UNITED REPUBLIC OF TANZANIA
MINISTRY OF WORKS, TRANSPORT AND COMMUNICATION
ROADS FUND BOARD

EVALUATION OF ROAD PROJECTS IMPLEMENTING AGENCY’S PERFORMANCE YEAR 2014/2015

Thursday, September 15, 2016
Executive Summary

1.0. Introduction

1.1. Background

In accordance with the Law which established the Roads Fund, the Law requires at least 90 percent of money deposited in the Fund to be used for maintenance and emergency repair of classified roads and related administrative costs in Tanzania Mainland in accordance with approved operations plans and at list 10% used for development works and related administrative costs. The distribution of fund to various beneficiaries of roads fund include 7 percent of funds are allocated to Ministry of Works to finance development projects; 63 percent is allocated to TANROAD for maintenance works and 30 percent is allocated to LGAs. RFB is assigned the responsibilities to ensure full collection of funds, disbursement and to monitor its utilization.

Technical Audit is conducted in accordance with (Clause 5.4 and Clause 5.8) of the Performance Agreement and Section 5 Subsection (4) (h) & (i) of the Road and Fuels Tolls Act CAP 220 (Revised edition 2006). Roads fund Board (RFB) has been conducting technical auditing every year for the purpose of evaluating roads projects funded by the board in order to see if they have quality and completeness respectively to Value for Money (VfM). Technical audit findings have been providing useful information which reveals the road agency’s performance status and facilitating RFB decision making and improvements where necessary.

1.2. Objectives of the Performance Analysis

The main objective of this report is to provide performance evaluation analysis on the road works executed in financial years 2013/14 and 2014/15 in accordance with performance agreement agreed upon between the RFB and the Implementing Agencies (TANROAD and LGAs). The specific objectives are:

i. To assess road projects Implementing Agency’s performance trends in two financial years.

ii. To provide performance comparable analysis between TANROADS and LGAs.

iii. To rank TANROADS best and poor performer regions.

iv. To rank best and poor performer LGAs

v. To provide valuable recommendations to RFB and other road stakeholders so as to manifest road sector improvement.
1.3. Methodology and Approaches

This analysis of technical audit reports has been based on Value for Money audit which is an independent evidence-based investigation to examine and report on whether economy, effectiveness and efficiency has been achieved in the use of road funds. RFB in association with Dr. Semboja Haji Hatibu Haji from the University of Dar es Salaam evaluated the performance of Implementing Agency carried out road projects with aim of examining VfM from those projects. Methods used were data collection, analysis and report writing. Data was collected from 22 technical audit reports for FY 2013/14 and 21 technical audit reports for the FY 2014/15. Data was analyzed by using computer software including Statistical Package For Social Science (SPSS) and MS Excel. Analyzed data was presented in tables followed with report writing. Report writing was based on the data presented in the tables in order to provide verbal descriptions on the observed findings.

2.0. Main Findings - Main findings is based on five main value for money criteria as follows

2.1. TANROADS Performance Status

2.1.1. Planning, Design and Tender Documentation

TANROADS performance at the stage of planning, design and tender documentation has been effective even though it was dropping over time. There is compliance of project planning with the requirements of performance agreement. There is accuracy, appropriate completeness of design calculations and technical drawings. Overall appropriateness of design in terms of economy and function has been good. Moreover, TANROADS has been performing better in ensuring that there are accurate and complete of bills of quantity (BOQs) and tender documents.

2.1.2. Procurement

The stage of procurement has been observed to be effective unlike to other stage particularly planning, design and tender documentation stage and project completion and closure. The study has found that, stability of market condition, signing contracts on time and capacity and capability of contractors, public accountability which lead to prescribed methods of tendering and prescribed policies towards the selection of the suppliers, good selection of the contractors and compliance with PPRA. However it was noted that, in some projects there was poor selection of methods of procurement, poor use of standard tender and contract document, and poor communication of clarification to bidders as well as evaluation processes and award of tenders.

2.1.3. Construction

Projects implemented by TANROADS in financial year 2013/14 and 2014/15, shows that there were an adequate performance in overall, however there some few parts should be stressed as it has relatively declined. Areas that are supposed to receive strong emphasis are; adherence to
quality assurance program, quality of environmental management plan, quality assurance program, and assessment including validity of claims and related cost overruns.

2.1.4. Project Completion and Closure

The stage of project completion and closure has been observed to be ineffective unlike to other stage particularly planning, design and tender documentation stage and procurement stage. The study has found that, as built drawings and snag lists were not prepared in many projects. In some projects, there were no evidence if contractors were attending liability period and other contractor were not notified the commence date of defects liability period. It is evidenced that final project reports were not prepared in most of projects. To a larger extent the quantities paid not been complied with the actual investments done. However, there is compliance of project costs as per final accounts with the accepted tender prices; as well as actual project completion time with the contract period.

2.1.5. Executed Works

Generally, the performance of TANROADS in this stage has been low for the observed years. Specifically, completed works satisfaction has been adequate due close project supervision. The compliance of major construction items of the completed works with drawings and technical specification has slightly dropped. It was observed decline in compliance of constructed culverts and bridges with technical drawings and specifications as well as the quality of materials used in pavement structures with technical specifications. Furthermore, there was decline in compliance of quality materials used in concrete and masonry work with technical specifications, and on average the compliance is still low for the observed years. The compliance of site clean-up and restoration of disturbed areas with EMP has slightly dropped while compliance of on-going construction activities with safety and EMP requirements has drastically dropped, and on average the compliance is low.

2.2. LGAs Performance Status

2.2.1. Planning, design and Tender Documentation

LGAs performance in a stage of planning, design and tender documentation has been low and it has been dropping overtime. There is inadequate compliance of project planning with requirement of performance agreement; inaccurate and incomplete design calculations and technical drawings, inappropriate technical specifications, inaccurate BOQ and engineer’s estimates as well as inadequate tender documentation.

