) replied disagree and strongly disagree and 53(40%) of respondents replied agreed and strongly agreed, whereas 26(19.8%) were indifferent. This indicates that there were no regular balances recording in the projects.

Classification of inventory in the store is in a controllable way was 63(48%) replied disagree and strongly disagree, 45(34%) respondents were replied agree and above, and 23(17.6%) was

undecided. For the item above half population of the study indicated uncontrollable way of storing of construction material in the project.

For an item “Forman in the construction site regular verification and keeping track of materials used was 44(33.5%) replied disagree and strongly disagree, 57(43.5%) were replied agree and strongly agree, 30(23%) were undecided. It indicates verification of the inventory and keeping track of materials used in order to manage the right need in the construction site.

For an item “the risk of construction material shortage can be reduced by holding safety or buffer stock in the project” 60(45%) replied disagree and strongly disagree, 39(33%) said agree and strongly agree, and 32(24%) were indifferent. This implies there was no buffer stock in the project to reduce materials shortage in the projects. Receipt issues, losses and adjustment of material is correctly recorded in the project, 48(29.8%) disagree and strongly disagree, and 61(46.5%) has replied agree & strongly agree, the rest 40(30.5%) were neutral. This implied presence of issuance & losses of materials correctly recording in the project.

For an item authorized body for controlling inventory had replied 63(48%) disagree and strongly disagree, 65(50%) were agreed and strongly agreed the rest 23(18%) undecided. Here as around half of the respondents 63(48%) it implied inventory is not controlled by authorized body in the projects.

Table 9 Description of Qualified personnel effect on material management

S/n	Item	Response	Response rate	
			Frequency	Percent
1	Personnel for material management are qualified in related field.	SDA	47	35.9
		DA	28	21.4
		Neutral	46	35.1
		A	10	7.6
		SA	0	0
		Total	131	100
2	There is continuous training for on material management in the project.	SDA	57	43.5
		DA	37	28.2
		Neutral	28	21.4
		A	9	6.9
		SA	0	0
		Total	100	100
3	There is laid down procedures to employ certified personnel to manage the materials unit.	SDA	50	38.2
		DA	33	25.2
		Neutral	39	29.8
		A	9	6.9
		SA	0	0
		Total	131	100
4	Personnel of material management always update themselves for material management science.	SDA	66	50.4
		DA	37	28.2
		Neutral	24	18.3
		A	4	3.1
		SA	0	0
		Total	131	100
5	There is well prepared and documentation system, on recruitment and selection activity at the construction project.	SDA	47	35.9
		DA	31	23.7
		Neutral	41	31.3
		A	12	9.2
		SA	0	0
		Total	131	100
6	The project staff members have very good awareness in material management on site.	SDA	41	31.3
		DA	36	27.5
		Neutral	39	37.4
		A	5	3.8
		SA	0	0
		Total	131	100
7	The present material inspection & control staff of the project are well equipped in material management technique.	SDA	46	35.1
		DA	31	23.7
		Neutral	50	38.2
		A	4	3.1
		SA	0	0
		Total	131	100

As shown in the table 9 for an item personnel for material management are qualified in related field, 75(57.2%) disagree and strongly disagree, only 10(7.6%) disagree and 46(35.1%) were undecided. This indicated that the majority of personnel of material management are not qualified from related fields. So it has effect on for better material management of construction projects.

For an item “there is continuous training on material management in the project, 94(71.7%) were replied disagree and strongly disagree, only 9(6.9%) agree, and 28(21.4%) were indifferent. Related with this for an item “personnel of material management always update themselves for material management science 103(78.6%) were disagree and strongly disagree, only 4(3%) agree, and 24(18.3%) were undecided. The replay of these two items showed that there is no of training and refreshing on material management skill in all construction projects. So it can increase inefficient way of material management at construction projects.

For an item “there is laid down procedure to employ certified personnel to manage the material unit”, 83(63.4%) were disagree and strongly disagree, only 9(6.8%) agree, 39(29.8%) respondents were undecided. In related with this 78(60%) disagree and strongly disagree, only 12(9.19%) agree and 41(31.3%) were undecided for the presence of well-prepared documentation system on recruitment and selection activity for the project. The replay for these two items showed that there were no clearway of recruitment and selection of their employees.

For project staff members possession of good awareness in material management on site 77(58.7%) replied disagree and strongly disagree only 5(3.8%) agree and 40(47.4%) were neutral. In relation to this 77(58.7%) disagree and strongly disagree, only 4(3%) agree and 50(38.2%) were undecided on item “The present material inspection and control staff of the project are well equipped in material management technique”. From the replay of these two items the staff and material inspection and control team has lack of awareness on material management technique.

Table 10 Description of Construction facility (equipment & warehouse)effect on material management

S/n	Item	Response	Response rate	
			Frequency	Percent
1	The project has appropriate working equipment, tools and machines.	Strongly disagree	17	13.0
		Disagree	37	28.2
		Neutral	19	14.5
		Agree	42	32.1
		Strongly Agree	16	12.2
		Total	131	100
2	The cost of hiring some of the equipment and machines are relatively cheaper.	Strongly disagree	23	17.6
		Disagree	44	33.6
		Neutral	33	25.2
		Agree	25	19.1
		Strongly Agree	6	4.6
		Total	131	100
3	There is accessible storage of construction materials to the project.	Strongly disagree	11	8.4
		Disagree	31	23.7
		Neutral	24	18.3
		Agree	55	42.8
		Strongly Agree	10	7.6
		Total	131	100
4	There is adequate storage or ware house for material to the project.	Strongly disagree	10	7.6
		Disagree	35	26.7
		Neutral	27	20.6
		Agree	47	35.9
		Strongly Agree	12	9.2
		Total	131	100
5	Protection of construction materials from depreciation & other things due to weather & human factors is well managed in the project.	Strongly disagree	9	6.9
		Disagree	38	29.0
		Neutral	27	20.6
		Agree	45	34.4
		Strongly Agree	12	9.2
		Total	131	100
6	Material handling & facilitation of the project is well	Strongly disagree	8	6.1

	managed.	Disagree	40	30.5
		Neutral	28	21.4
		Agree	49	37.4
		Strongly Agree	6	4.6
		Total	131	100
7	The project has convenient material transportation equipment.	Strongly disagree	14	10.7
		Disagree	33	25.2
		Neutral	32	24.4
		Agree	40	30.5
		Strongly Agree	12	9.2
		Total	131	100

From the table 10 for an item "the project has appropriate working equipment, tools and machine", the respondents replied 57(43.5%) disagree and strongly disagree, 58(44%) agree and strongly agree, and 19(14.5%) were indifferent. Also for an item "The cost of hiring of the equipment and machine are relatively cheaper" they replied 67(51.1%) disagree and strongly disagree, 31(23.6%) agree and strongly disagree, and 33% were indifferent. This implied that hiring machine being costly and certain projects has the problem of machines and equipment.

For an item "there is accessible storage of construction material to the project", 42(32%) replied disagree and strongly disagree, 65(49.6) agree and strongly disagree and 24(18.3%) were undecided. In related with this for an item presence of adequate storage or warehouse for material, 45(34.2%) replied disagree and strongly disagree, 59(45%) agree and strongly agree, and 27(20.6%) were neutral. The replay was indicated that in average presence of accessible and adequate storage of materials for the project.

