ASSESSMENT OF THE QUALITY OF ROAD CONSTRUCTION PROJECTS CONDUCTED BY TARURA: A CASE OF KINONDONI DISTRICT

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A DESSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PROJECT MANAGEMENT

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CERTIFICATION

The undersigned, certifies that he has read and hereby recommends for acceptance by the Open university of Tanzania, a dissertation entitled: ***Assessment of the Quality of Road Construction Projects Conducted by TARURA: A Case of Kinondoni District"*** in partial fulfillment of the requirements for the degree of Master of Project Management of the Open university of Tanzania.

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Dr. Salvio Macha

(Supervisor)

…….

Date

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DECLARATION

I, **Lilian Boniface Kimzanye,** do hereby declare that this dissertation is my own original work; and that it has not been presented and will not be presented to any other University for a similar or any other degree award.

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Signature

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Date

DEDICATION

I dedicate this work to my parents Mr. and Mrs. Paul Boniface for their reliable parenting and for laying the foundation of my academic abilities.

ACKNOWLEDGEMENT

I am grateful to my God almighty for giving me strength and courage to complete this dissertation. I am thankful to Mr. Salvio Macha my supervisor, who gave me support in the whole process of writing this dissertation. His helpful supervision and ideas enabled me to accomplish this study, and hence achieve my goal.

ABSTRACT

The study aimed at assessing quality of road construction project conducted by TARURA at Kinondoni district in Dar es Salaam region. Specifically the study based on three specific objectives which are; assessing effectives of the strategies used by TARURA in monitoring quality of road, analyzing stakeholder satisfaction on roads constructed by TARURA and identifying the challenges facing TARURA in roads construction project. Case study design was used in the study; also the study used both primary and secondary sources of data collection in collecting the relevant information from TARURA officers and stakeholders from Kinondoni municipality. Methods of data analysis used were qualitative and quantitative data analysis. The qualitative data analysis was analyzed through thematic analysis while quantitative analysis was used to perform the descriptive analysis. From the findings it was revealed that; the strategies used in monitoring quality of the road were highly effective while the stakeholders ware moderately satisfied with the roads constructed by TARURA. And lastly TARURA was faced with moderate challenges in road construction project. The study concluded that quality of road construction project conducted by TARURA in Kinondoni municipality needs improvement. Further the study recommends that TARURA needs to come up with new strategies such as collecting customers opinion before and after road construction so as to identify the missing gape. Lastly the study believes that; there is need of conducting the same research in other areas where TARURA construct roads so as to identify the real quality of the roads constructed.

Keywords: The Quality, Road Construction Projects, in Kinondoni District

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LIST OF ABBREVIATIONS

BCR	Benefit Cost Ratio
CM	Contract Management
IDs	Inherent Difficulties
IRR	Internal Rate of Return
LGA	Local Government Authority
NPV	Net present value
PB	Payback Method
PDCA	Plan-Do-Check-Act Cycle
PORALG	President's Office Regional Administration
PPRA	Public Procurement Regulatory Authority
RTIM	Road Transport Investment Models
TARURA	Tanzania Rural and Urban Roads Agency

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter contains introduction of the study which gives outline the study content, Background of the study, which explains on the situation of the study title. Also the chapter contains Statement of the problem, research objectives and questions, significance of the study, scope of the study, study limitation, and lastly organization of the study.

1.2 Background of the Study

Accessibility of transportation is among the channels that lead to development within the country. People depend on transportation to move from one location to another or to transport their goods from one place to another. Manufacturing industries depend on transportation system to transport their raw material and goods. Rodrigue and Notteboom (2016) asserted that efficient transportation provides economic and social opportunities that lead to positive multiplier effects such as (employment opportunities, market accessibility and investment opportunities).

Gunduz and Yahya (2018) highlighted on the importance of having better transportations a means of transforming countries economy. Developed countries acknowledged the value of having good infrastructure as an instrument of tying up development during their early independence. Countries such as United States, Western Europe and Asia countries are mentioned to have the longest and the largest roads in the world's means of facilitating easy transportation (Lockhart, 2017).

However road construction differs in terms of grades depending on request and type of activities pertaining in that location. Olatunji (2017) supported that quality of road differ depending on the type materials, budget allocation and weight which is supposed to carry. Richardson (2017) mentioned that density and quality of road infrastructure determine country competitiveness for that reason experts in construction need to be involved in figuring out the type of roads to be constructed and the type of materials needed depending on road capacity and traffic flow.

Respicious (2016) clarified that poor road construction leads to early destruction, which cause misfortune and death, which have an impact in economic growth of the country. Even though government institutions and World Bank are in the front line making sure that the roads contracted obtain enough funds so as to have quality roads. Berg *et al* (2015) cited that in the year 2002 World Bank constructed more than 260,000 km of roads in different locations of which is observed to bring great improvements.

Developing countries consider roads construction as the artery through which countries economy is developed. Most of the roads are reconstructed on the existing paved roads while the rest are earthen or gravel. Inadequate fund have coursed poor road construction especially in poor geographical location with plateau, steep slopes and contours. Somalia considers developing and rehabilitates roads linked to regional trade countries such as Ethiopia, Kenya and Djibouti so as to easily get access of the markets and employment (National Development Plan 2017-2019). Economic report from United Nations Economic Commission for Africa reported that African continent lack capacity to develop proposal that would attract institutional lenders so

as to finance their infrastructure projects (Dahir, 2017). Apart from these challenges countries such as Namibia, Egypt, South Africa, Morocco, Rwanda, Kenya, and Tanzania are mentioned to be among the countries with many roads construction (WEF, 2019).

The Government of Tanzania, through its Vision 2025 emphasizes on the importance of having quality and sustainable road network. The governments construct road basing on tax collected, subsidies, grant or loan so as to make sure that areas within the country are easily reached or accessible. The country has 945,000sq km with 86,472km roads, 6,700 paved and more than 2,200 km roads upgraded from gravel to tarmac (Simon, (2017). Tanzania National Road Agency (TANROAD) and Tanzania Rural and Urban Road Agency (TARURA) are the road agencies given mandatory of constructing and making sure that the roads are well constructed and maintained of which are accused by drivers for not caring out inspection and maintenance of the potholes, rusts and uneven surface which are the main cause of car accidents causing nearly 14% of the accidents (Bikam, 2019) therefore the proposed study assesed the quality of road construction project conducted by TARURA.

1.3 Statement of the Problem

Roads are considered as important network that facilitate social and economic development within the country. Due to its importance the government have deligatedroad constructional activities to different authorities so as to construct and maintain the roads. Local governments are among theagencies given authority to deals with construction control and making management of the streets and roads within their location. Apart from this responsibilities there have been raising issuesof poor

road construction and maintananceof the roads constructed by local government. Kimario (2014) asseted that road constructed by local government authoritiesare not sastainable within few month after construction they contain potholes. Roads such as Makumbusho Nzasa are mentioned to be among the roads in kinondoni district constructed by the local government authority with poor quality (Kombe, 2016).

Inadequate budget location and lack of enough resources in construction are observed to be among the courses of poor road construction. Buguzi (2016) supported that local government authority lack logistical support in managing and maintaining local roads due to inadequate allocation of budgets for roads rehabilitation in filling of potholes repairing road shoulders and road cleaning. For that case the government had to establish TARURA in 2017 to take over the operational roles and functions related to development and maintenance of rural and urban roads network, which previously were performed by Local Government Authority (LGA). Referring to CAG report of 2020 reported on weak enforcement of quality control and assurance of road construction during road execution. Therefore the study assessed quality of road construction project conducted by TARURA for the past three years.

1.4 General Objective

The general objective of the study is to assess quality of road construction project conducted by TARURA; the case of Kinondoni district, Dar es Salaam region.

1.4.1 Specific Objectives

(i) To assess effectiveness of the strategies used by TARURA in monitoring quality of road.

(ii) To analyze stakeholder satisfaction on roads constructed by TARURA.

(iii) To identify challenges facing TARURA in roads construction project.

1.5 General Questions

General question of the study comes from the main objective of the study, which is; what is the quality of road construction project conducted by TARURA in Kinondoni district Dar es Salaam region.

1.5.1 Specific Questions

(i) What are the strategies used by TARURA in monitoring quality of road?

(ii) What are the stakeholder satisfactions on roads constructed by TARURA?

(iii) What are the challenges facing TARURA in roads construction project?

1.6 Significance of the Study

The study is useful to government authorities in allocating enough budgets to roads constructed by TARURA. To the policy makers the study is useful in improving the provided policy and amending new policies in the construction industry. The study also acts as a guideline to the academician's in accomplishing their study basing on the same topic so as to identify the research gap. Lastly the study acts as guideline to new researchers who focus on the same research topic.