2.2.2. Procurement

The stage of procurement has been observed to be relatively better and effective unlike in other stages particularly planning, design and tender documentation stage and project completion and closure, although in some aspects the performance have dropped. The study has found that, there was improvement of procurement methods in accordance to PPA, good policy, tenderer and management, good market condition and capability of contractors, the tender based on principles
competition, fairness and accountability and compliance of procurement process with PPA and its regulations. In some projects the evaluation process and award of contracts were poor hence contractors awarded contracts were incompetent. There was no publication of award and notification to the unsuccessful bidder, and the disqualification of the lowest bidder contrary to PPA 2011 and its Regulations 2013.

2.2.3. Construction Stage

The performance of LGAs under this stage for the observed financial years has dropped in all aspects, and on average the performance has been low. The timeliness performance has been moderated since there was adherence to contract with respect to handover the site to contractors. Inadequate LGAs performance has been observed in quality and adherence to project programs as well as quality of contractor’s site organization and staff. Also there was low performance in quality and adherence to/of quality of assurance program, and also there was low quality of and unavailability of Environmental Management Plan to most of the projects. Furthermore, there was low quality and mismanagement of project documentation. However, there was satisfactory performance in quality of supervising engineer’s and site staff, management of contractual documents including security and insurance bonds. Moreover, there was satisfactory performance in assessment (including validity) of variations, assessment (including validity) of claims and related cost overruns and assessment (including validity) of project delays and extensions of time. These are very sensitive parts in construction stage; it should be further emphasized as it carries weight contributing to quality project outcome.

2.2.4. Project Completion and Closure

LGAs performance in the stage of project completion and closure has dropped, and it is still unsatisfactory for both observed years. In most LGA’s As-built-drawings, snag lists and final project completion reports were not prepared; and also there was inadequate management of defects liability period. There is late issuance of completion certificates and settlement of final accounts. There is low compliance of quantities paid with actual investments done as per as-built-drawings, as well as actual project completion time with contract period. Also there is unsatisfactory compliance of project costs as per final accounts with the accepted tender prices.

2.2.5. Executed Works

The performance of LGAs has dropped in the assessment of executed works stage. The quality of completed works has been low. There is inadequate compliance of quality of materials used in pavement structures and concrete and masonry works with technical specifications. And also there is low compliance of site clean-up and restoration of disturbed and/or damaged areas. Moreover, the compliance of on-going construction activities with safety and EMP requirements has been low for the observed years. However, there was satisfactory compliance of dimension of major construction items of completed works; and culverts and bridges with the drawings and technical specifications.
2.3.  Overall Performance Status

2.3.1.  Planning, design and tender documentations

The overall performance at this stage is 71.8 percent for TANROADS and 49.8 percent for LGAs. TANROADS has been performing better than LGAs at a stage of planning, design and tender documentations. TANROADS has performed better in compliance of project planning with requirements of performance agreement. It has got accurate and complete design calculations and technical specifications compared to LGAs. Also TANROADS has got accurate, appropriate and complete technical specifications, design in terms of economy and function, BOQ, engineers’ estimates and tender documents contrary to LGAs.

2.3.2.  Procurement

The overall performance at this stage is 83.6 percent for TANROADS and 68.0 percent for LGAs. Generally, the performance in terms of average, TANROADS was good than LGAs for the FY 2013/14 to FY 2014/15. The factors for the good performance are the improvement of procurement methods in accordance to PPA, good policy, tenderers and good management, good market condition, signing contracts on time and capability of contractors (RFB 2014/15), good evaluation process and award of contract and compliance of procurement process with PPA and its regulation, TANROADS procurement is in good position rates provided by contractors were within engineers estimates, evaluation procedures were followed, awards and notification were done based on regulations.

2.3.3.  Construction Stage

The overall performance at this stage is 62.0 percent for TANROADS and 45.6 percent for LGAs. TANROADS’ performance improvements have been observed in area of timeliness of site possession; project programs and adherence to quality assurance program as well as quality of site organization, staffs and supervising staffs. LGA performance was noted to be significantly improved although it was still underperforming. It was performing poorly in areas such as adherence to project program and quality assurance program. Other areas included non-compliance to EMP and project documentations. Also, there were claims and costs overruns as well as project delays and extension of time.

2.3.4.  Project Completion and Closure

The overall performance at this stage is 21.8 percent for TANROADS and 21.1 percent for LGAs. However the overall performance of all agencies is very low. In general TANROADS has been performing better than LGAs in this stage. Both have been performing inadequately in management of quality and completeness of as-built-drawings. TANROADS has been performing better in aspects of compilation and management of snag lists as well as timely issuance of project completion certificates and settlement of final account. There is inadequate management of defects liability period as well as low quality and inadequate final project reports to both TANROADS and LGAs. Also there is the same performance to both in aspect of compliance of final quantities paid for with those reflected by the actual investments as per as-
built-drawings. Furthermore, TANROADS has been performing better in aspect of compliance of project costs as per final accounts with the accepted tender prices; and actual project completion time with contract period.

2.3.5. Executed works

The overall performance at this stage is 46.0 percent for TANROADS and 36.5 percent for LGAs. In wider range TANROADS has been performing better compared to LGAs in a stage of executed works. TANROADS has been performing better in ensuring satisfaction of completed works and compliance of dimension of major construction items of completed works with the drawings and technical specifications. Also best performance by TANROADS has been revealed in compliance of dimensions of culverts and bridges with drawings and technical specifications. Moreover, TANROADS have been performing better in compliance of quality of materials used in pavement structures as well as concrete and masonry works with technical specifications. Both have been performing unsatisfactory in compliance of site clean-up and restoration of disturbed and/damaged areas as well as on-going compliance with EMP requirements.