To material handling and facilitation of the project is well managed question/item/ 48(36.6%) replied disagree and strongly disagree, 55(41.9%) agree and strongly agree, and 28(21.4%) were undecided. In addition to this for an item possession convenient material transportation equipment 47(35.9%) replied disagree and strongly disagree, 52(39.7%) agree and strongly agree, and 32(24.4%) were undecided. Even if majority of them replied agree and strongly agree for both items, too many respondents reply indicated problem of material handling&

facilitation and inconvenient transportation access in the project which affect material management of construction projects in the study area.

4.3 Correlation Matrix

Table 11 Correlation Matrix

Correlations								
		Material management	Availability of materials	Purchasing.	Inventory control	Qualified personnel	Construction facility	Budget
Material management	Pearson Correlation	1	.495**	.650**	.619**	.591**	.620**	.482**
	Sig. (2-tailed)		.000	.000	.000	.000	.000	.000
Availability of materials	Pearson Correlation	.495**	1	.648**	.536**	.521**	.591**	.441**
	Sig. (2-tailed)	.000		.000	.000	.000	.000	.000
Purchasing.	Pearson Correlation	.650**	.648**	1	.722**	.722**	.710**	.443**
	Sig. (2-tailed)	.000	.000		.000	.000	.000	.000
Inventory control	Pearson Correlation	.619**	.536**	.722**	1	.764**	.687**	.428**
	Sig. (2-tailed)	.000	.000	.000		.000	.000	.000
Qualified personnel	Pearson Correlation	.591**	.521**	.722**	.764**	1	.792**	.481**
	Sig. (2-tailed)	.000	.000	.000	.000		.000	.000
Qualified personnel	Pearson Correlation	.620**	.591**	.710**	.687**	.792**	1	.527**
	Sig. (2-tailed)	.000	.000	.000	.000	.000		.000
Budget	Pearson Correlation	.482**	.441**	.443**	.428**	.481**	.527**	1
	Sig. (2-tailed)	.000	.000	.000	.000	.000	.000	
	N	131	131	131	131	131	131	131
**. Correlation is significant at the 0.01 level (2-tailed).								

As the above Pearson correlation table11 showed purchasing & material management had positive and significant relationship (r =0.650, p < 001), Inventory control and material management (r= 0.619, p < 0.001) and budget with material management (r=0.482, p< 0.001) significant at 1% level of significance. And this implied that at a 1% level of significance it

was discovered that the purchasing ,inventory control and budget factors plays a significant role in material management of construction projects at Gurage zone in Wolkite town.

4.4 Result of Regression Analysis

Table12Model summary

Model Summary[b]				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.717[a]	.514	.491	.56893
a. Predictors: (Constant), Budget, Inventory control, availability of materials, Construction facility, purchasing , qualified personnel				
b. Dependent Variable: material management				

The above table12 shows that correlation of the six independent variables with the dependent variable material management, R value is 0.717 and $R^2$is 0.514. The variance in respondents' perception of material management practice was tested for six predictor variables among them the dependent variable explained by three variables, purchasing, inventory control and Budget, while 48.6% of variation in construction material of construction projects can be attributed to other variables which are not considered in this study.

Table 13 Model fitness test

ANOVA[a]						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	42.502	6	7.084	21.885	.000[b]
	Residual	40.137	124	.324		
	Total	82.639	130			
a. Dependent Variable: Material Management						
b. Predictors: (Constant), Budget, Inventory control, Availability of materials, Construction facility (equipment& warehouse), Purchasing and Qualified personnel.						

The above table 13 shows Model fitness result of linear Regression's ANOVA, which the model is significant at 5% level indicated by P value less than 0.001.

Table 14 Result of Linear Regression

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.554	.235		2.355	.020
	Availability	.020	.087	.019	.225	.822
	purchasing	.253	.094	.295	2.707	.008
	Budget	.168	.077	.165	2.187	.031
	Inventory	.171	.084	.216	2.044	.043
	Qualified personnel	-.013	.105	-.015	-.123	.902
	Construction facility	.154	.100	.176	1.541	.126
a. Dependent Variable: Mmgt = Material management.						

As the above table 14the result of regression analysis showed from six independent variables which are Availability of materials, purchasing, Inventory control, Budget, Qualified personnel and Construction facility three of them have positive and statistically significant relationship with material management practice of construction projects. As can be seen from the result provided in the model summery table above that R-square was 0.514. These three independent variables explain 51.4% ($R^2 = 0.514$) of variation in overall material management practice. This indicates that there is other variable which influences material management practice of construction projects in Gurage Zone Wolkite town. The relationship of purchasing with material management is positive and statistically significant ($p < 0.01$). The relationship of inventory control is positive and statistically significant ($p< 0.1$) with material management. And the relationship of Budget with material management is positive and statistically significant ($p< 0.1$).

In addition to this regression analysis highlighted the priority areas of material management and revealed that not all the variables contribute equally to the material management practice of construction projects in Wolkite town. The study indicated that among the various independent factors, purchasing is the first with the largest β value of 0.3 followed by inventory control with β value of 0.2and budget with β value of 0.2. Therefore, the higher material management practice the most important variable, purchasing may be helpful in providing enhanced material management practice for construction projects while inventory control and budget had the next level of importance next to that of purchasing for the material management practice in this study.

Y = 0.5+0.3pu 0.2inv+ 0.2bug

This result consistent with (Obioojuru, 2007) Calculated t = 7.388, while tabulated t value at 5% level of significance is 2.015. Since t calculated = 7.388 > t (0.5, 5) = 2.015, by rejecting null hypothesis by accepting alternative hypothesis he conclude that "Inventory Build-up" has a significant effect on the "Success Level in Achieving Effective Materials Management". Similarly a study by (K.Harish, 2014) concluded frequently occurred problem is surplus or missing of the materials. To avoid this, inventory should be managed with care.

Contractor-related problems, material related problems, and owners' budget/financial constraints/ related problems were the three main factors for delay & cost overrun in the construction projects of private residential projects in Kuwait (Kang, 2018). Similarly A study by Nasir (2013), as cited by (Gurmu, 2018) stated materials purchasing procedure was found to be one of the significant practices for increasing the productivity of infrastructure projects in the US.

A research conducted in Nigeria Ondo state by (Festus, 20216) showed that that purchasing of materials, material planning method and transportation of materials are the most common practices of materials Management. The most severe problem militating against materials management was lack of proper work planning and scheduling while other problems include inadequate cash flow to contractors due to delayed payments, burglary, theft and vandalism.

CHAPTER FIVE

CONCLUTION AND RECCOMENDATION

5.1 Summary of findings

Material management needs transformation to improve over all handling way of construction materials for better efficiency and effectiveness of construction projects. The poor way of material management of construction projects affect all construction parties in terms of budget, time, profit and quality etc.

The descriptive analysis part of the research has been done by frequency distribution and respondent's percentage.

Based on the overall mean category for likert scale data as Zaidaton & Bagheri (2009) for 10 items to compute material management at construction projects, 69(52.7%) respondents were replied disagree & strongly disagree, 35(26.7%) were agree and strongly agree and the rest 27 (20.6%) were indifferent perception .According to respondents perception the result indicated that, the presence of material management problem at all construction projects in Gurage Zone in Wolkite town.