1.7 Limitations and Delimitations of the Study

In conducting the study budget constraint limited researcher in carrying out research study. Also the study was limited with time since the researcher failed to do in-depth study in collecting enough information from the stakeholders who were closely

attached with the road construction in Kinondoni municipal. To solve the problem of time management; the researcher arranged schedule of activity so as to collect the necessary information while budget constrain was solved by obtaining the relevant information available during data collection and secondary information to support the obtained information.

1.8 Scope of the Study

The study aims at assessing quality of road construction project conducted by TARURA in Kinondoni district, Dar es Salaam region focusing on strategies, stakeholder's satisfaction, and the challenges facing TARURA in roads construction project. The study used both qualitative and quantitative research strategies of which descriptive survey design was used in analyzing the obtained information. The study involved roads constructed by TARURA for the last three years. Whereby; both primary and secondary information was involved in the study to collect relevant information from the respondents. Primary data was collected by using interview and questionnaire method while the secondary information was obtained from the documentary review.

1.9 Organization of the Research Proposal

The first chapter of the study contains background, which explains on the situation of quality of road construction focusing on the developed countries, developing countries and within Tanzania. The statement of the problem explains on the existing problem of road construction conducted by TARURA. The General objective of the study is made up from the research title and the specific objective that helps to support the general objective of the study. The general question and the specific question are

formulated from the study objectives. Significance of the study explains on the important of assessing the quality of road construction project. Scope of the study explains on the study boundary and the limitation explains on the constraints that hinder researcher and the ways of overcoming the obstacles in collecting the relevant information and finally organization of the study, which gives the whole structure of the final report.

The second chapter contains the definition of the key terms used in the study, theoretical review showing the theories basing on the specific variables. Empirical review, which focuses on the studies, conducted by different authors in relation with the study specific objectives. The research gap mainly deals with identifying the missing information that could not be found in the empirical review focusing on the study main objectives and lastly the chapter contains the conceptual framework and the explanations of the conceptual framework.

The third chapter carries the research methodologies which involve the tools and methods used by researcher in conducting the study whereby; the researcher explained on the research paradigm, research design, study Population, sample size, and sampling procedures that was used in the study. The chapter also explains the research instruments along with methods of data collection and data analysis and lastly the chapter involves reliability and validity of the study.

The forth chapter contains analysis of data, presentation and discussion of the findings from the study as guided by the research questions and objectives.

The fifth chapter establishes the summaries of the study in relation to the research objectives and guiding questions of the research study. Also the chapter involves conclusion and recommendations from the study findings and lastly the study contains references and appendices.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains literature review of the study where it includes definition of key terms used in the study, theoretical review showing study related theories, empirical review basing on specific objectives, research gap and lastly conceptual framework.

2.2 Definition of Key terms

This part explains the key terms that are used most often in the study basing on the study topic. The words used are quality, road construction and TARURA.

2.2.1 Quality

Quality is described as the process of meeting customers need and providing customers satisfaction (Eldin 2011). Quality is also described as the free from errors quality is oriented to cost or quality is described as the degree to which a set of inherent characteristics fulfills requirements (ISO 9000). Shewhart described quality through account of production named as Plan-Do-Check-Act cycle (PDCA) as the epistemology for improving quality. Plan involves identification of the problem, Do is used in testing the potential solution, Check based on studying the results and in deciding hypothesis testing, Act is useful in identifying if the solution was successful to be implanted (Walter A. Shewhart, 1891-1967). The benefit of quality involve less rework, higher project team morale, fewer returns less warranty work fewer repair low maintenance cost.

2.2.2 Road Construction

Construction is described as the art and science of forming objects or system (Oxford English Dictionary Edition, (2009). Construction involves buildings infrastructure construction also covers repairs and maintenance improve and extend the asset. Road construction is a way that connects one location and another or is a route constructed to connect two or more places that has been surfaced or improved to allow people who travel by foot.

Roads can be used by people, animals or moving machines such as cars. Roads are contracted depending on the raw materials used. Roads are constructed basing on different quality whereby some roads are constructed of concrete roads; asphalt roads and some road are made from gravel (Way *et al*, 2015).

2.2.3 TARURA

Tanzania Rural and Urban Roads Agency (TARURA) was established in 2017 under the prime minister office. The Agency was established to take the operational roles and functions, which were related to development and maintenance of rural and urban roads, which are carried out under the Local Government Authority (LGA). TARURA develops and manages all district roads such as the feeder roads community and collector roads (TARURA, 2018).

2.3 Theoretical Review

This section explains the theories that are closely related to the study title. Thestudy is made up of three theories, which are theory of construction management, Road transportation model and stakeholder's theory.

2.3.1 Theory of Construction Management

The theory states that construction performance is limited when focus is based on project management (Radosavljevic and Bennett, 2012). The theory insists that development and progress of construction depends on the perceptive of project management. Construction management enables construction to be efficient and effectively within the agreed objectives. The theory further believes that construction objectives could be achieved when experienced team such as (managers, designers, building team, specialist, manufactures) are selected to undertake essential construction activities. The theory focuses on the fact that construction management reduces inherent difficult though in construction activities inherent difficulties are unavoidable.

The inherent difficulties (IDs), which are the fundamental variables in the theory are used to determine construction management strategies. Established relationship this is based on the relationship that was built by the interacting team that was built before establishment of the project. Relationship fluctuation this is based on the time that was spent on the project that was established between the teams. Relationship quality based on the time that the team members spent together earlier working when together. Relationship configurations this is based on the pattern that team interact over the project. Performance variability is based on consistence between performances of the team. External interference these are the factors that are outside the control of the project manager.

CM approaches currently used in practice are Ballard *et al* (2002) Traditional construction involves different versions such as the US specialist constructor design

European architect and engineers' design and UK developed traditional construction. Design build involves the responsibility on project delivery. Management approaches these involves the working under general direction of the client. Partnering focuses on establishment of effective relationship rather than the roles and responsibilities. Total construction service emphasizes on reliability, quality and continuous improvement. Theory of construction management is very useful in the study in assessing the strategies used in roads constructed by TARURA.

2.3.2 Road Transport Investment Models (RTIM)

Road Transportation Investment Models is the model, which was developed by (Cundill, 1982) aiming at making comparison on road expenditures, road improvements and road maintenance with the operating costs over the life of road. The model determines if the improvement are economically justified and in identifying the proper ways of financing and maintaining the road standards so as to minimize the total cost. Further the model emphasize on calculating the Net present value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR) and Payback Method (PB) in calculating value for money used in road constructional project.

Parsley and Robinson (1982) Net present value (NPV) helps in determining whether the revenue and the cost of road construction are estimated and discounted by comparing with the initial investment. The model assists that when the calculated NPV is negative then the road construction project needs to be rejected because the present value of the stream benefits is not enough to recover the cost of the project and when the calculated NPV is positive then the road construction project needs to be

accepted because the present value of the stream benefits is sufficient to recover the project cost.

Internal Rate of Return (IRR) is the discount rate which when is applied to the net revenue of road construction sets them equal; to the initial investment. The model assists on the road agencies to prefer the IRR with the greatest increase and to reject the IRR with the smallest increase. Benefit Cost Ratio (BCR) is the discounted net revenue divided by the initial investment. The model assist on the selection of BCR with the greatest ratio exceeding 1 (BCR>1) in any event while the BCR with the smallest ratio of less than 1 (BCR<1) should not be accepted Payback (PB) is a financial appraisal method that measures the length of time that takes to recover the initial investment. The method assists in determining the profit. PB methods involve number of months or years, which used to return the initial investment.

The discussed theory is applicable in the study in assessing value for money for the roads constructed by the TARURA (Kerali, 2003). The model incorporates economic appraisal framework basing on the concept of life cycle cost analysis, the annual cost of construction and maintenance of one or more roads investment. Also the model shows that traffic congestion investment in capacity expansion can produce high economic returns provided the value assigned to travel time is realistic.

2.3.3 Stakeholder Theory

The theory describes stakeholders as people or groups that belief or legal claim against the substantive aspects. Also Stakeholders are people who are affected or attached by the project (Phillips, Freeman and Wicks, 2005). Stakeholder’s theory is

the theory that is based on organization management and ethics. The theory emphasizes in paying attention to the interest and well being to those who can assist or hinder achievement for stakeholder's more than maximizing shareholder wealth. Stakeholders in the construction project are clients, architect, contractor, community, project manager, funding bodies, employees, users, suppliers, and designers. Therefore Performance of the project depends on the interaction and interrelationships between participants.