Table 1: Implementing Agencies overall performance trend

<table>
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<td>41.3</td>
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<td>58.5</td>
<td>50.5</td>
<td>54.5</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td>Rate of Growth in %</td>
<td></td>
<td></td>
<td>13.7</td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Roads Fund Board, 2015

Key:

- Decrease
- Decline
2.4. General Recommendations

- Ensure timely disbursement of funds to TANROADS, local authorities and other agencies so as to enable improvement of Project Completion and Closure and Executed Works stages by completing projects on time.

- Put in place efficient systems of operations of TANROADS, local authorities, to ensure that they fully comply with the APA.

- Ensure effective monitoring control on the use of the funds disbursed to TANROADS, local government authorities or other agencies for the purposes and objectives of the fund.

2.4.1. Specific Recommendations

2.4.1.1. Planning, designing and tender documentation

- The emphasis should be invested on the use of software such as DROMAS for LGAs as well as HDM4 and RMMS for TANROADS in planning processes so as to enhance economic viability of the projects.

- The road agencies should maintain survey and inventory all over to gain information for updates in the database to be used in projects planning.

2.4.1.2. Procurement Stage

- Road agencies should have to comply with Public Procurement Act and regulations during procurement processes.

- There should be enhancement of record management systems to the road agencies so as to collect and keep records for use.

- Evaluation and award of tender should be done with observance of the compliance against capacity and competence of contractors, as well as the price and complexity of the projects.
2.4.1.3. **Construction Stage**

- There should be spread of knowledge to IA’s engineers about having EMP in road construction sites.

- There should be continuous capacity building programs to local contractors for the purpose of enhancing their competency and capital capacities.

- The road agencies are advised to put more emphasis on measures that enhance environmental conservation to the sites where projects take place.

- Road agencies are supposed to ensure that project schedules are prepared and revised where necessary.

- RFB and other road project donors have to disburse funds on time to road agencies to facilitate timely implementation of road.

2.4.1.4. **Project Completion and Closure**

- The managements are supposed to emphasize on submission of up-to-date projects reports and as-built drawings for completed works and ensure snag lists are prepared during project handover for monitoring defects and defects remedy during defect liability period.

2.4.1.5. **Executed Works**

- Road agencies should closely manage the contractors employed and ensure that major construction items are submitted as specified in contracts based on physical site measurements and technical specifications.

- There should be assessment of construction materials expected to be used in road construction projects so as to enhance use of quality materials for sustainability of roads constructed.

- Road projects should comply with environmental laws and regulations in order to conserve the environment in areas where they are executed.
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<th>Description</th>
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<tbody>
<tr>
<td>BOQs</td>
<td>Bills of Quantity</td>
</tr>
<tr>
<td>BRD</td>
<td>International Bank for Reconstruction and Development</td>
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<tr>
<td>CER</td>
<td>Civil and Environmental Research</td>
</tr>
<tr>
<td>CoP</td>
<td>City Of Peterborough</td>
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<td>CTA</td>
<td>California Technology Agency</td>
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<td>DFID</td>
<td>Department for International Development</td>
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<td>Department of Infrastructure, Planning and Natural Resources</td>
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<td>DROMAS</td>
<td>District Road Management System</td>
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<td>EBRD</td>
<td>European Bank for Reconstruction and Development</td>
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<td>EMP</td>
<td>Environmental Management Plan</td>
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<td>ERA</td>
<td>Ethiopian Road Authority</td>
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<td>EYRC</td>
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<td>FY</td>
<td>Financial Year</td>
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<td>IFA</td>
<td>Institute and Faculty of Actuaries</td>
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<td>LGAs</td>
<td>Local Government Authority</td>
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<td>MKUKUTA I</td>
<td>Mpango wa kukuza Uchumi na Kupunguza Umaskini Tanzania</td>
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<tr>
<td>MOTI</td>
<td>Ministry of Transport and Infrastructure</td>
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<td>Ministry of Works</td>
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<td>National Audit Office</td>
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<td>WSDOT</td>
<td>Washington State Department of Transport</td>
</tr>
</tbody>
</table>
Chapter One

Introduction

1.0. Background

Road connectivity is a key enabler of economic growth and transition in the country. By providing the physical networks and services upon which the economy and society depends for the movement of people and goods, and by connecting areas of economic activities within the country increases the access of businesses and consumers to market and services, promotes economic diversification and regional integration, supporting growth of the wider economy.

The country road network is estimated to be 87,000 km long which includes trunk, regional, district, feeder and urban roads. Urban, district and feeder roads, which are estimated to be over 52,000 km, are managed by Local Government Authority (LGAs) while regional trunk roads (25,000 km) are managed by Tanzania National Roads Agency (TANROADS). In addition to this, some road networks which are in National Parks and Game Reserve are managed by the Tanzania National Parks (TANAPA) and other institutions.

In accordance with the Law which established the Roads Fund CAP 220 of 2006, into which shall be paid all monies collected as roads and fuel tolls imposed on diesel and petrol, transit fees, heavy vehicle licenses, vehicle overloading fees, or from any other source at the rate or rates to be determined by Parliament from time to time; the Law requires at least 90 percent of money deposited in the Fund shall be used for maintenance and emergency repair of classified roads and related administrative costs in Tanzania Mainland in accordance with approved operations plans and at least 10% be used for development projects and related administrative costs. 7 percent of funds are allocated to Ministry of Works to finance development projects; 63 percent is allocated to TANROAD and 30 percent is allocated to PORALG for maintenance and development projects respectively. Road Fund Board (RFB) is assigned the responsibilities to ensure full collection of funds, disbursement and to monitor its utilization.