Based on frequency distribution analysis among six independent variables response given to purchasing were for majority items disagree and strongly disagrees, for inventory control and budget the majority respondents replied, disagree and strongly disagree, which showed that there were a problem in purchasing procedure inventory control and budget of project in all construction projects in Wolkite town.

The regression result showed that among six independent variables purchasing, inventory control and budget had significant effect on material management of construction projects in the study area.

The study had found multiple linear regression analysis models for construction projects by beta value Y = 0.5+0.3pu 0.2inv+ 0.2budg.

The Linear regression result was in line with the descriptive analysis result of purchasing, inventory control and budget.

5.2 Conclusion

The study was conducted on one asphalt road, one street light project and on 11 different uses building projects which includes Wolkite General Hospital building project. The data collected were analysed in frequency distribution analysis and multiple linear regression analysis were used to explain the relationship of explanatory variables which affect the material management practice of construction projects in Wolkite town.

- ✓ For material management there were 10 items to measure by five point likert scale data analysed result showed out of 131 respondents 69(52.7%) replied disagree & strongly disagree, 35(26.7%) were agreed & strongly disagree and the rest 27(20.6%) were indifferent. This perception of respondents indicated that existence of material management problem at all construction projects in the study area.
- ✓ For purchasing factor the majority respondents replied disagrees and strongly disagree for majority items to measure it. So they were indicated the seriousness of the problem at all projects. For inventory control respondents reply were disagree and strongly disagree for majority items to measure it at all construction projects. Similarly for budget response items again also the majority percentage of respondents replied disagree and strongly disagree for all items to measure it as shown summery of table 7 above, which indicated budget related problems to address material request at all construction projects.
- ✓ From the result of Linear Regression Analysis, purchasing procedure from the bid up to material kept in the store, budget readiness for material procurement and inventory control (stock of materials in the store) have strong relationship with material management practice in the projects.
- ✓ This is supported by (R) of 0.72 result of model summery. The higher value of R implies the independent factors of the study jointly have higher positive effect for better material management for construction projects.
- ✓ The coefficient of R^2 0.514 implies that 51.4% success for material management practice is explained by total purchasing procedure of material, budget allocation &

readiness and inventory control in the construction projects, which is in line with the above descriptive analysis result for significant explanatory variables.

- ✓ The study had found multiple linear regression models for construction projects by beta value:

Y = 0.5+0.3pu 0.2inv+ 0.2bugfor every a unit increase in purchase; Inventory control and budget(independent variable) Y or material management also increase by 0.3, 0.2 and 0.2 amount respectively. By this multiple linear equation it can be determine the value of Y, or the amount of material needed when the value of explanatory variables purchase, inventory control and budget are known.

- ✓ When there is better material management with in a construction project it increases the construction party's benefit in terms of time, quality, and satisfaction and profit etc.

5.2 Recommendation

Based on the above analysis and conclusion the following recommendations were given for better material management at construction projects.

- For contractors when there is higher ability in material management it would help to determine the optimum quantity of construction material and equipment for a given project in order to achieve maximum profit. In the case of client it reduces cost increment and it can be finished within a given working days and it can available for intended use as programmed. Similarly for consultants, in our case Gurage Zone Urban Development & Construction Department higher officials & experts increase their institutional performance & decrease abandonment of construction projects throughout the year. Therefore three of them have to be responsive for their individual responsibility for better material management at construction projects.
- From explanatory variables purchasing have the highest significant level among others, due to this from the bid, to buy material up to the material reaches to construction store has to be managed well.
- Budget which is needed for material management procurement has to be timely decided & allocated. The consultancy party or Urban Development & Construction Department has to be responsive to timely payment certificate preparation to enhance material procurement of the project.
- Inventory control which intends about accumulating sufficient stock of construction material by doing regular stock taking to up-to-date stock in order to minimize holding cost, stocking cost and acquisition cost etc.
- Store managers should have up to date their technical conceptual skill to be equipped in managing inventory control.
- Availability of road infrastructure from project site to material production area has to be convenient for transportation.

5.3 Related Areas for further investigation can

Material management is currently burning issue at private and government organizations. So related areas for further investigation each explanatory variable in this study can be studied in dependently at local and as national level in order to examine their level of effect independently on material management of construction projects.

References

DR. Kevin Aku Okorocha . (Volume 2, Issue 4- ISSN). FACTORS AFFECTING EFFECTIVE MATERIALS MANAGEMENT IN BUILDING CONSTRUCTION PROJECTS- A CASE STUDY OF SELECTED BUILDING SITES,IN IMO STATE, NIGERIA. . *International Journal of Management Sciences and Business Research* , 59.

Cosmas Obioojuru . (2007). *STUDY OF THE EFFECTIVENESS OF MATERIALS MANAGEMENT IN THE CONSTRUCTION INDUTRY.* NIGERIA IMO State: Master Research for project managment.

Nesru Sirani. (june 2019). *The causes & effect of Delay of Building construction In Gurage Zone Welkite town.* JIGJIGA.

Abdu, D. (2015). *Assessment of Performance Measures for Material Management Process on Building Projects in Addis Ababa.* Addis Abeba.

Aditya A. Pande & S .Sabihuddin. (2015). Study of Material Management Techniques on Construction Project. *International Journal of Informative & Futuristic Research (IJIFR)* , 3479-3480.

Ahmed, Z. (2017). *THE IMPACT OF MATERIAL MANAGEMENT ON CONSTRUCTION PROJECT DELIVERY IN MALDIVES.* Maldive.

AHMED, ZAHA. (2017). *THE IMPACT OF MATERIAL MANAGEMENT ON CONSTRUCTION PROJECT DELIVERY IN MALDIVES.* Maldive.

Akinradewo, B. T. (2016). Assessment of materials management on building projects in Ondo State, Nigeria. *World Scientific News* , 170.

Akinradewo, B. T. (2016). Assessment of materials management on building projects in Ondo State, Nigeria. *World Scientific News* , 171-172.

Andualem Getnet . (2017). *ASSESSMENT OF CONSTRUCTION MATERIAL MANAGEMENT IN ADDIS ABABA HOUSING CONSTRUCTION PROJECT OFFICE.* Addis Abeba.

Anwaredin Elias. (2019). *Factors affecting performance of small and medium enterprises in Butajira & Wolkite town.* Wolkite: unpublished.

Argaw Gurmu, P. (2018). Tools for Measuring Construction Materials Management Practices and Predicting Labor Productivity in Multistory Building Projects. *Journal of Construction Engineering and Management ·* , 5-6.

Arnold, J. R. (2008). *Introduction to Materials Management 6th Edittion.* Columbus, Ohio: Printed in the United States of America.

Asienga, E. (2005). *Materials Management on Construction Projects.* Nairobi.

Bamidele Temitope et.al. (20216). Assessment of materials management on building projects in Ondo State, Nigeria . *World Scientific News* , 01.

Cosmas Obioojuru. (2007). *STUDY OF THE EFFECTIVENESS OF MATERIALS MANAGEMENT IN THE CONSTRUCTION INDUSTRY.* NAIGRIA IMO State: Master Research for project managment.