Matheson and Olson (1992) claim that stakeholders can affect project goals and development. Stakeholders only become effective when they support the project in achieving its goals.

2.4 Empirical Review

This section explains different reviews that have been conducted by other researcher basing on the specific objectives.

4.1.1 Effectives of Strategies used by TARURA in Monitoring Quality of Road

Sebor (2016) aimed at determining the extent to which acquisition of materials influenced performance of road construction project the study was conducted in Kenya. The paradigm used was pragmatism and research approach used was mixed methods. Cross sectional descriptive survey and correlation research design was applied in the study. Findings revealed that types of materials, procurement methods and storage places required had no statically significance influence on road construction projects while the establishment of quantities of materials required statically had significance influence on the performance of road construction projects.

Type of contract for specific materials supply is said to be among the factors affecting material management also affects minimization of material cost, enhancement of material delivery and quality improvement. Omojola and Olugboyega (2015) carried out the study on the influence of construction materials supply chain network structure and strategies on project delivery in Nigeria. Questionnaire survey was used to address the problem. The study findings revealed that constructors and supplier are human resources attached to the project performance, which had positive influence on cost, quality and schedule of projects.

Construction plans and documents do not reflect the required needs this was reported by Najmi (2011) who aimed at studying project management of construction project in Palestine. Both quantitative and qualitative methodwere used to compete the research work. It was revealed that information produced by the construction agency were not sufficient. Poor planning, poor project management and poor communication distracted project development.

2.4.1 Community Satisfaction on Roads Construction

Simon (2017) aimed at finding causes of delay in road construction projects in Tanzania. Questionnaire was distributed to road officers, contractors, and stakeholders. Qualitative and quantitative data were collected. The study findings discovered that involvement of stakeholder who had below average percentage was 44.4% and 42.2% respectively. The study recommends that government and TANROADS should have long term plan for road construction policy, to use good quality, enough materials and correct equipment so as to meet stakeholder’s satisfaction.

Managing stakeholder is very important in project management. Disagreements and changes are mostly influenced by poor participation of stakeholders in project. Assefa (2015) from Ethiopia assessed on the impact of external and internal stakeholders on road projects. The study adopted questionnaire and interview to collect information from the stakeholders. The study analyzed six ongoing projects it was revealed that the external stakeholders had brought changes in the construction design. Also there was poor engagement of external stakeholders and the project.

Failure to realize stakeholder's expectation has resulted into many project failures as asserted by Hongyang (2013) who evaluated on stakeholder satisfaction during public participation in infrastructure and constructional projects. Participatory approach was used in making project decisions. The study evaluated satisfaction from the single stakeholder group and the infrastructure and construction project.

Guillermo (2017) carried out the study on stakeholder's attitudes knowledge and engagement in local road systems planning and decision making. The study approves qualitative research methods in studying the attitude of the stakeholder. It was analyzed that there was a need of providing quality information to support awareness to the local transportation system. Using of multiple communication channels helped in improving stakeholder's satisfaction with project outcomes and engagement process and lastly it was highlighted that the stakeholder needed to be engaged in defining the policy problem and developing options that could help in improving the local road systems.

Nokulunga (2018) focused on assessing the challenges that faced stakeholders in the road construction projects in South Africa. Quantitative research and structure

questionnaire were distributed to construction companies. Research findings revealed that community unrest and land proclamation ranked the highest scores as the challenges that hinder road construction other factors were time, financial constraints and poor planning shortage of skilled labour.

4.1.2 Challenges Facing TARURA in Roads Construction Project

Simon (2017) carried out the study with the aim of finding out the courses of delay in road construction projects in Tanzania. Questionnaires were sent to TANROADS officials, stakeholders, and contractors. From the study findings it was revealed that involvement of parties, politicians and environmental condition were the factors that lead to delay of road construction. The study therefore recommends that government and TANROADS to have a long term plan for road construction policy employ skilled and experience contractors.

Value for money is the assessment done by client on the delivered projects basing on the project objectives. Olatunji (2017) focused on the ways that could be used by the project managers in achieving value for money. This includes risk in analysis, allocation risk. The study also highlighted factors such as life cycle, cost analysis value management, building information, modeling and lean construction methods when used efficiently and effectively could bring value and return in investment. The study advocated that projects needs to be asses before its undertaken and completed to determine whether value for money have been delivered.

Mlinga (2016) assessed on the impact of financing models on completion of road projects in Tanzania. Case study design was used together with questionnaire and

interview as the technique of data collection. The study findings revealed that road infrastructure development in Tanzania mainly comes from the donor. Among the factors that were considered to cause road delay were high price of construction material, supervision of donors fund, extreme weather inadequate feasibility studies. The study forwards it recommendations to the government so as to allocate enough funds for the completion of road construction.

Time quality and cost are considered to be the key indicators of Value for money this was cited by Simaya and Maro (2018) who assessed on the performance of building projects in local government authorities in Tanzania, the study methodology involved the use of documentary review for 30 completed audited projects by Public Procurement Regulatory Authority (PPRA).

On their study findings it was revealed that there challenges that faced LGAs in achieving value for money among the challenges that were mentioned were poor management, late payments, lack of skilled contractors and poor preparation of tender.

Jatarona *et al* (2015) Construction industry in Malaysia is seen as unsatisfactory in the construction of public project. The study assesses the problems encountered in the public project in Malaysia through analysis of documents. problems identified in the public projects development are design contract construction, closing stage of construction the study recommends on the attention to be given so as to ensure accomplishment of time, quality and cost hence attainment of value for money in public projects.

2.4.2 Research Gap

This part explains on the missing information that the researcher has observed from the previous studies. From the theory the study has revealed that most of the theories are only useful in giving guides on how to make assessment of the budget, stakeholders but do not give a clear picture on the real situation. Also most of the empirical reviews are conducted outside Tanzanian; few on the studies have been conducted in Tanzania most especially on projects conducted by TARURA.

2.5 Conceptual Framework

The conceptual framework is made up of three variables, which are independent, mediating and dependent variable. Independent variable is the variable that does not depend on other variables; mediating variable is the variable that links the dependent and independent variable and lastly the dependent variable, which is the variable that depends on other variables. The independent variable is made of three objectives focusing on the strategies, stakeholder's satisfaction, and challenges.

2.5.1 Explanation on the Conceptual Framework

The conceptual accepts that having good strategies leads to good quality this involves doing proper survey, having good road design, sufficient supervision and evaluation, good methods of enforcing quality control, and excellent tendering. However the study believes that stakeholders are very important in achieving projects objectives therefore its very important in making sure that they are well satisfied. Presence of road signs, road lights, width of the road drainage system, pedestrian passages reduces road congestion and accidents.