From July 2011 after consultations with Stakeholders new weighting percent and parameters for assessing Vfm were introduces. New VfM weighting covers 20 percent for planning, designing
and tender documentation; 10 percent for procurement stage; 20 percent for construction stage; 10 percent for project completion and closure stage and 40 percent for executed works. In Vfm also there are several parameters as shown in table 1.

Tables 1 shows Value for money instrument stages for assessing projects and respective number of parameters.

<table>
<thead>
<tr>
<th>S/No</th>
<th>Stage</th>
<th>Weighting (%)</th>
<th>Number of Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Planning, Designing and Tender Documentation</td>
<td>20</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>Procurement Stage</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>Construction Stage</td>
<td>20</td>
<td>13</td>
</tr>
<tr>
<td>4</td>
<td>Project Completion and Closure Stage</td>
<td>10</td>
<td>8</td>
</tr>
<tr>
<td>5</td>
<td>Executed Works</td>
<td>40</td>
<td>7</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>100</td>
<td>41</td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

1.1. Objectives of the Performance Analysis

The main objective of this report is to provide performance evaluation analysis on the road works executed in financial years 2013/14 and 2014/15 in accordance with performance agreement agreed upon between the RFB and the Implementing Agencies (TANROADS and LGAs). The specific objectives are:

i. To assess road projects Implementing Agency’s performance trends in two financial years.

ii. To provide performance comparable analysis between TANROADS and LGAs.

iii. To rank TANROADS best and poor performer regions.

iv. To rank best and poor performer LGAs
v. To provide valuable recommendations to RFB and other road stakeholders so as to manifest road sector improvement.

1.2. Methods and approaches

The evaluation of road projects Implementing Agency performance has based on Value for Money audit which is an independent evidence-based investigation to examine and report on whether economy, effectiveness and efficiency has been achieved in the use of road funds. RFB in association with a consultant from the University of Dar es Salaam came up to evaluate the performance of Implementing Agency carrying out road projects with aim of examining VfM from those projects. Methods used were data collection, analysis and report writing. Data was collected from 22 technical audit reports for FY 2013/14 and 21 technical audit reports for the FY 2014/15. Also, data was collected from the sample of 547 and 628 roads executed projects for the FYs 2013/14 and 2014/15 respectively. Data was analyzed by using computer software such as statistical package for social science (SPSS) and MS Excel. Analyzed data was presented in tables followed with report writing. Report writing was based on the data presented in the tables in order to provide verbal descriptions for the observed findings.

1.3. Outline of the report

The organization of this report is designed to provide a reader with the general over view of the analysis conducted. Analysis was conducted to evaluate results from technical audits conducted in road related project.

The report comprises of a total of four chapters as follows:- chapter one provides an introduction and background information and scope of work.

The second chapter presents the analysis information about the evaluated performance of roads’ related projects executed by TANROADS and its weighted average performance of overall projects.
Chapter three contains the analysis of information of roads’ related projects performance by local government authorities (LGAs) and their weighted average performance analysis of roads related projects.

Chapter Four contains conclusion and general recommendations. It also provides a brief about the status of evaluated performance and the way forward on how to improve the performance of implementing agencies.

1.3.1. **Color Presented in the Tables**

Table 1.1 has colors to present visual performance behavior of the analyzed parameters for the observed years. The colors used are green, yellow, orange and red where these colors represent the following performance behavior:

**Table 1.1: Performance Behavior**

<table>
<thead>
<tr>
<th>Percentage Range</th>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>80% and Above</td>
<td>Excellent</td>
<td>All set targets achieved and funds well utilized.</td>
</tr>
<tr>
<td>70% - 79%</td>
<td>Good</td>
<td>Most of the set targets achieved and funds absorption is over 70%.</td>
</tr>
<tr>
<td>60% - 69%</td>
<td>Moderate</td>
<td>Some of the core set targets achieved and funds absorbed to over 60%.</td>
</tr>
<tr>
<td>50% - 59%</td>
<td>Satisfactory</td>
<td>Few targets achieved and funds absorption is over 50%.</td>
</tr>
<tr>
<td>Less than 50%</td>
<td>Low</td>
<td>No target achieved and funds absorption is less than 50%</td>
</tr>
</tbody>
</table>
Chapter Two

TANROADS Roads Projects

2.0. Introduction

TANROAD is an executive road agency responsible for maintenance and development of the trunk and regional roads network in Tanzania Mainland. The technical auditing is conducted to evaluate the performance of roads agency in handling roads projects in its areas of jurisdiction. This analysis of technical audit reports has shown the current status on performance in each stage of projects and suggested some recommendations.

The chapter has six (6) main sections. Section 1.2 covers issues related to planning, designing and tender documentation. Section 1.3 covers issues related to procurement and section 1.4 covers issues related to construction. Furthermore, section 1.5 covers issues related to project completion and closure while section 1.6 covers issues related to executed works. Lastly, section 1.7 covers issues related to TANROADs’ overall performance.

2.1 Planning, Design and Tender Documentation

Planning, design and tender documentation is the first phase for the project. Planning includes; collecting data on traffic accounts, planning and evolving development plans for maintained new roads, liaison with the Ministry works, transport and communication for road requirements, feasibility studies for long range planning; project evaluation and cost estimates for seeking finance from the treasury.

The design of project activities involve survey, geometric design; preparation of design standards, specifications and contract documents.