Dawd Abdu . (2015). *Assessment of Performance Measures for Material Management Process on Building Projects in Addis Ababa .* Addis Abeba.

Donyavi, S. (2009). THE IMPACT OF EFFECTIVE MATERIAL MANAGEMENT ON CONSTRUCTION SITEPERFORMANCE FOR SMALL AND MEDIUM SIZEDCONSTRUCTION ENTERPRISES. *Association of researchers in costruction managment* , 11.

Dr.C.Venkatasubramanian . (2017). Factors Affecting material managment in construction Industry. *International Journal of Civil Engineering and Technology* , 879.

Dr.C.Venkatasubramanian. (2017). Factors Affecting material managment in construction Industry. *International Journal of Civil Engineering and Technology* , 879.

EBOLE, A. J. (2005). *MATERIALS MANAGEMENT ON CONSTRUCTION PROJECTS: A CASE STUDY OF CONCRETING WORKS ON SITES IN NAIROBI.* NAIROBI.

Eyad Abed Elqadir, T. K. (2017). *Material Managment 3 Research Reports.* Gazza & Addis Abeba.

Festus, B. T. (20216). Assessment of materials management on building projects in Ondo State, Nigeria. *World Scientific News* , 01.

Frederick Kangala . (2016). FACTORS THAT AFFECT FINANCIAL PERFORMANCE OF SMALL AND MEDIUM ENTERPRISES IN KENYA. 2.

G.S.MADDALA. (1992). *Introduction to Econometrics.* New York: MACMILAN PUBLISHING.

Getnet, A. (2017). *ASSESSMENT OF CONSTRUCTION MATERIAL MANAGEMENT IN ADDIS ABABA HOUSING CONSTRUCTION PROJECT OFFICE.* Addis Abeba: unpublished.

Gurage zone 2010 repoert. (2010 E C.). *2 010 Abstruct.* Welkitte: Un published.

Gurmu, D. A. (2018). Tools for Measuring Construction Materials Management Practices and Predicting Labor Productivity in Multistory Building Projects. *Journal of Construction Engineering and Management ·* , 5-6.

J.R. Tony Arnold, S. N. (2012). *Introduction to Material managment.* Edwards Brothers.

K.Harish. (2014). A STUDY OF MATERIALS MANAGEMENT IN EXISTING CONSTRUCTIONS . *GLOBAL JOURNAL OF ENGINEERING SCIENCE AND RESEARCHES* , (24-27).

Kang, H. K. (2018). Improving Project Budget Estimation Accuracy and Precision by Analyzing Reserves for Both Identified and Unidentified Risks. *Project Management Journal* , 3.

Kasim, N. (CIBW 107). IMPROMNG MATERIALS MANAGEMENT PRACTICES IN CONSTRUCTION PROJECTS. *InternotionuiSynrposium in Developing Economieics* , 358.

Keitany, P. J. (2014). ASSESSMENT OF THE ROLE OF MATERIALS MANAGEMENT ON ORGANIZATIONAL PERFORMANCE. *ORGANIZATIONAL PERFORMANCE* , 1.

Ministry of Urban Development and costruction. (2012, Julay). CONSTRUCTION INDUSTRY POLICY (First Draft) . Addis Abeba, Addis Abeba, Ethiopia.

NANN LWIN PHU1 , et al. (May,2014). Factors Affecting Material Management in Building Construction Projects. *International Jornal of Scientific Engineering and Technology Research* , 1-2.

Napoleon Kuebutornye D.K., E. A. (2018). Effects Of Material Management Techniques On Construction Project Success. *INTERNATIONAL JOURNAL OF SCIENTIFIC & TECHNOLOGY RESEARCH VOLUME 7, ISSUE 5* , 183.

Nesru Sirani. (June,2019). *The cause and effect of delay of Buildig construction projects in Wolkite Town.* Jigjija.

Okorocha, D. K. (Volume 2). FACTORS AFFECTING EFFECTIVE MATERIALS MANAGEMENT IN BUILDING CONSTRUCTION PROJECTS- A CASE STUDY OF SELECTED BUILDING SITES,IN IMO STATE, NIGERIA. *International Journal of Management Sciences and Business Research* , 59.

Pauline JerutoKeitany et.el. (2014). Assessment of the role of Materials Management on organizational performance. *European Journal of Material Sciences* , 1.

Prof. Chetna M. Vyas, e. a. (2011). CONSTRUCTION MATERIALS MANAGEMENT ON PROJECT SITES. *National Conference on Recent Trends in Engineering & Technology*, (p. 1). Gujarat, India.

R Kokila1, A. R. (2018). AN ASSESSMENT OF ROLE OF MATERIAL MANAGEMENT IN CONSTRUCTION PROJECTS. *International Research Journal of Engineering and Technology (IRJET)* , 1049.

Sabihuddin, A. A. (2015). Study of Material Management Techniques on Construction Project. *International Journal of Informative & Futuristic Research (IJIFR)* , 3479.

Sekaran, U. (2003). *RESEARCH METHODS FOR BUSINESS 4th Edition.* Southern Illinois University at Carbondale: Printed in the United States of America.

Sohrab Donyavi. (Semptember 2009). THE IMPACT OF EFFECTIVE MATERIAL MANAGEMENT ON CONSTRUCTION SITEPERFORMANCE FOR SMALL AND MEDIUM SIZEDCONSTRUCTION ENTERPRISES. *Association of researchers in costruction managment* , 11.

Tadesse. (2016). Assment on performance & challenge of Ethiopian construction Industry. *Jornal of Arechtectural civil Enginering* , page 1.

TAYE, K. (2017). *EFFECT OF EMPLOYEES' PERCEPTION OF PERFORMANCE APPRAISAL ON JOB SATISFACTION.* Addis Abeba.

Turn™, S. (2014). *Inventory and Warehouse Management Best Practices 1st edittion.* San Francisco: DiCentral, Inc.

Urban Development & construction Department. (Hidar 2012 E.C). *Annual Plan.* Welkite.

Urban & construction Department. (Sene 2011 E.c). *Annual Report.* Wolkite.

ZAHA AHMED . (2017). *THE IMPACT OF MATERIAL MANAGEMENT ON CONSTRUCTION PROJECTS.* MALDIVES.