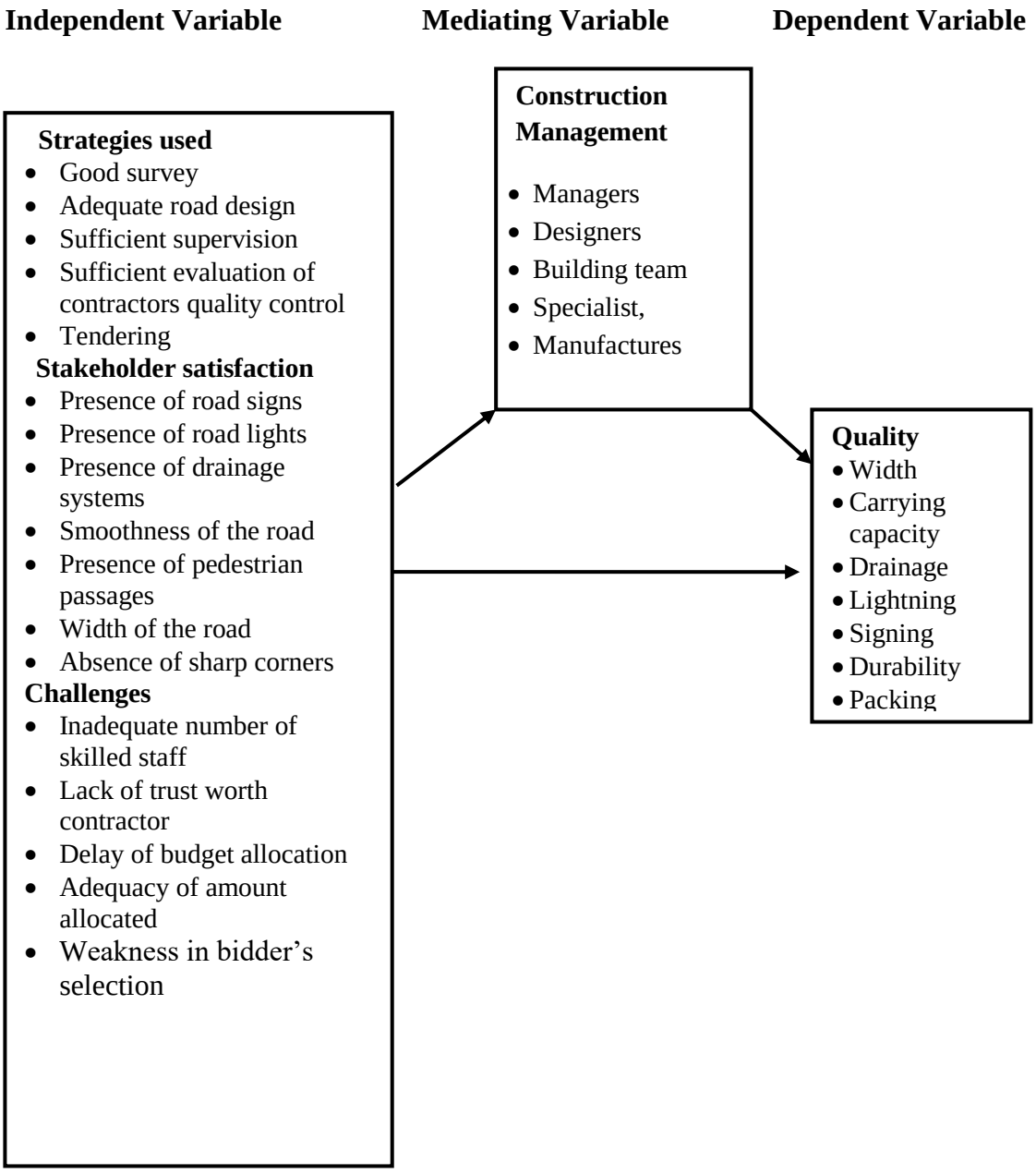

Figure 2.1: Conceptual Frameworks
Source: Researcher own source (2020)

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However the conceptual believes that in any construction activities is faced with different challenges this involves inadequate number of skilled staff, lack of trustworthy contractors, delay of budget allocation, inadequate amount allocated and weakness in tendering. All this challenges if they are not well handled they lead to poor road quality. Further the conceptual framework explains that; construction management is very important in having quality road. Construction management team such as managers, designers, building team is very essential in supporting the construction activities. Lastly quality of the road is determined by factors such as width of the roads, carrying capacity, drainage paten, lightning, durability and packing. The study believes that assessing and analyzing the resources, budget and customers satisfaction leads to quality road construction project conducted by TARURA also construction management has a great possibility to leads to quality road.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter contains strategies and methods such as research philosophy research design, study population, study area, sampling design, and procedure, methods of data collection and data analysis that was used by researcher in obtaining the necessary information from the respondents. Also the study explains reliability and validity of the study.

3.2 Research Paradigm

Research paradigm refers to the ways in which research could be affected and guided or it refers to the pattern of belief and practices that regulate inquiry within a decline by providing procedure through which research is accomplished Saunders, Lewis and Thornhill (2009). The research philosophy of the study is pragmatism in order to answer the research question since the study focuses on relevant problems practices and theories which enables successful action also it allows the use of research problem and research question.

3.3 Research Design

Kothari (2004) described research design as a set of technique and measures used in collecting and analyzing variables of problem research. The study used case study design since it allows researcher in focusing on specific and interesting cases also it gives room to researcher and opinions on the quality of the roads constructed by TARURA for the past three years.

3.4 Study Area

Study area is the location in which the study is conducted so as to represent the whole population. The study was conducted in Dar es Salaam specifically in Kinondoni district. The city was selected due to availability of the roads constructed by TARURA for the past three years. Kinondoni district is located in the north-west of Dar es Salaam in the East Indian Ocean, North and West Pwani Region of Tanzania. Kinondoni district covers the area of 531km^2.

3.5 Study Population

Study population is described as the subset of the population with the characteristics of the interest defined by a certain criteria (Friedman *et al*, 2015). Researcher used 76 respondents in identifying the effectiveness of the strategies used by TARURA in monitoring quality of road and the challenges facing TARURA in roads construction project. The study involved the government officers working in TARURA department mainly in procurement and in construction department. Also the study involved stakeholders (road users) from Kinondoni municipality so as to identify the stakeholder satisfaction concerning the roads constructed by TARURA

3.6 Sampling Design

Sample design is described as a plan for obtaining a sample from a given population. It involves techniques and procedures used by researcher in selecting items for the sample (Kothari, 2008). There are two types of sampling design, which are probability sampling and non-probability sampling. Probability sampling focuses on random selection while non-probability sampling focuses on non-random selection (Kothari, 2008).

Researcher used non-probability sampling in selecting the respondents on the basis that small mass represents the whole population. The researcher selected respondents focusing on subjective judgment. Specifically the study used purposive sampling technique basing on the knowledge and credibility of the researcher also it allowed researcher to select people who fit to participate in the research study.

3.7 Sample Size

Sample size is the group of subjects that are selected from the total population where it represents the real population (Kitchin and Tate, 2007). The researcher used non-probability sampling in selecting a sample size of 15 government officers dealing with construction and procurement department working under TARURA and 45 respondents who used the roads constructed by TARURA at Kinondoni Municipality making a total of 60 respondents.

3.8 Data Collection

Kothari (2004) argues that data collection methods refer to the process of obtaining evidence in a systematic way to ascertain educational and other problems. There are two types of data collection namely primary and secondary data collection. Primary data involves collection of first hand information. Information is obtained through observation, questionnaire, interviewer focus grouped discussion. Secondary data collection involves obtainment of second hand information this are the information that are already obtained from the respondents. Secondary information is obtained through documentary reviews.

The study collected data from both primary and secondary data collection. Primary data was obtained through interview and questionnaire. The source of information

obtained helped in analyzing resources used and road users satisfaction conducted by TARURA in road construction.

3.8.1 Questionnaire

Involves set predetermined questions, the questions are prepared basing on the research objectives or questions. The study involved structured and unstructured questions. Structured question enabled respondents in analyzing and producing data that analyzed quantitatively patterns and trends. Unstructured questions were prepared in such a way that it allows respondent to give many details. The questions allow respondents to answer freely using their own words.

3.8.2 Interview

Kothari (2004) interview involves verbal conversation between two people with the objective of collecting relevant information. The study involved personal interview, which involves face-to-face interview, which was carried out in a planned manner. Interview method enabled the researcher in obtaining the in-depth information also it allows exchange of information from the respondents.

3.9 Methods of Data Analysis

Data analysis is the application of reasoning that helps to understand and interpreting the data that have been collected. The study used both qualitative and quantitative analysis. Is the method of applying statistical and logical techniques so as to describe organize summarize and make comparison of the data collected (Babbie, 2004).

3.9.1 Qualitative Data Analysis

Qualitative data analysis deals with implication and examination of the attitude. It is a subjective concept mainly dealing with data reduction which helps in elaborating

irrelevant data and making proper organization of data collected so as enable researcher in making conclusion. Qualitative data analysis of the study was analyzed through thematic analysis.

3.9.2 Quantitative Data Analysis

Quantitative analysis focuses on analyzing numerical data; this type of analysis mainly focuses on numerical data. With the help of SPSS, researcher performed descriptive analysis to attain conclusion of the study; whereby the researcher used frequency, percent and means to explain the results of the study.

3.10 Validity and Reliability

3.10.1 Validity

(Kothari, 2004) validity refers to applicability and the usefulness of obtained data. The study considered three categories of validity, which are descriptive, interpretative, and explanatory validity. *Descriptive validity*: is the degree of accuracy that is determined from the collected data. Researcher ensured descriptive validityby collecting relevant information from the field. *Interpretative validity*: is the degree to which researcher is able to represent respondents' opinions and meanings of the studied field (Maxwell and loomis 2003).

With regards to this research, information was gathered through the interview and written documents obtained from the field. *Theoretical (explanatory)* validity: is the degree to which theoretical importance reflects on how questions developed fit the selected concept (Maxwell and loomis 2003). The study involved analysis and interpretations from the objective questions.

3.10.2 Reliability

Reliability refers to the extent to which obtained result are consistence overtime (Amin, 2005). Cronbach's Alpha was used to test reliability of the study with cut-off point of 0.70 to test corrections between items of the scale.

Concerning effectives of strategies used by TARURA there were 6 variables which are good survey, adequate road designs, sufficient supervision, sufficient evaluation of contractors, methods used in enforcing quality control and excellent tendering. The objective had a Cronbach's Alpha of 0.947.