Table 2.1 shows the performance of project planning, designing and tender documentation for TANROADs projects for FYs 2013/14 and 2014/15.
Table 2.1: Project Planning, Design and Tender Documentation

<table>
<thead>
<tr>
<th>Project implementation aspects</th>
<th>2013/14</th>
<th></th>
<th></th>
<th></th>
<th>2014/15</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2013/14</td>
<td>2014/15</td>
<td>2013/14</td>
<td>2014/15</td>
<td>N/A</td>
<td>Very poor</td>
<td>Poor</td>
<td>Fair</td>
<td>Good</td>
<td>Total</td>
<td>N/A</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Compliance of project planning with requirements of the PA.</td>
<td>13.3</td>
<td>1.3</td>
<td>0</td>
<td>25</td>
<td>60</td>
<td>100</td>
<td>1.1</td>
<td>0</td>
<td>1.1</td>
<td>21.1</td>
<td>76.7</td>
</tr>
<tr>
<td>Accuracy and completeness of the design calculations and technical drawings.</td>
<td>5</td>
<td>0</td>
<td>11</td>
<td>21</td>
<td>63</td>
<td>100</td>
<td>5.6</td>
<td>0</td>
<td>6.7</td>
<td>34.4</td>
<td>53.3</td>
</tr>
<tr>
<td>Accuracy, appropriateness and completeness of technical specifications.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>12</td>
<td>88</td>
<td>100</td>
<td>2.2</td>
<td>0</td>
<td>2.2</td>
<td>17.8</td>
<td>77.8</td>
</tr>
<tr>
<td>Overall appropriateness of the design (economy and function)</td>
<td>1</td>
<td>0</td>
<td>3</td>
<td>16</td>
<td>80</td>
<td>100</td>
<td>1.1</td>
<td>0</td>
<td>2.2</td>
<td>11.1</td>
<td>85.6</td>
</tr>
<tr>
<td>Accuracy and completeness of the design of BOQs</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>73</td>
<td>100</td>
<td>1.1</td>
<td>0</td>
<td>1.1</td>
<td>30</td>
<td>67.8</td>
</tr>
<tr>
<td>Accuracy of the engineers’ estimates</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>25</td>
<td>71</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>1.1</td>
<td>32.2</td>
<td>66.7</td>
</tr>
<tr>
<td>Accuracy and completeness of the design of tender documents</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>27</td>
<td>72</td>
<td>100</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>25.6</td>
<td>74.4</td>
</tr>
<tr>
<td>Overall performance</td>
<td><strong>72.4</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>71.8</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>


2.1.1 Compliance of project planning with the requirements of performance agreements

A planning performance agreement is a project management tool which the planning authorities and applicants can use to agree timescales, actions and resources in the form of performance standards for the consideration and determination of the planning application. Planning performance agreements can be particularly useful in establishing appropriate measures for monitoring compliance with the respective parties’ and setting out an efficient and transparent process for determining large and/or complex planning applications. In preparing for projects’ planning, there is significant number of related activities clearly identified to enable the project planning process completed, (ERYC, 2005).

For effective evaluation of this variable, the following criteria should be considered: assessment of competing alternatives based on updated road inventory and condition Survey, Analysis of
feasibility based on appropriate road maintenance software (such as HDM 4, DROMAS, or RMMS) and Timely appointment of in-house/ independent design professional or Consultant should be considered (VFMI, 2013).

Table 2.1 shows that the compliance of project planning with the requirements of performance agreements (PA) has increased by about 27.8 percent from 60 percent in FY 2013/14 to 76.7 percent in FY 2014/15. And on average the compliance of project planning with the requirements of PA has been moderate at about 68.35 percent. The observed improvement in performance in this aspect has been resulted from the utilization of software during planning; presence of appropriate interventions to some projects and presence of strip maps on some projects. However, the project economic analysis was not successful because HDM4/RMMS software was not used to compare alternatives for economic viability in most of the projects which retard their performance (RFB, 2015).

The decision made in the project planning without the use of road maintenance software has impacts to roadway design capabilities which help professional engineers create data-rich models, and the streamline roadway geometry layout, including intersection design, with powerful, rules-based toolsets and analysis capabilities that helps uncover potential impacts in the preliminary design phase (Autodesk, 2015). By using HDM4/RMMS software there is a wide room of improvement for project planning with requirements of the PA in terms of project economic analysis and strengthen proper project decision making (Heggie 2004).

2.1.2 Accuracy and completeness of design calculations and technical drawings

The technical equations used for expressing the value of projects designed for execution should be free from material errors and consistent if the same estimates are used from different periods. With no relevant information excluded from being used in the calculation and drawings of the technical provisions without justification, technical drawings determine the structure of designed projects in order to compose plan to visually communicate the scope of a project to be undertaken.
Table 2.1 shows that the accuracy and completeness of design calculations and technical drawings has declined by about 15.4 percent from 63 percent in FY 2013/14 to 53.3 percent in FY 2014/15. However, on average there is a satisfactory performance on accuracy and completeness of design calculations and technical drawings at about 58.15 percent for the observed years. The declining of performance was influenced by absence of drawings calculations; road signs; Lack of strip maps; inconsistence of some design documents; violation of engineers principals such as the use of RMM software as well as inadequate details for development projects (RFB 2015).

The sequential decline in accuracy and completeness of design calculations and technical drawings has the long term effects on the projects efficiency. If the design stage where the requirements of the client are identified and the constructive aspects and the standards of quality are defined through procedures, drawings and technical specifications are not well encountered, the results will be underperformance on other stages. Hence, poor performance of the whole project (CoP, 2015).

2.1.3 Accuracy, appropriateness and completeness of technical specifications

A detailed description of technical requirements, usually with specific acceptance criteria, stated in terms of suitable to form the basis for the actual design development and production processes of the project. Technical specifications contain all detailed information reviewed by projects’ team in order to understand the requirements and refine them, facilitate developing projects budget and resource needed to implement solutions. Thus technical specifications included in the design ensure that the system, if built in accordance with the plans and specifications, will be in compliance with the building codes and good engineering practice current at the time of design.