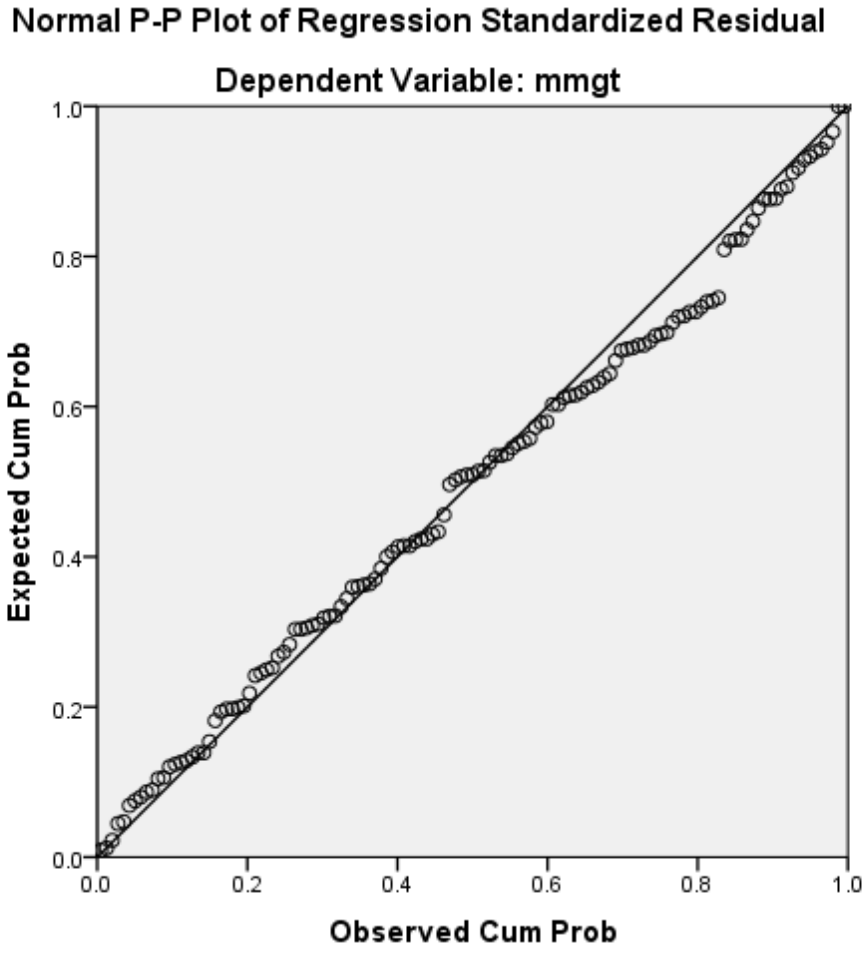
Zairra Mat ,Jusoh, et al. (2017). INFLUENTIAL FACTORS AFFECTING MATERIALS MANAGEMENT IN CONSTRUCTION PROJECTS. *Management and Production Engineering Review* , 82 & 84.

Zairra Mat, M. ,. (2018). INFLUENTIAL FACTORS AFFECTING MATERIALS MANAGEMENT IN CONSTRUCTION PROJECTS. *International Journal of Sustainable Construction Engineering & Technology* , 45.

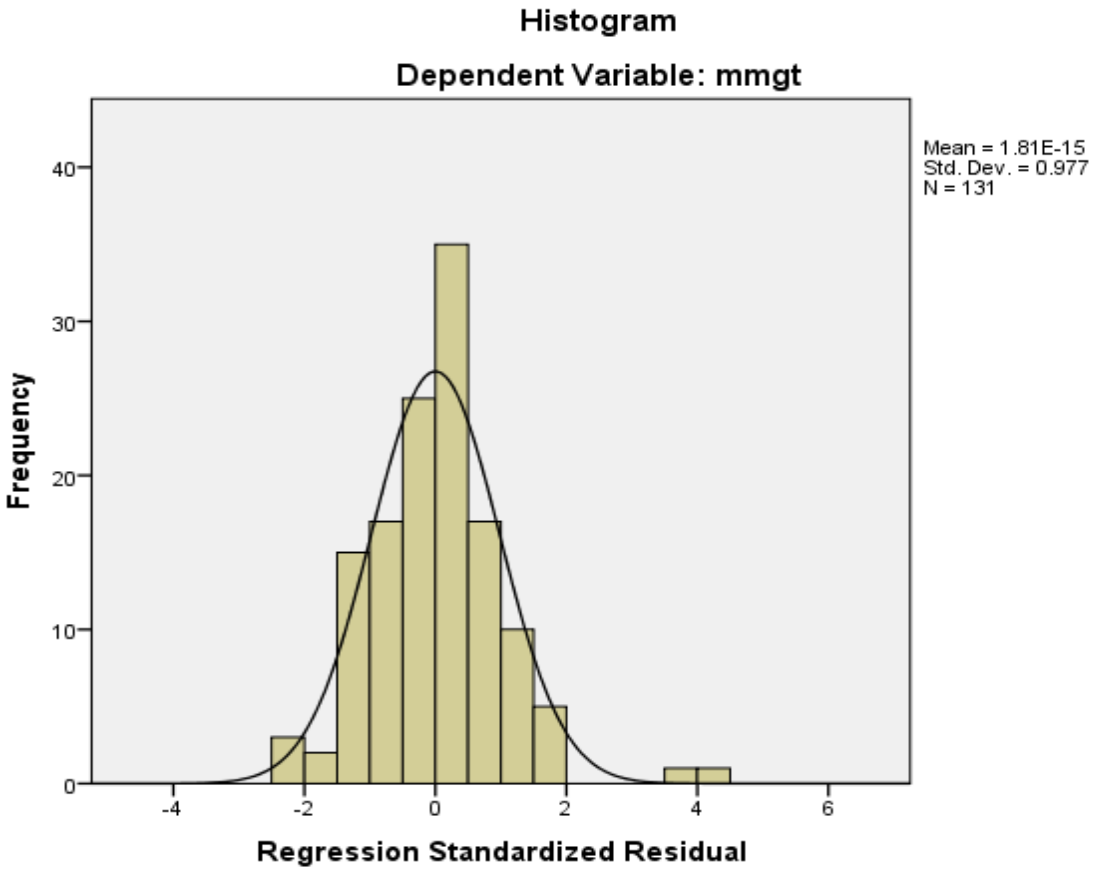
Zairra Mat, M. ,. (Dec. 2018). INFLUENTIAL FACTORS AFFECTING MATERIALS MANAGEMENT IN CONSTRUCTION PROJECTS. *International Journal of Sustainable Construction Engineering & Technology* , 45.

APPENDICES

I. Appendix figure



II. Appendix figures



III. Gurage Zone 3 Years consecutive capital budget

Year	Zonal capital budget	Construction share	%
2010	403680984	234134970	57.99
2011	532858898.9	319715339.3	60.00
2012	551198209	348580351.4	63.24

Source Gurage Zone finance & Economy Development 2010,2011 & 2012 E.C Reports

IV. Summary of reliability test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.554	.235		2.355	.020		
	Availability of	.020	.087	.019	.225	.822	.527	1.897
	purchasing	.253	.094	.295	2.707	.008	.331	3.023
	Inventory	.171	.084	.216	2.044	.043	.351	2.851
	Qualified p	-.013	.105	-.015	-.123	.902	.269	3.721
	Constructio n facility	.154	.100	.176	1.541	.126	.302	3.315
	Budget	.168	.077	.165	2.187	.031	.689	1.452

a. Dependent Variable: Material management

V. **Model Summary[b]**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.717[a]	.514	.491	.56893

a. Predictors: (Constant), Budget, Inventory, availability, Construction facility, purchasing, qualified personnel

b. Dependent Variable: Material Management

VI. **ANOVA[a]**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	42.502	6	7.084	21.885	.000[b]
	Residual	40.137	124	.324		
	Total	82.639	130			

a. Dependent Variable: Material management

b. Predictors: (Constant), Budget, Inventory, availability, Construction facility, purchasing, qualified personnel

: Material management category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	69	52.7	52.7	52.7
	2.00	27	20.6	20.6	20.6
	3.00	35	26.7	26.7	26.7
	Total	131	100.0	100.0	100

VII. Appendix Questionnaire (English version)

WOLKITE UNIVERSITY

SCHOOL OF GRADUATE STUDIES

COLLEGE OF BUSINESS AND ECONOMICS

DEPARTMENT OF MANAGEMENT

This is a questionnaire on **Factors affecting material management of construction projects in Gurage zone Wolkite town.** The study is required for the partial fulfilment of Master's degree in Business Administration. Dear respondents, you are expected to provide genuine, and reliable information with respect to material management practice of construction projects in Gurage Zone which are building in the Wolkite town .Your genuine information is highly critical for the success of this study. Therefore, the researcher assures you that the information you provide is very confidential and only serves for academic purpose. There is no right or wrong answer. If you are unsure of an answer, please respond with your best estimate. I value your participation and thank you for the commitment of time, energy and effort. If you have any further question, I can be reached at the address given below.