Concerning stockholders satisfaction the objective had 7 variables, which are presence of road signs, presence of road lights, width of the road, presence of drainage systems, Presence of pedestrian passages, Smoothness of the road, absence of sharp corners with Cronbach's Alpha of 0.898.

Concerning the challenges facing TARURA in road construction project the objective had 5 variables, which are inadequate number of skilled staff, lack of trustworthy contractors and delay of budget allocation, inadequate amount allocated and weakness in bidder's selection with Cronbach's Alpha of 0.870.

Table 3.1: Reliability Table

Objective	Items	Cronbach's Alpha
Strategies used by TARURA	6	0.947
Stakeholders satisfaction	7	0.898
Challenges facing TARURA	5	0.870

Source: Field data

3.11 Ethical Consideration

Ethical consideration refers to the ways, which were used by researcher in carrying out the study. As for the study the researcher received permission from the Open University of Tanzania. The obtained information from the respondents was used only for academic issues and no information was given out without permission of the respondent.

CHAPTER FOUR

DATA ANALYSIS, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents results obtained from the study basing on the completed questionnaire and interview where information was obtained from TARURA officers, which included (procurement officers and road constructors) together with Road users. The chapter is made up into two sections. The first section includes gender; Age, education and experience of respondent and the second part are the result of study objective.

4.1.1 Gender of Respondent

The results in Table 4.1 were generated using cross tabulation in order to explore details of gender of respondents. The reason why gender of respondent was recorded was to show that respondents came from both sexual characteristics.

Table 4.1: Gender of respondent

Variables		**Category**		Total
		TARURA officers	**Road users**	
Female	Frequency	6	27	33
	% within Category	40.0%	60.0%	55.0%
	% of Total	10.0%	45.0%	55.0%
Male	Frequency	9	18	27
	% within Category	60.0%	40.0%	45.0%
	% of Total	15.0%	30.0%	45.0%
Total	Frequency	15	45	60
	% within Category	100.0%	100.0%	100.0%
	% of Total	25.0%	75.0%	100.0%

Source: Field data (2020)

From Table 4.1 it are shown that (55%) of the respondent ware women while (45%) of the respondent were men.This implies that there was no biasness in assessing quality of the road construction. This implies that the views obtained in the study reflect the understanding of both men and female.

4.1.2 Age of Respondent

Table **4.21** were generated using cross tabulation in order to explore details of age of respondents. The reason why age of respondent was selected was to identify the group of age who participated in providing the population. The study involved respondents who were aged from 18 years up to those who were above 50.

Table 4.2: Age of Respondent

Variables		**Category**		Total
		TARURA officers	**Road users**	
Above 50	Frequency	2	9	11
	% within Category	13.3%	20.0%	18.3%
	% of Total	3.3%	15.0%	18.3%
46-50	Frequency	1	3	4
	% within Category	6.7%	6.7%	6.7%
	% of Total	1.7%	5.0%	6.7%
41-45	Frequency	1	3	4
	% within Category	6.7%	6.7%	6.7%
	% of Total	1.7%	5.0%	6.7%
36-40	Frequency	2	7	9
	% within Category	13.3%	15.6%	15.0%
	% of Total	3.3%	11.7%	15.0%
31-35	Frequency	5	12	17
	% within Category	33.3%	26.7%	28.3%
	% of Total	8.3%	20.0%	28.3%
26-30	Frequency	1	2	3
	% within Category	6.7%	4.4%	5.0%
	% of Total	1.7%	3.3%	5.0%
18-25	Frequency	3	9	12
	% within Category	20.0%	20.0%	20.0%
	% of Total	5.0%	15.0%	20.0%
Total	Frequency	15	45	60
	% within Category	100.0%	100.0%	100.0%
	% of Total	25.0%	75.0%	100.0%

Source: Field data (2020)

Table 4.2 shows 18.3% of respondent was above 50 years, 6.7% of respondent aged 46 to 50 years, and 6.7% of the respondent aged between 41 to 45 years. 15.0% were aged between 36 to 40 years. 28.3% were aged between 31 to 35 years, 5.0% were aged 26 to 30 year. 20.0% were aged between 18 to 25 years.

4.1.3 Education level

Table 4.3 explains on the education of respondent. Data were analyzed using cross tabulation. The study involved respondents with informal education, primary education, diploma, university education. Reason why education of respondent was selected was to show that the study involved respondents from all level of understanding.

Table 4.3: Education Level

Variable		Category		Total
		TARURA Officers	Road users	
University education	Frequency	10	21	31
	% within Category	66.7%	46.7%	51.7%
	% of Total	16.7%	35.0%	51.7%
Diploma	Frequency	5	12	17
	% within Category	33.3%	26.7%	28.3%
	% of Total	8.3%	20.0%	28.3%
Primary education	Frequency	0	4	4
	% within Category	0.0%	8.9%	6.7%
	% of Total	0.0%	6.7%	6.7%
Informal education	Frequency	0	8	8
	% within Category	0.0%	17.8%	13.3%
	% of Total	0.0%	13.3%	13.3%
Total	Frequency	15	45	60
	% within Category	100.0%	100.0%	100.0%
	% of Total	25.0%	75.0%	100.0%

Source: Field data (2020)

Table 4.3 revels that 51.7% of the respondent had university education, 28.3% of the respondent had diploma education and 6.7% of the respondent had primary education, 13.3% of the respondents.

4.1.4 Experience Level

Table 4.4 gives explanation on the experience of the respondent. Cross tabulation was applied to analyze experience of respondents who were aged 3 years up to more than 10 years. Experience level was selected so as to know there familiarity within the organization.

Table 4.4: Experience Level

Experience		**Category**		Total
		TARURA Officers	**Road users**	
Les than10 years	Frequency	2	7	9
	% within Category	13.3%	15.6%	15.0%
	% of Total	3.3%	11.7%	15.0%
7-10 years	Frequency	2	4	6
	% within Category	13.3%	8.9%	10.0%
	% of Total	3.3%	6.7%	10.0%
3-6 years	Frequency	7	25	32
	% within Category	46.7%	55.6%	53.3%
	% of Total	11.7%	41.7%	53.3%
More than 3years	Frequency	4	9	13
	% within Category	26.7%	20.0%	21.7%
	% of Total	6.7%	15.0%	21.7%
Total	Frequency	15	45	60
	% within Category	100.0%	100.0%	100.0%
	% of Total	25.0%	75.0%	100.0%

Source: field data (2020)

4.2 Results of the Study Objectives

This part gives results of the specific objectives; different analyses are involved in the study depending on the study objectives so as to make conclusion. Mainly the study

has based on assessing effectives of the strategies used by TARURA in monitoring quality of road, analyzing stakeholder satisfaction on roads constructed by TARURA and identifying challenges facing TARURA in roads construction project.

4.2.1 Effectives of Strategies used by TARURA in Monitoring Quality of Road

The first objective aims at assessing effectiveness of strategies used by TARURA in monitoring quality of road. The objective is made up of six proxies, which are sufficient supervision, weakness in tendering, sufficient evaluation of contractors, adequate road designs, methods used in enforcing quality control and good survey.

The results of descriptive analysis have been given in table 4.5. In interpreting the results the mean score of 4.21-5.00 indicates “very high effectiveness”, mean score of 3.41-4.20 indicates “Highly effectiveness” mean score of 2.61-3.40 indicates “Moderately effectiveness”, mean score of 1.81-2.60 indicates “little effectiveness”, and mean scores ranging from 1.00-1.80 indicates “very little effectiveness”.

Table 4.5: Strategies used by TARURA in Monitoring Quality of Road

Variables	SD	D	M	A	SA	N	Mean
Good Survey	2	1	2	1	9	15	3.60
Adequate road designs	2	2	0	10	1	15	3.80
Sufficient supervision	3	2	0	1	9	15	3.93
Sufficient evaluation of contractors	2	1	2	3	7	15	3.73
Method used in enforcing quality control	1	2	2	3	7	15	3.87
Excellent tendering	3	1	2	2	7	15	4.00
Weighted mean	3.82						

Source: Field data (2020)

The results of Table 4.5 shows that; concerning the strategies used by TARURA in monitoring quality of the road; those who strongly disagree on good survey were 2officers, disagree were 1officer, neither agree nor disagree represented 2 officers, those who agree was 1officer and strongly agree was 9officers with a mean score of 3.60. This implies that; Survey was highly effective in monitoring quality of the road. In adequate road designs those who strongly disagree were 2officers, disagree were 2officers, there was no response for those who neither agree nor disagree, those who agreed were 10officersand strongly agree was1officer with a mean score 3.80. This implies that; strategies used by TARURA in adequate road designs were highly effective.