Table 2.1 shows that accuracy, appropriateness and completeness of technical specifications has dropped by about 11.6 percent from 88 percent in FY 2013/14 to 77.8 percent in FY 2014/15. However, the average performance has been excellent at about 82.9 percent for the observed years. The decline in performance to some projects was contributed with some factors such as detailed documents and information were not accurate and not in place; Standard specifications
were not used; absence of detailed specifications as well as incomplete materials specifications (RFB 2015). The decline in performance in this aspect has resulted to ambiguities in requirements surface later in the life cycle, and more time and money been spent in fixing these ambiguities (Tran, 1999).

2.1.4 Overall appropriateness of design in terms of economy and function

The intention of the engineers for projects construction is conveyed to the contractors by drawings. Road designing typically begins by creating an existing surface condition and compiling a base map of existing conditions; information about the topography, parcels, utilities, and other potential impacts to the route design. Creating structural ground map of road is based on the quality measure of stakeholder’s criteria. Project design reflects the functional operational activities to be undertaken considering the available resource. To design a project work is a task which needs experience in estimating structure of work schedule with comparison to the available resources (Autodesk, 2012).

According to data on table 2.1, the overall appropriateness of design in terms of economy and function has improved by about 7 percent from 80 percent in FY 2013/14 to 85.6 percent in FY 2014/15. However, on average the performance in overall appropriateness of the design in terms of economy and function has been excellent at about 82.8 percent for the observed years. In most of the projects, a designer begins with a checklist of features that are essential and desirable; information about the topography, parcels, utilities, and other potential impacts to the route design, structural ground map of road were based on the quality measure of stakeholder’s criteria reflecting the functional operational activities to be undertaken considering the available resource, (RFB 2015).

By incorporating design standards various physical features of the road alignment, functional classifications of the road and the amount and character of the traffic has impacted positively the optimization of cost and safety, comfortability and the appealing of the road to the eyes, (Tom et al, 2007).
Despite the overall good performance of the projects in overall appropriateness of design in terms of economy and function with a rising trend still there are some factor hindering the performance of some projects to perform well such as; comparison which was made and also the use of software for road maintenance was not emphasized; lack of awareness and information about the imposed budget for projects led to inappropriate estimation hence wrong projects design, (RFB 2015).

2.1.5 Accuracy and completeness of bills of quantity (BOQs)

The Bill of Quantities (BOQ) shows a list of brief descriptions and estimated quantities. The quantities are defined as estimated because they are subject to admeasurement and are not expected to be totally accurate due to the unknown factors which occur in civil engineering work (Atkinson, 2000). The objective of preparing the Bill of Quantities is to assist estimators to produce an accurate tender efficiently and to assist the post contract administration to be carried out in an efficient and cost-effective manner. It should be noted that the quality of the drawings plays a major part in achieving these aims by enabling the engineer to produce an accurate bill and also by allowing the estimator to make sound engineering judgments on methods of working (Tweeds, 2014).

According to table 2.1, the accuracy and completeness of bills of quantity (BOQs) has dropped by 7.1 percent from 73 percent in FY 2013/14 to 67.8 percent in FY 2014/15. In spite of such drop, the average performance of this variable has been good at about 70.2 for the evaluated financial years. This implies that, the objectives of preparing the BOQ were met with some minor weakness on the issue of consistency with drawings and technical specifications.

TANROADS performance on accuracy and completeness of bills of quantity (BOQs) for two financial years was decreasing due to some reasons including lack of relevant documents classifying quality of work; projects file did not contain information about projects estimated costs; inconsistency with drawings, missing items for material test and relevant drawings and specifications were not available (RFB, 2015). This has impacted to more variations during construction and so less price certainty when the investment decision is made.
2.1.6 Accuracy of the engineers’ estimates

The engineer’s estimate is an important part of the overall design process. It is a determination of the construction costs based on the details in BOQs for any given project. The estimate is then used for programming and funding proposes. Preparing the estimate requires knowledge of construction methods, fabrication processes and construction costs based on the measurement and payment section in the specifications. Cost estimates are prepared manually to determine preliminary or alternative cost estimates. When design details are limited may be rounded based on the experience of the cost engineer, whereby, the end cost is not significantly affected Yakowenko, 2004).

Table 2.1 shows that engineers’ estimates about the total cost of projects based on the details in BOQs and experience have dropped by 6.1 percent from 71 percent in FY 2013/14 to 66.7 percent in FY 2014/15. However, on average the performance of TANROADS in accuracy of the engineer’s estimates has been moderate at about 68.9 percent for the observed years. In most projects, cost estimates were well prepared with the use of good estimation methods and there was well consumption of available resources.

However, in some projects there was inaccurate engineer’s estimates and this influenced by number of factors including the use of inappropriate software for estimates; improper range of values; incomplete or incorrect information; the failure to reflect prices prevailing at the time the estimate is prepared (either understating or overstating them); lack of adequate risk assessment and quantification and improper corresponding statements of scope and estimation done based on insufficient information or analysis, (RFB 2015).

Inaccuracy of engineer’s estimates has brought some impacts where engineers estimate to fail to encapsulate the unknowns in the estimated results and an exclusion of those who would actually implement the project from the estimating process and failure in deriving project construction cost. Thus engineer estimate is therefore a significant factor against which the success of a project is measured. An accurate and complete engineer estimate goes a long way toward
supporting the successful delivery of a project within its approved budget, (County of Riverside 1999).

2.1.7 Accuracy and completeness of tender documents

The document containing necessary application papers and informs of additional information that the suppliers must deliver in order to apply for the tender and enter the selection process. The tender document gives a detailed explanation of the deadlines, requirements, necessary information and criteria. In general it consists of the following documents: a cover letter, an invitation to tender, the form of the tender, the terms and conditions of the contract, a bill of quantities, the specifications, designs/drawings and/or plans, the quality requirements, the evaluation criteria and the tender return label. The criteria upon which a supplier is usually chosen are the proposed prices and costs, delivery times and terms, availability and quality (EBRD 2010).