- There is no need of writing your name.
- Please tick (√) in the appropriate boxes for general questions and mark the extent to which you agree or disagree that the statements describe the factors that can improve performance in the construction projects through effective materials management functions. In the 5–points scale provided, mark a cross (√) at the point that represents your felling.
- Strongly Disagree = 1
- Disagree = 2
- Undecided/Neutral = 3
- Agree = 4
- Strongly Agree = 5

In cause you need clarification use

Sufiyan Mudesir.Mobile: 0911 31 89 13Email:ebinutariq@gmail.com

Part one General Information.

1. Gender Male ☐ Female ☐
2. Occupation , Design and control ☐ Quality control ☐ Regulatory ☐

Higher official ☐ planning & follow-up officer ☐ purchaser ☐

Others, Contractor ☐ Workman ship ☐ client ☐ Store /warehouse manager ☐

3. Experience, 0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ Above 20 ☐

4. Education level: - Below certificate ☐ Certificate ☐ Diploma ☐ BSC/BA ☐ MSC/A ☐

Part two. Items related to Material Management.

Here in the 5–points scale provided, mark a cross (√) at the point that represents your felling.

	Material Management Practice	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
		1	2	3	4	5
1	Local and industry materials are easily accessible in the market to the project construction.					
2	Bulk purchase of material in order to maximum savings in materials cost in the project is always possible.					
3	Required materials are always delivered on the time intended to the project.					
4	Responsible & authorized person decide and release budget on time for material procurement for the project.					
5	There is regular inventory control activity for extra safety stock in the construction project.					

6	There are qualified material management personnel in the project.					
7	There is adequate material handling facility in the projects is as desired.					
8	There is adequate ware house/store for material storage to the project.					
9	Materials are Stored in a well-planned and properly designated location.					
10	There is Proper receiving, handling and storage of unused materials in the project.					

Part three: Factors Affecting Materials Management practice of construction Projects.

3.1 Availability of materials		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
		1	2	3	4	5
1	Local construction materials are available at your construction project adequately.					
2	Accessibility of road infrastructure from project site to local material production site is safe.					
3	Local construction materials are easily affordable to the project.					
4	Industry produced materials to the project are accessible.					
5	Materials to the project are acquired With well consideration of stock and waste.					
6	Determination of what & when materials are needed in the project is tried to be well accurate.					
7	There is better information sharing between material supplier & authorized person of the project.					
3.2	**Purchasing of materials**	Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
		1	2	3	4	5

1	There is timely procurement of local and industry material for the project.					
2	Procurement of material is based on clear specification					
3	Always Appropriate quality of materials & equipment are purchased for the project.					
4	Construction materials are purchased at reasonable price to the project.					
5	Material receiving and verification is safely handled in the project.					
6	Materials and equipment are purchased to the project from legal &certified sources to construction project.					
7	There is adequate amount of material purchasing & continuous supply without any interruption to the project building.					
3.3Budget		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
		1	2	3	4	5
1	Building of the project is based on planned budget for material purchasing.					
2	Price increment of construction materials is managed by timely released of budget.					
3	Approval of payment certificate and timely payment to suppliers in order to sustain material flow.					
4	There is adequate readiness to overcome Shortage of cash to material purchase.					
5	There is sufficient budget source for material procurement to the project.					
6	The project's financial management capacity keeps material flow consistency in the project.					
7	There is planned budget for every phase 0f timely material procurement need of the project up to delivery.					
3.4 Inventory control		Strongly Disagree	Disagree	Neutral	Agree	Strongly agr

						ee
		1	2	3	4	5
1	There is stock taking of materials regularly in the project in order to update the stock.					
2	There is well documented stock accounting or balance recording in the project.					
3	Classification of inventory in the store is in a controllable way.					
4	Receipt, issues, losses and adjustment of material is correctly recorded in the project.					
5	There is an authorized body for controlling of inventory.					
6	Forman in the construction site regularly verifies the inventory & keeps track of materials used.					
7	The risk of construction material shortage can be reduced by holding safety or buffer stock in the project.					
3.5Qualified Personnel		Strongly Disagree	Disagree	Neutral	Agree	Strongly agree
		1	2	3	4	5
1	Personnel for material management are qualified in related field.					
2	There is continuous training for on material management in the project.					
3	There is laid down procedures to employ certified personnel t o manage the materials unit.					
4	Personnel of material management always update themselves for material management science.					
5	There is well prepared and documentation system, on Recruitment & selection activity at the construction project.					
6	The project staff members have very good awareness in material management on site.					
7	The present material inspection & control staff of the project are well equipped in material management technique.					
3.6Construction facility (equipment & warehouse)		Strongly Disagr	Disagree	Neutra	Agree	Strongly

		ee		l		agr ee
		1	2	3	4	5
1	The project has appropriate working equipment, tools and machines.					
2	The cost of hiring some of the equipment and machines are relatively cheaper.					
3	There is accessible storage of construction materials to the project.					
4	There is adequate storage or ware house for material to the project.					
5	Protection of construction materials from depreciation & other things due to weather & human factors is well managed in the project.					
6	Material handling & facilitation of the project is well managed.					
7	The project has convenient material transportation equipment.					

VIII. Appendix Questionnaire (Amharic version)

ወልቂጤ ዩንቨርሲቲ

በቢዝነስና ኢኮኖሚክስ ኮሌጅ

የማናጅመንት ትምህርት ክፍል

የድህረ ምረቃ ፕሮግራም

ይህ መጠይቅ በኮንስትራክሽን የግንባታ ፕሮጀክቶች ላይ Factors affecting material management of construction projectsin Gurage zone Wolkite town ተብሎ ለሚሰራዉ ጥናት መረጃ ማሰባሰቢያነዉ። ጥናቱ የሚደረገዉ በቢዝነሰ አድሚኒስትሬሽን ማስተርስ ዲግሪ ሚሚያ ነዉ ። ዉድ መጠይቁን የምትሞሉ አካላት ካላችሁ ልምድ ፤በተግባርሂደት ከተመለከታችሁት እና በዘርፉ ካላችሁ እወቀት በመነሳት በጉራጌ ዞን ወልቂጤ ከተማ በሚሰሩ የግንባታ ፕሮጀክቶች ላይ የግንባታ ቁሳቁስና የግንባታ ዕቃዎች ስራ አመራር ዙሪያ የለዎትን ትክክለኛና ተጨባጭ መረጃ እንዲሞሉ ይጠበቃል ። እርሶ የሚሞሉት ትክክለኛ መረጃ ለጥናቱ ስኬት እጅግ ከፍተኛ አስተዋፆኦ ያለዉ ሲሆን የሚሞሉት የተኛዉም መረጃ ሚስጥራዊነቱ የተጠበቀና ለማንም ለሶስተኛ ወገን ተላልፎ የማይሰጥ ከመሆኑም በላይ አገልግሎቱም በዋናነትለመመረቂያ ፅሁፍ ሚሚያ ብቻ ነዉ።