In Sufficient supervision; those who strongly disagree were 3 officers, disagree were 2 officers, there was no response for those who neither agree nor disagree, 1officergreed, and those who strongly agreed were 9 officers with a mean score 3.93.This implies that; there was highly Sufficient supervision.

In sufficient evaluation of contractors; those who strongly disagree were 2officers, disagree was 1officerneither agree nor disagree ware 2 officer, agreed were 3 officers, and those who strongly agree were 7 officers with a mean score of 3.73which was highly effective.

Concerning method used in enforcing quality control; strongly disagreewas1 officer, those who disagree, were 2 officers; neither agree nor disagree were 2 officers, those who agreed were 3 officers and those who strongly agreed ware7 officers with a mean score of 3.87which was highly effective.

Concerning excellent tendering; those who strongly disagree were 3officers, disagree was1officer followed by those who neither agreed nor disagree 2, those who agreed were 2 officers and lastly strongly agree ware 7 with a mean score of 4.00 this implies that excellent tendering was highly effective.

Lastly the general results revels that weighted mean of 3.84 indicate that the strategies used by TARURA in monitoring quality control were highly effective. This means that TARURA had good strategies in monitoring quality control of the roads.

Discussion on the strategies used by TARURA in monitoring quality of road

This part gives results of the findings that were obtained in the field. The objective is made up of six variables which are good Survey, adequate road designs, sufficient supervision, sufficient evaluation of contractors, method used in enforcing quality control, excellent tendering.

Sufficient Supervision

The study reveals that TARURA supervisors are well trained and provide appropriate guidance and encourage staff members. Bernard (2005) asserts that; supervision involves influencing people in achieving organizational goal. However; Omojola and Olugboyega (2015) supports that sufficient supervision either improves or destructs team productivity. The study further explains that sufficient supervision was achieved through good relationship and this was very important for construction success. One among the officer reported that:

> "*TARURA supervisors are very keen in making sure that the employees are well listened* since *happy employees lead to good performance. Also they share their positive opinion with their coworkers. Other factors such sufficient training, good payments, good working conditions improves employee morale*".

Hongyang (2013) reported that construction activities require supervision especially on activities that are in progress. The conducted study reports that good supervision was essential in meeting corporate goals and in bridging gap between upper management and employees. Also study findings revealed that good supervision brings teamwork where employees give support to one another. Good supervision has also helped workers when receiving minimum turnover they believe that there job won't disappear overnight. Also within organization there is attendance of providing feedback on their work and letting them know who they performed a certain task this makes them feel that their work is valued and appreciated.

Excellent tendering and sufficient evaluation of contractors

The study revealed that TARURA officers were very selective in offering road construction tender. During the offer tendering TARURA allows open tender procedure to be followed so as to allow contractors to submit their proposals. After that the contractors are evaluated by using the obtained information from the technical and contracting offices.

One among the officer who was interviewed reported that:

> *"TARURA follows all the procurement procedures in tender offering so as to make sure that the organization receives the contractors who are ready to participate in the construction activities".*

Further the study revealed that all the road construction tender are first advertised to the public through the magazines, notes board at the council so as to allow everyone to participate in the tender biddings.

Road designs

The conducted study revealed that the road constructors shared construction designs with the TARURA before beginning of the construction. However; the study reported that road design were very useful in saving the cost of construction. One among the officer reported:-

> *"Having good road design helps in reducing unnecessary cost this is because before the construction activities begin the contractor identifies all the conflicting areas and finding the right solution before the construction begins".*

The study reports that road design differ depending on the road constructed. A design that is used in one road cannot necessarily be used in the other roads this is due to difference in the geographical location. However one among the officer was noted mentioning that; the roads contracted in Kinondoni district by TARURA are found to be well designed depending on the geographical location.

Method used in enforcing quality control

The study revealed that TARURA has been using different methods in enforcing quality control in the construction activity. TAURA officers who were responsible in supervising the construction activity had a tendency of visiting the site location.

> "*Construction department of TARURA is responsible in making sure the construction activities are well conducted so as to ensure quality of the roads*".

So far the study added that quality is not only ensured at the beginning of the work but also at the commencement of the project. However the construction department ensures that; all the materials used are incorporated in the construction as specified.

> "*The construction department is also responsible in ensuring that all the requested materials alien with the contractor's agreement as to ensure quality of the road".*

World Bank (2018) asserted that ensuring quality is maintained in the construction is very important. Therefore there is a need of ensuring that the procedures for testing different materials and work are in standard specification. The study also confirmed that district commissioner promoted awareness to TARURA officers who were in construction department so as to update their knowledge in standards specification and code of practice for construction of concrete roads.

Good Survey

The study confirmed that; TARURA department was also responsible in conducting survey of the road areas before the construction processes begins. Survey of the construction area allows the constructor to know the areas that may need modification. One among the officer who was in construction department asserted that:

> *"Before we begin our construction activities we first conduct survey in the areas where we want the road to be located and this have helped us in identifying the areas with drainage paten, overhead wires, nearby buildings"*

Further the study reports that surveying the location before construction helped TARURA in identifying the proper location where the roads could be constructed. Buguzi (2016) reports that; land must be prepared before the construction activities begin also the road constructors need to map the optimal, grading slopes, curves and creation of tunnels or other features along the roads constructed route.

So far it was discovered that TARURA construction department was able to carry out a survey at Kivulini/ Rashid road so as to understand the geographic restrictions and the layout of the area before attempting to determine the best route for placement of the road.

4.2.2 Stakeholder satisfaction on roads constructed by TARURA

The second objective aimed at analyzing stakeholder's satisfaction on road constructed by TARURA. The objective was made up of different variable which are presence of road signs, presence of road lights, width of the road, presence of drainage systems, presence of pedestrian passages, smoothness of the road and absence of sharp corners.

In interpreting the results the mean score of 4.21-5.00 indicates "very high satisfied", mean score of 3.41-4.20 indicates "high satisfied" mean score of 2.61-3.40 indicates "moderate satisfied", mean score of 1.81-2.60 indicates "Unsatisfied", and mean scores ranging from 1.00-1.80 indicates "very unsatisfied".

Table 4.6: Stakeholders Satisfaction on Roads Constructed by TARURA

Variables	**SCALE**					**N**	**Mean**
	VU	**U**	**M**	**S**	**VS**		
Presence of road signs	6	2	6	14	17	45	3.76
Presence of road lights	3	10	8	17	7	45	3.49
Width of the road	19	9	3	7	7	45	2.42
Presence of drainage systems	10	7	10	11	7	45	2.96
Presence of pedestrian passages	17	6	8	9	5	45	2.53
Smoothness of the road	17	8	5	9	6	45	2.53
Absence of sharp corners	13	9	5	11	7	45	2.78
WEIGHTED MEAN	3.09						

Source: Field Data (2020)

Table 4.6 present analysis of stakeholder's satisfaction on road constructed by TARURA. Those who reported the road signs were very unsatisfied were 6 stakeholders, unsatisfied were2stakeholders neither agreed nor disagree were 6

stakeholders satisfied were 14 stakeholders and very satisfied were 17 stakeholders with a mean score of 3.76, which implies that the stakeholders were highly satisfied with road signs constructed by TARURA.

Individuals who reported on the presence of road lights, very unsatisfied were 3 stakeholders, unsatisfied were 10 stakeholders neither agreed nor disagree were 8stakeholders, satisfied were 17 stakeholders, very satisfied were 7stakeholders with a mean score of 3.49. This implies that stakeholders were highly satisfied with the road constructed by TARURA.

Those who responded on the width of the road, very unsatisfied were 19 stakeholders unsatisfied were 9 stakeholders, neither agreed nor disagree were 3 stakeholders followed by those who were satisfied were 7 stakeholders and very satisfied were 7 stakeholders with a mean score of 2.42. This implies that; the stakeholders were unsatisfied with the width of the road constructed by TARURA.

Those who responded on presence of drainage systems; very unsatisfied were 10stakeholders, unsatisfied were 7 stakeholders, neither agreed nor disagree were 10stakeholders, satisfied were 11 stakeholders and very satisfied were 7 stakeholders with a mean score of 2.96. This implies that the drainage system was moderately satisfying.

Those who responded on the presence of pedestrian passages; very unsatisfied ware 17 stakeholders, unsatisfied were 6 stakeholders, neither agreed nor disagree were 8stakeholders followed by those who were satisfied were 9stakeholders and lastly very

satisfied were 5stakeholders with a mean score 2.53. This implies that; stakeholders were unsatisfied with the pedestrian passages.