Table 2.1 shows that the performance accuracy and completeness of tender documents has increased from 72 percent in FY 2013/14 to 74.4 percent in FY 2014/15 by about 3.3 percent. And on average the performance in accuracy and completeness of tender documents has been good at about 73.2 percent for the observed years. It implies that in most of the projects there was accurate and complete tender documents.

Despite of accurate and complete tender documents, still in some projects TANROADS did not perform well due to some contractors organization charts were not adequate, lack of relevant information and poor quality tender documents that lead to inaccurate estimates, higher margins in bids, claims and disputes (RFB 2015).

2.1.8 Overall performance

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely
to identify the contribution of efforts upon completion of tasks for final managerial decisions; whether to empower the exiting or invest new efforts.

Table 2.1 shows that TANROADS overall performance has declined by about 0.6 performances from 72.4 percent in FY 2013/14 to 71.76 percent in FY 2014/15. However, on average overall performance in planning, design and tender documentations has been high at about 71.9 percent for the observed years.

The decline of overall performance has been influenced by various factors where the HDM4/RMMS software was not used to compare alternatives for economic viability in most of the projects. The design drawings were incomplete and implicit, specifications were greater hence difficult to handle them and finally ignored. And also often design documents were having inconsistency, errors and omissions hence lack clarity in presentation. There was use of inappropriate software for estimates and improper range of values which influenced by having incomplete or incorrect information (RFB 2015).

Despite the overall decline in the performance due to the moderate and adequate scores of accuracy; appropriateness and completeness of technical specifications; accuracy and completeness of bills of quantity (BOQs); accuracy of the engineers’ estimates and accuracy and completeness of design calculations and technical drawings, the overall performance of project planning, designing and tender documentation is good at about 72.4 percent for the FY 2013/14 and 71.8 per cent for the FY 2014/15.

2.2 Procurement Stage

Procurement means buying, purchasing, renting, leasing or otherwise acquiring any goods, works or services by a procuring entity and includes all functions that pertain to the obtaining of any goods, works or services, including description of requirements, selection and invitation of tenderers, preparation and award of contracts (PPA 2011)

Table 2.2 shows the TANROADS performance in procurement stage in FY 2013/14 and 2014/2015.
## Table 2.2: Procurement stage

<table>
<thead>
<tr>
<th>Procurement Parameters</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A</td>
<td>Very Poor</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Appropriateness of method of procurement.</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Compliance of procurement process with PPA 2004.</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Evaluation process and award of contract.</td>
<td>0</td>
<td>3</td>
</tr>
<tr>
<td>Competitiveness of rates quoted for major items of construction.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Overall competitiveness of most economic tender compared with market price.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Capacity and competence of selected contractor in relation to project size and complexity.</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Average Performance</strong></td>
<td><strong>86</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Roads Fund Board, 2015

### 2.2.1 Appropriateness of Methods of Procurement

Procurement methods are the procedures used by the procuring entity to acquire goods, services and works. There are many factors which determine which method is appropriate, but the most important of these would be: requirements of the Government Contract Regulations, Financial Administration Manual, requirements of the Trade Agreements, urgency of requirement, estimated dollar value, complexity of requirement, quantities required, commercial availability, source of supply, the Business Incentive Policy, land claim agreements and economic development initiatives (Negotiated Contracts) (GNWT,2009).

Appropriateness of Procurement Methods is evaluated based on the adherence to Regulation 47(2) of G.N. No. 97 stipulates that approval of the AO or CEO must be held either by inclusion of that procurement in a procurement programme or plan or by request an individual item of procurement. Regulation 54(1) of G.N. No. 97 states that approval of the tender documents by the TB is required before the tender is advertised. Furthermore, section 30(d) of PPA 2004 lists approving of procurement procedures as one of the TB functions. The Second Schedule of the
G.N. No. 97 of 2005 also specifies Methods of Selection and Limit of Application of each method (VFMI, 2013).

The table 2.2 shows that appropriateness of the methods of procurement for TANROADS projects has slightly decreased by about 1.1 from 93 percent in FY 2013/14 to 92 percent in FY 2014/15. However, on average the TANROADS performance in appropriateness of methods of procurement has been excellent at about 92.5 percent for the period under consideration. The good performance for most of TANROADS projects was enriched by observance of all procurement regulations, and good selection of methods of procurement (RFB, 2015).

The slightly performance decline in the appropriateness of the method of procurement was influenced by poor determination on the selection of the most appropriate procurement method for the specific need to some of the projects. It is also one of the reasons contributing to the poor performance of the construction industry principally (Ali et al 2011). The selection of an inappropriate procurement method may lead to undesirable project outcomes and hindrance in obtaining value for money and may not make effective use of both State government and private sector resources. And also inappropriate procurement method adopted is one of the major factors affecting cost and time overruns (ibid).

Research undertaken to assess the Nigerian procurement sector have shown weak correlation between methods of procurement used and project performance (AJER, 2015). And in the U.S. the public sector statutes that govern procurement, typically based on FARs, strongly favor the use of competitive bidding. Competitive tendering is widely recognized as an attractive procurement mechanism and is commonly advocated for several reasons; most notably it is viewed as a procedure that stimulates and promotes competition. By its nature, open competitive tendering invites potential suppliers from many venues. Furthermore, in the face of competition from many potential suppliers each one has strong incentives not to inflate his price. For example, from 1995 to 2000, ninety-seven percent of public sector building construction projects in Northern California were procured using competitive bidding. While competitive bidding does have the advantage of unbiased awarding of projects (Bajari and Tadelis, 2006).
Therefore more emphasis should be on the use of new procurement methods but it needs to question the impact if any of using the modern procurement strategies on the objective of the project concern.