መጠይቁ የሚሞላዉ በመመሪያዉ መሰረት ብቻ ሲሆን በመጠይቁ ትክክል ነዉ ወይም ትክክል አይደለም ተብሎ የሚሞላ መልስ አይኖርም ፤መጠይቁን በሚሞሉበት ወቅት በሚሞሉት መልስ እርግጠኛ መሆን ካልቻሉ እባክዎትን ተቀራራቢ የሚሆነዉንና የተሻለዉን ግምት መልሰ ይሙሉ ።ወድ በመጠይቁ ተሳታፊ የምትሆኑ አካላት መጠይቁን በወቅቱ ሞልቶ መመለስ ፋይዳዉ ከፍተኛ በመሆኑ የበኩላችሁን እንድታደርጉ እየጠቅኩ መጠይቁን ለመሙላት ለምትከፍሉት ጊዜ ፤ጉልበትና መሰጠት ከልብ የመነጨ እጅግ ከፍተኛ የሆነ ምስጋና አቀርባለሁ። መጠይቁን ሲሞሉ የተኛዉንም ግልፅ ያልሆነሎትና ሊረዱ የሚፈልጉት ነገር ካለ ከዚህ በታች ባለዉ የሰልክ አድራሻ ያገኙኛል ።

- ስም መፃፍ አየስፈልግም።

- በክፍል አንድ ስር ለአጠቃላይ መረጃ ለተጠየቁ መጠይቆች ትክክለኛዉን መልስ በተቀመጠዉ ሣጥን ዉስጥ ራይት ምልክት (√) ያድርጉ። እንዲሁም በክፍል 2 ና እና 3 ለተጠየቁ መጠይቆች የስምምነት ደረጃ እስማማለሁ አልስማማም በማለት ትክክለኝ የግንባታ ቁሳቁስና ዕቃዎች ስራ አመራር በግንባታዎች አፈፃፀም ለይ የለዉን አሰተዋፅኦ ደረጃ ለይተዉ ምልክት ያደርጋሉ ። በዚህም መሰረት ከ 1 እስከ 5 በተሰጠዉ የነጥብ ወይም የዉጤት ሰኬል እርሶ በሚስማሙት ነጥብ ስር ራይት ምልክት (√) ያድርጉ ።
  - በጣም አልስማማም ። 1
  - አልስማማም ። 2
  - ለመወሰንእቸገራለሁ (NUTRAL) 3
  - እስማማለሁ ። 4
  - በጠም እስማማለሁ ። 5

ግልፅ እንዲሆንልዎ የሚፈልጉት ነገር ካለበ 0911318913 በኢሜልebinutariq@gmail.comእገኛለሁ ።

ክፍልአንድበመጠይቁተሳታፊአጠቃለይመረጃ

1/ የተሳታፊ (ዋ) ፆታወንድሴት ☐ ☐

2/ የስራ ዘርፍ ዲዛይንናቁጥጥር ☐ ጥራት ቁጥጥር ☐ ግንባታቁጥጥር ☐

የተቋም ኃላፊ ☐ የልማት እቅድና ክትትል ☐ ግዥ ☐

ኮንትራክተር ☐ የግንባታ ሰራተኛ ☐ የግንባታ ባለቤት ☐ ንብረት ክፍል ☐

3/ የስራልምድበአመት 0-5 ☐ 6-10 ☐ 11-15 ☐ 16-20 ☐ ከ20 በላይ ☐

4/ የትምህርት ደረጃ የቀለምትምህርት ☐ ሰርተፊኬት ☐ ዲፕሎማ ☐

ዲግሪ ☐ ማሰተርስ ዲግሪ ☐

ክፍል ሁለት

ከግንባታ ቁሳቁስ የተመለከቱ መጠይቆች ሲሆኑ ከጥያቄዎቹ መነሻ የሚስማሙበት ነጥብ ላይ(√) ምልክት ያኑሩ።

2	**የግንባታ ቁሳቁስ አመራር ተግበር**	1	2	3	4	5
1	ለፕሮጀክቱ የአካባቢና የፋብሪካ ቁሳቁሶች በገበያ በቀላሉ ማግኘት ይቻላል።					
2	ወጪ ለመቆጠብና የግዥ ዋጋ ለመቀነስ በአንድ ጊዜ ለፕሮጀክቱ ከፍተኛ ግዥ ይፈጽማል።					
3	ለግንባተየሚስፈልጉቁሳቁሶችሁልጊዜበተፈለጉበትወቅትለግንባታዉይቀርባሉ።					
4	የሚመለከተዉ የስራ አመራር ለግንባታ አስፈላጊ የሆነ በጀት በወቅቱ ወስኖ ለግዥ ይፈቅዳል።					
5	በፕሮጀክቱ የግንባታ ቁሳቁስ እጥረት እንዳይገጥም በየወቅቱ የንብረት ቆጠራ በማድረግ አስፈላጊ ግብአቶች እዲሟሉ ይደረጋል ።					
6	ፕሮጀክቱ የሰለጠነ የንብረት ስራ አመራር በለሙያ አለው ።					
7	በፕሮጅክቱ በቂ የሆነ የንብረት አያያዝ ምቹ ሁኔታ በተፈለገው ልክ አለ ።					
8	በፕሮጀክቱ በቂ የንብረት ማከማቻ መጋዘኖች አሉ ።					
9	በፕሮጀክቱ የግንባታ ቁሳቁስ በአይነት በተገቢዉ በታቀደና በተለየላቸው ቦታዎች ይከማቻሉ ።					
10	በፕሮጅክቱ አገልግሎትላይያልዋሉ የግንባታ ቁሳቁሶችና ዕቃዎች ርክብክብ፣ አያያዝ ፣ ክምችትበተገቢውይፈፀማል ።					