Concerning smoothness of the road; very unsatisfied were17 stakeholders, unsatisfied were 8stakeholders, neither agreed nor disagree were 5 stakeholders, satisfied were 9 stakeholders and very satisfied were 6 stakeholders with a mean score of 2.753. This implies that stakeholders were unsatisfied with the smoothness of the road of the road constructed by TARURA.

On the absence of sharp corners; very unsatisfied were 13stakeholders, unsatisfied were 9stakeholders, neither agreed nor disagree were 5 stakeholders, satisfied were 11stakeholders very satisfied were 7stakeholder with a mean score of 2.78 this implies stakeholders were moderately satisfied with absence of sharp corners.

General results of weighted mean (3.09) revels that the stakeholders were moderately satisfied with the roads constructed by TARURA this means that TARURA needs to improve its services so as to meet stakeholder's satisfaction.

Discussion concerning stakeholder's satisfaction on roads constructed by TARURA

Below are the explanations of the study results that had been obtained from the field concerning the stakeholder's satisfaction on the roads constructed by TARURA. The objective contains seven variables, which are presence of road signs and of road lights, Width, smoothness of the road, sharp corners and presence of drainage system and pedestrian passages.

Presence of road signs and of road lights

The study found that; TARURA had played a great part in ensuring that the roads constructed contained road signs and lights so as to reduce the number of accidents that had been occurring earlier. One among the road user who was interviewed reported that:-

> "*TARURA have done a great job especially in ensuring that the road constructed contains road signs and lights. The road lights have been very useful to us especially during the evening hours. Sometimes robbers used to hide in the darkness places at the road side waiting for pedestrian"*

So far the study discovered that TARURA had set different traffic signs such as warning signs, warning markings and the warning signals. Kimario (2014) argued that the road signs and lights are very useful especially in giving warning the road pedestrians.

Width of the road, Smoothness of the road and sharp corners

The study revealed that the width of the roads were not sufficient enough due to poor road environment. The roads are found to be narrow shoulder where break down vehicles fail to park incase of emergency also the study discovered of limited places for car parking. Sharp corners were mentioned to be very risky especially when the cars were at high speed. One among the stakeholders who was interviewed reported that:-

> *"roads constructed by TARURA lack bus stops and this courses long queue since they cannot handle large volume at a specific turning movement also the shape Conner's are not well managed*

Simon (2017) reported that; road constructors need to be very keen especially in identifying the geographical location of construction area. Road Transportation

Investment Models shows that traffic congestion investment in capacity expansion can produce high economic returns provided the value assigned to travel time is realistic (Cundill, 1982). Therefore there is a need of the TARURA to improve width, smoothness of the road and sharp corners during road construction. Below is a picture showing width of the road, which leads to road congestion at Kinondoni municipality.

Figure 4.1: Width of the Road
Source: Study Field (2020)

The Figure 4.1 shows width of the road, which lead to road congestion at Kinondoni municipality.

Drainage system and pedestrian passages

Drainage systems were mentioned to be important especially during heavy rainfall. The pedestrians reveled that during heavy rainfall the roads could not be used easily this is due to poor design of the roads where the road pedestrians found it difficult in using the roads. One among the pedestrian who was interviewed reported that:

> "*The roads which are constructed within the streets do not have the drainage system and the pedestrian passage where they use the same road where vehicles have to pass. This has been very dangerous especially for children's when they go to school*"

Theory of Construction Management believes that construction objectives could be achieved when experienced team such as managers, designers, building team, specialist, manufactures are selected to undertake essential construction activities (Radosavljevic and Bennett, 2012). Below is the Figure 4.2, which was constructed by TARURA in one of the road within Kinondoni municipal, showing absence of drainage system pedestrian passages.

Figure 4.2: Drainage System and Pedestrian Passages

Source: Study field (2020)

The Figure 4.2 shows road constructed by TARURA within Kinondoni municipality showing absence of drainage system pedestrian passages.

Challenges facing TARURA in roads construction project

The third objective aimed at identifying the challenges facing TARURA in road construction project. The study analyzed seven variables, which are inadequate number of skilled staff, lack of trustworthy contractors, delay of budget allocation, inadequacy amount allocated and weakness in tendering,

In interpreting the results the mean score of 4.21-5.00 indicates “not challenging factor”, mean score of 3.41-4.20 indicates “low challenging factor” mean score of 2.61-3.40 indicates “moderate challenging factor”, mean score of 1.81-2.60 indicates “high challenging factor”, and mean scores ranging from 1.00-1.80 indicates “very high challenging factor”

Table 4.7: Challenges Facing TARURA in Roads Construction Projects

Variable	SA	A	M	D	SD	N	Mean
Inadequate number of skilled staff	5	3	1	4	2	15	2.67
Lack of trustworthy contractors	3	5	3	2	2	15	2.67
Delay of budget allocation	4	5	2	2	2	15	2.53
Inadequacy amount allocated	2	1	7	3	2	15	3.13
Weakness in tendering	1	3	3	7	1	15	3.27
Weighted mean							2.854

Source: Field data (2020)

Those who reported on inadequate number of skilled staff; 5 officers strongly agrees, 3 officers agreed, 1 officers neither agreed nor disagreed, followed by 4officers who disagreed and 2 officers who strongly disagreed with a mean score of 2.67This implies that; inadequate number of skilled staff was very high challenging factor.

Concerning lack of trustworthy contractors; 3 officers strongly agreed, 5 officers agreed, 3 officers neither agreed nor disagreed, 2 officers disagreed and 3 officers strongly disagreed with a mean score of 2.67. This implies that; trust worth contractors was high challenging factor.

Those who reported on the delay of budget allocation, 4 officers strongly agreed, 5 officers agreed, 2officers neither agreed nor disagreed, 2officers disagreed and 2 officers strongly disagreed, with a mean score of 2.53. This implies that; budget allocation was high challenging factor.

Regarding inadequacy amount allocated; 2 officers strongly agreed, 1officer agreed, 7officers neither agreed nor disagreed, 3officers disagreed and 2officers strongly disagreed, with a mean score of 3.13. This implies that; amount allocated was moderate challenging factor.

About weakness in bidder's selection, 1officerstrongly agreed, 3officersagreed, 3officers neither agreed nor disagreed, followed by 7officers disagreed and 1officers strongly disagreed with a mean score of 3.27. This implies that; weakness in bidder's selection was moderate challenging factor.

General weighted mean of 2.854 indicates that TARURA face moderate challenges on roads construction project. This proves that TARURA are able to solve the challenges with time.

Discussion concerning the challenges facing TARURA in road construction project

Below is the discussion that was obtained from the TARURA officers regarding the challenges that they were faced in road construction project. The objective had six

variables, which are inadequate number of skilled staff, lack of trustworthy contractors, delay of budget allocation, weakness in bidder's selection and inadequacy amount allocated.

Inadequate number of skilled staff

The study discovered that TARURA department had limited staffs which were required in deferent professional areas. One among the officer who was interviewed mentioned that:

> "TARURA *department needs people with different skills so as to work in different field. The IT depart need people with skills so as to fix the light, the quantity surveyors lawyers social workers*"

Further the study highlights that skilled staff who were employed were required to perform more than one professional job. Since the accountant was found to be involved in the procuring activities and this had an impact.

Lack of trustworthy contractors

Obtaining trust worthy contractors was among the factor that that TARURA considered before offering tender. Even though; the study revealed that obtaining trustworthy contractor was difficult since most of the contractors received more than one tender in different locations which lead to delay in the construction activities. One among the officers who was interviewed reported that:

> "*Sometimes projects delay due to untrustworthy contractors who receive more than one tender. This makes them to not stay focused in one activity*".

Theory of construction management revels that; contractors need to be very careful especially in the construction activities so as to achieve quality of the road (Radosavljevic and Bennett, 2012).

Delay of budget allocation and Inadequacy amount allocated

The study reports that budget is very important in making sure that the roads are well constructed. TARURA depends on budget from the government therefore delay of the budget allocation leads to delay of the construction activities one among the respondent reported that.

> "*Some time the amount requested for the construction of the road is not provided as requested sometimes the budget delayand this has resulted into poor quality of road construction*"

Road Transportation Investment Models insists that the project manager needs to calculate the Net present value (NPV), Internal Rate of Return (IRR), Benefit Cost Ratio (BCR) and Payback Method (PB) so as to identify value for money that could be used in road construction project(Cundill, 1982).

Weakness in bidder's selection

Concerning weakness in bidder's selection the study discovered that TARURA department faced difficulties in the selection of bidders, which had sent their proposal for offer tendering. One among the officer who was interviewed reported that:

> "*Selection of the right bidder have been difficult this is because some of the bidders who request for tender have resembled qualification and some have more experience than the other*"

Theory of construction management confirms that development and progress of construction depends on the perceptive of project management (Radosavljevic and Bennett, 2012). Therefore TARURA construction team needs to be very careful in the selection of right bidders so as to achieve development and progress of construction project.

CHAPTER FIVE

SUMMARY, CONCLUSION, RECOMMENDATION AND AREA FOR FURTHER STUDIES

5.1 Introduction

This chapter is consisting of summary of the study, conclusion of the study, recommendations of the study and area for further studies.

5.2 Summary

The study aimed at assessing quality of road construction project conducted by TARURA. Mainly the study focused in answering the research questions, which are: - What are the strategies used by TARURA in monitoring quality of road? What are the stakeholder satisfactions on roads constructed by TARURA? What are the challenges facing TARURA in roads construction project?

5.2.1 Effectives of the Strategies used by TARURA in Monitoring Quality of Road

The objective was made up of six variables, which are sufficient supervision, excellent tendering, sufficient evaluation of contractors, adequate road designs, method used in enforcing quality control and good survey. The results revealed that; Survey was highly effective in monitoring quality of the road same to the road designs, sufficient supervision, and evaluation of contractors, method used in enforcing quality control and excellent tendering was graded as highly effective strategies used by TARURA in monitoring quality of road.

5.2.2 Stakeholder Satisfaction on Roads Constructed by TARURA

The study also assessed stakeholders satisfaction on road constructed by TARURA the objective was made up with seven variables which are:- presence of road signs, presence of road lights, width of the road, presence of drainage systems, presence of pedestrian passages, smoothness of the road and absence of sharp corners. From the study results it was revealed that; stakeholders were highly satisfied with road signs and road lights constructed by TARURA; moderately satisfied with the drainage system, absence of sharp corners, width of the road, pedestrian passage and smoothness of the road.

5.2.3 Challenges Facing TARURA in Roads Construction Project

Also the study was interested in identifying the challenges that face TARURA in road construction project. The objective is composed of five variables which are:- Inadequate number of skilled staff, lack of trustworthy contractors, delay of budget allocation, inadequacy amount allocated and weakness in tendering. From the study findings it was revealed that; inadequate number of skilled staff, trustworthy contractors and delay of budget allocation was highly challenging factor while amount allocated and weakness in bidder's selection was moderate challenging factor.

5.3 Conclusion

Lastly the conducted study concludes that; the strategies used in monitoring quality of the road are highly effective while the stakeholders are moderately satisfied. However TARURA were faced with moderate challenges in road construction project. The study reveals that concerning quality of road construction project conducted by

TARURA more is to be done so as to improve quality of the roads within Kinondoni municipality.

5.4 Recommendation

This part gives recommendation of the study basing on the specific objectives

(i) TARURA needs to come up with new strategies such as collecting customer's opinion before and after road construction so as to identify the missing gape.

(ii) TARURA department concerning with road designing need to identify all the sharp canners that could possibly lead to road accidents.

(iii) There is a need of recruiting more skilled staff in TARURA department so as to allow delegation of duties.

5.5 Area for Further Studies

The study believes that there is need of conducting the same research in other areas where TARURA construct roads so as to identify the real quality of the roads constructed.

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APPENDICES

Appendix I: Questionnaire to Road constructors and Procurement officers

A. Introduction

This questionnaires aim at ASSESSING QUALITY OF ROAD CONSTRUCTION PROJECTS CONDUCTED BY TARURA. The information provided will be used for academic purpose as part of fulfillment of Masters Degree in Project management. Any information given will be confidentiality observed. Kindly tick the appropriate answer

B. Respondent profile

1. Gender of respondent

Male	1
Female	2

2. Age of respondent (in years)

18-25	26-30	31-35	36-40	41-45	46-50	Above 50
1	2	3	4	5	6	7

3. Education of respondent

Diploma	3
University education	4

4. Experience in Job position

< 3	3-6	7-10	>10
1	2	3	4

C. Study questions

1. The study wants to assess challenges facing TARURA in roads construction project. Please indicate how you would rate challenges facing TARURA in road construction below. (1= strongly agree, 2= agree, 3= neutral, 4= Strongly disagree, 5= Disagree).

Variables	strongly agree	agree	neutral	Strongly disagree	Disagree
Inadequate number of skilled staff	1	2	3	4	5
Lack of trustworthy contractors	1	2	3	4	5
Delay of budget allocation	1	2	3	4	5
Inadequacy of amount allocated	1	2	3	4	5
weakness in bidder's selection	1	2	3	4	5

2. The study wants to analyze effectiveness of the strategies used by TARURA in monitoring quality of road contraction. Please indicate how you would rate goodness of the factors relating to effectiveness of the strategies below. (1= Strongly disagree, 2= disagree, 3= Neutral, 4= Strongly agree, 5= agree).

Variables	Strongly disagree	disagree	Neutral	Strongly agree	agree
Proper survey	1	2	3	4	5
adequate road designs	1	2	3	4	5
sufficient Supervision	1	2	3	4	5
sufficient evaluation of contractors	1	2	3	4	5
method used in enforcing quality control	1	2	3	4	5

Appendix II: Questionnaire to stakeholders (road users)

A. Introduction

This questionnaires aim at ASSESSING QUALITY OF ROAD CONSTRUCTION PROJECTS CONDUCTED BY TARURA. The information provided will be used for academic purpose as part of fulfillment of Masters Degree in Project management. Any information given will be confidentiality observed. Kindly tick the appropriate answer.

B. Respondent profile

1. Gender of respondent

Male	1
Female	2

2. Age of respondent (in years)

18-25	26-30	31-35	36-40	41-45	46-50	Above 50
1	2	3	4	5	6	7

3. Education of respondent

No any formal education	1
Primary education	2
Secondary education/Diploma	3
University education	4

4. For how long have you been staying in this municipality (in years)

< 3	3-6	7-10	>10
1	2	3	4

C. Study question

5. The study wants to know how residents of Kinondoni municipality have been satisfied with the recently road constructed within this municipality. Therefore rate the level of your satisfactory with the following factors related to the roads.

Variables	Very-unsatisfied	Un-satisfied	Neutral	Satisfied	Very-satisfied
Presence of road signs	1	2	3	4	5
Presence of road lights	1	2	3	4	5
Presence of drainage systems	1	2	3	4	5
Smoothness of the road	1	2	3	4	5
Presence of pedestrian passages	1	2	3	4	5
Width of the road	1	2	3	4	5
Absence of sharp corners	1	2	3	4	5

6. Please give short explanation concerning your selection above

_____

_____

_____

Appendix III: Research Clearance Letter

THE OPEN UNIVERSITY OF TANZANIA

DIRECTORATE OF RESEARCH, PUBLICATIONS, AND POSTGRADUATE STUDIES

P.O. Box 23409 Fax: 255-22-2668759
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PG: 201800294

24th May 2019

Project Manager
China GEO Engineering Corporation
P.O. Box 149
Kyela, Mbeya

RE: RESEARCH CLEARANCE

The Open University of Tanzania was established by an act of Parliament no. 17 of 1992. The act became operational on the 1st March 1993 by public notes No. 55 in the official Gazette. Act number 7 of 1992 has now been replaced by the Open University of Tanzania charter, which is in line the university act of 2005. The charter became operational on 1st January 2007. One of the mission objectives of the university is to generate and apply knowledge through research. For this reason staff and students undertake research activities from time to time.

To facilitate and to simplify research process therefore, the act empowers the Vice Chancellor of the Open University of Tanzania to issue research clearance, on behalf of the Government of Tanzania and Tanzania Commission for Science and Technology, to both its staff and students who are doing research in Tanzania. With this brief background, the purpose of this letter is to introduce to you Ms. **Lilian Boniface Kimzanye**, **Reg No: PG 201800294** pursuing **Master Degree of Project Management.** We hereby grant this clearance to conduct a research titled: **"Assessment of the Quality of Road Construction Projects Conducted by TARURA: A Case of Kinondoni District"**, **s**he will collect her data in Kyela, Mbeya, Tanzania from 11th December 2019 to 7th February 2020.

In case you need any further information, kindly do not hesitate to contact the Deputy Vice Chancellor (Academic) of the Open University of Tanzania, P.O. Box 23409, Dar es Salaam. Tel: 022-2-2668820. We lastly thank you in advance for your assumed cooperation and facilitation of this research academic activity.

Yours sincerely,

,

Prof Hossea Rwegoshora
For: VICE CHANCELLOR
THE OPEN UNIVERSITY OF TANZANIA