ክፍልሶስት

ከግንባታቁሳቁስአመራርላይተፅዕኖየሚፈጥሩነገሮችላይየቀረበመጠይቆችመነሻየሚስማሙበትነ ጥብላይ(√)ምልክት ያኑሩ።

3.1	**የግንባታቁሳቁስመኖር /availability/**	1	2	3	4	5
1	ለፕሮጅክቱየአካባቢየግንባታቁሳቁስበአካባቢውይገኛል።					
2	ከፕሮጅክቱ ግንባታ ቦታ አስከ የግንባታ ቁሳቁስ ማምረቻ ድረስ ምቹ መንገድ አለዉ።					
3	የአካባቢ ግንባታ ቁሳቁሶች ለፕሮጀክቱ በተመጣጣኝ ዋጋ ይገኛሉ ።					
4	የፋብሪካ ቁሳቁሶች ለፕሮጀክቱ ግንባታ በቀላሉ ይገኛሉ ።					
5	በፕሮጀክቱ የግንባታ ቁሳቁሶች በመጋዘን ያለዉንና ብክነት ታሳቢ በማድረግ ይህንኑ ሊያካክስ በሚችል ሁኔታእንዲገቡይደረጋል።					
6	በፕሮጅክቱ ምን አይነት ቁሳቁሶችና መቼ እንደሚያስፈልጉ በትክክል እየተወሰነ ይተገበራል::					
7	በፕሮጅክቱ ተቆጣጣሪ እና ቁሳቁስ አቅራቢ መሃከል ተገቢ የሆነ የመረጃ ልውውጥ አለ ።					
3.2	**የግንባታቁሳቁስግዥሁኔታ**	1	2	3	4	5
1	የአካባቢ እና የፋበሪካ ቁሳቁሶች በወቅቱ ተገዝተው ለፕሮጀክቱ ግንባታ ይቀርባሉ።					
2	የፕሮጀክቱ የግንባታ ቁሳቁሶች ግዢ በስፔሲፊካሽን (specification) መሰረት ይፈጸማል።					
3	ለፕሮጀክቱ ሁልጊዜ ተገቢው ጥራት ያሟሉ የግንባታ ቁሳቁስ እና እቃዎች ተገዝተው ይቀርባሉ።					
4	ለፕሮጀክቱ የግንባታ ቁሳቁሶች በተወዳዳሪ ዋጋ ተገዝተው ይቀርባሉ።					
5	የግንባታ ቁሳቁስ የመረካከብና የማረጋገጥ ስራዎች በሚመለከተዉ አካል በተገቢው ይፈጸማሉ።					
6	የፕሮጀክቱ የግንባታ ቁሳቁሶች ግዢ ከሀገሪዊ አቅራቢዎች ቢቻ ይፈጸማሉ።					
7	ለፕሮጅክቱ ግንባታ በቂ የሆነ ቁሳቁስ የግዥና አቅርቦት ያለምንም መቆራረጥ በተገቢው ይፈጸማል።					
3.3	**በጀት**	1	2	3	4	5

1	የፕሮጀክቱ ግንባታ ለግንባታ ቁሳቁስና ዕቃ በተያዘለት በጀት ይፈጸማል።					
2	የግንባታ ቁሳቁስ ዋጋ ንረት ለመከላከል የግዥ በጀት በወቅቱ ተለቆ እንደገዛ ይደረጋል።					
3	የክፍያ ሰርተፊኬት በወቅቱ በማጽደቅና፣ የአቅራቢ ክፍያ በወቅቱ በመፈጸም የቁሳቁስ አቅርቦት በወቅቱ ይተገበራል።					
4	የቁሳቁስ ግዥ ለመፈፀም የካሽ እጥረት እንዳይገጥም ተገቢው ዝግጅት ይደረጋል።					
5	ለፕሮጅክቱ ግንባታ ቁሳቁስ አቅርቦት በቂ የበጀት ተመድቦ ይፈጸማል።					
6	የፕሮጀክቱ ግዥና ሂሳብ ስራ አመራር አቅም የቁሳቁስ አቅርቦት ሳይቆራረጥ በተገቢው እንዲፈጸም ያደርጋል።					
7	ለፕሮጀክቱ ለየግንባታ ደረጃ (phase)የሚያስፈልጉ የግንባታ ቁሳቁስ አቅርቦት ግዢ በእቅዱ መርሃ ግብር መሰረት በጀት ተይዞ በወቅቱ ፈጸማል።					
3.4	**የንብረትቁጥጥር**	1	2	3	4	5
1	በፕሮጀክቱ በየወቅቱ የንብረት ቆጠራ በማድረግ አስፈላጊ ቁሳቁሶች እንዲሟሉ ይደረጋል።					
2	በፕሮጀክቱ የተደራጀ የንብረት ገቢ ወጪ ምዝገባ ስርዓት አለ።					
3	በፕሮጀክቱ ቁሳቁሶች ለቁጥጥርና ክትትል ሊያመች በሚችል ሁኔታ ይከማቻሉ ።					
4	በፕሮጀክቱ የቁሳቁስ ገቢ ፣ ወጪ፣ ብክነት እናማስተካከያዎች በተገቢው ተመዝግበዉ ይደራጃል።					
5	በፕሮጀክቱ የቁሳቁስ ቁጥጥር በሃላፊነት የሚፈፅም አካል ተመድቦ ይሰራል።					
6	የፕሮጀክቱ ፎርማን (forman)በግንባታ ሳይት በቋሚነት የግንባታ ቁሳቁስ በመቆጣጠር ተግባር ላይ ስለመዋሉ በመከታተልተገቢነቱን ያረጋግጣል።					
7	በፕሮጀክቱ የግንባታ ቁሳቁስ አጥረት ለመከላከል መጠባበቂያ ወይም ወቅታዊ ክምችት በማኖር ይከናወናል።					
3.5	**የሰለጠነየሰውሃይል**	1	2	3	4	5
1	በፕሮጀክቱ የቁሳቁስ አመራርና አስተዳደር በመስኩ በሰለጠነ የሰውሃይል ይመራል።					

2	ፕሮጀክቱ ለሁሉም በለሙያዎች በቁሳቁስ ስራ አመራር ላይ ስልጠና ይሰጣል፡፤					
3	በፕሮጀክቱ ለንብረትቁጥጥርና ክትትል ግልጽ የሰራተኛ ቅጥር ድንብ መሰረት ይፈጸማል።					
4	በፕሮጅክቱ የንብረት ቁጥጥር ክፍል ሰራተኞች በቁሳቁስ አመራር ሳይንስ ወቅተዊ ስልጠናዎች እንዲያገኙ ይደረጋል።					
5	ለፕሮጀክቱ ምልመላና መረጣ ስራ (Recruitment & selection) ተገቢዉ የመረጃና ዶክመንቴሽን ስርአት አለዉ ።					
6	ሁሉም የፕሮጀክቱ ሰራተኞች በቁሳቁስ ስራ አመራር ላይ የተሟላ ግልጸኝነት አላቸው።					
7	አሁን ያሉት የፕሮጀክቱየንብረትቁጥጥርናኢንስፔክሽንባለሙያዎችበቂክህሎትያላቸውናቸው።					
3.6	**የግንባታ እቃዎችና ማከማቻ**	1	2	3	4	5
1	ፕሮጀክቱተገቢየሆኑየግንባታእቃዎችናማሽነሪዎችአሉት።					
2	ለፕሮጀክቱግንባታየሚያስፈልጉእቃዎችናማሽነሪዎችበተመጣጣኝኪራይዋጋይገኛሉ።					
3	ፕሮጀከቱአመቺየሆነ የቁሳቁስ ናንብረት የማከማቻቦታአለው።					
4	ፕሮጀክቱበቂየማከማቻመጋዘንአለው ፡፤					
5	በፕሮጀክቱየግንባታቁሳቁሶችበሰውእናከአየርንበረትለውጥምክንያትእርጅናና ሌብነትእንዳይኖር በተገቢዉ የመከላከልስራዎችይከናወናሉ።					
6	በፕሮጀክቱየቁሳቁስአያያዝናየማመቻቸትስራበተገቢውይመራል ።					
7	ፕሮጀክቱምቹየቁሳቁስ ማንቀሳቀሻና ማገገዣ ማሽነሪዎችአሉት።					