### 2.2.2 Compliance of the Procurement Process with PPA and its Regulations

Procurement process means the successive stages in the procurement cycle, including planning, choice of procedures, measures to solicit offers from tenderers, examination and evaluation of those offers, award of contract and contract management (PPA 2011). Public Procurement Act regulates the purchasing by public sector bodies and certain utility sector bodies of contracts for goods, works or services. This section examine the extent to which TANROADS projects conform to rule such as specifications, policy, standard or law of procurement process with PPA and its regulation.

Table 2.2 shows that compliance of the procurement process with PPA and its regulations for TANROADS projects has increased by about 7.4 percent from 81 percent in FY 2013/14 to 87 percent in FY 2014/15. And on average, the compliance of the procurement process with PPA and its regulations has been excellent at about 84 percent for the observed years. In general procurement process followed the regulations, tendering procedure were adhered, evaluation considered criteria set in the tender dossier (RFB 2015).

Adherence to PPA 2011 and its Regulations 2013 leads to a success of a project with a good performance in terms of time, cost and quality. In the case of Nigeria, the procurement process has largely remained the same though there are evidences of the use of many modern procurement methods but currently the Nigerian procurement industry is going through a period of revival which resulted in the enactment of Procurement Act in 2007 (AJEL, 2015). Conforming to regulations leads to efficiency and effectiveness in procurement. The procurement entity should comply with regulation 97(11) of G.N. No. 97, unsuccessful bidders should be notified.
2.2.3 Evaluation Process and Award of Contract

Evaluation process is the situation where a contracting authority identifies which one of the tenderers meets the set requirements. In order to award to the lowest bidder, they must be responsive and meet all the technical requirements stated in the invitation for bids. Holt (1998) defined Contractor evaluation as the process of investigating or measuring Contractor attributes, and Contractor selection as the process of aggregating the results of evaluation to identify an optimum choice.

Table 2.2 shows the performance in evaluation process and award of contracts has dropped by about 10.9 from 82 percent in FY 2013/14 to 73 percent in FY 2014/15. However, on average, the TANROADS performance in evaluation process and the award of contract had been good at about 77.5 percent for the observed years.

Reported causes for decline are; some of the projects had poor negotiation and award of contracts, and poor approval of award of contract. Adams et al, (2002) suggests that selection of contractors using the lowest bidder as unique criteria can sometimes leads to the selection of incompetent contractors, excessive claims by the contractor against the client, disputes and litigation between two parties, bid shopping and other problems. Rizwan et al (2008) indicate that in Pakistan and other developing construction economies, the most common method of awarding the contract is the Low-Bid or Priced Based method, which has inherent flaws of high competition and minimum performance. The Public Procurement Regulatory Authority (PPRA) admits that many Procuring Entities are not managing their contracts properly and for many Procuring entities, the procurement process virtually “ends” upon award of contract (Alban et al, 2014).

However, reason for high average performance is that, evaluation procedures were followed in the two financial years to the most of the projects. Also, awards and notifications were done based on the set regulations. Evaluation considered criteria set in the tender (RFB 2015). Virtuous performance of evaluation process leads to good selection of a capable contractor that will lead to better project performance.
2.2.4 Competitiveness of Rates Quoted for Major Items of Construction

According to Feng (2005), “Evaluated tender price” means that the price should not be lower than the bidder’s cost or the consultant’s estimate and that the bid should be substantially responsive to the requirements of the bidding documents.

Table 2.2 shows the performance in competitiveness of rates quoted for major items of construction has dropped by about 13 percent from 83 percent in FY 2013/14 to 72 in FY 2014/15. However, on average, competitiveness of rates quoted for major items of construction has been good at about 77.5 percent for the observed years. The decline in performance was influenced by low capability of some contractors and there were poor estimations. In some countries the client’s estimate is provided to the bidders.

This sub indicator possesses a serious challenge to fill in because the Auditor is expected to have or know the prevailing market rates within the region where the IA is located, which is not always the case. Further, assumption that the Auditor may use engineer’s estimates as basis for comparison is not strictly correct because IAs may not have the capacity to prepare realistic engineer’s estimates and sometimes the engineer’s estimates do not reflect market prices of the inputs (VFMI, 2013).

The main disadvantage is that many contractors will quote prices within a certain range of the client’s estimate, afraid for being disqualified (Rijn, 2005).

However, TANROADS has been performing better in this aspect due to number of factors including rates provided by contractors were within engineers’ estimates, stability of market condition, signing of contracts on time and capacity and capability of contractors (RFB 2016). Capability and experience of a contractor leads good estimation that eventually results to successful project.
2.2.5 Overall Competitiveness of the Most Economic Tender

Tender means an offer, proposal or quotation made by a supplier, contractor or consultant in response to a request by a procuring entity (URT, 2011). The contract shall be awarded to the tender with the lowest price or to the one that is the most economically advantageous as a whole taking into account for example quality, price, technical merit, aesthetic and functional characteristics, environmental characteristics, running costs, cost effectiveness, after sales service, delivery date and delivery period or period of completion (Alhola, et al 2000).

This sub indicator assesses the overall competitiveness of the most economic tender when compared with prevailing market prices in both private and public sectors. It is understood that road construction in private sector are rare and obtaining their costs is difficult. Further, the most economic tender (lowest evaluated tender) is selected based on criteria contained in the tender dossier; hence questioning competitiveness may not be realistic (VFMI, 2013).

Table 2.2 shows that the overall competitiveness of the most economic tender has decreased by about 14 percent from 91 percent in FY 2013/14 to 78 percent in FY 2014/15. However, on average the overall competitiveness of the most economic tender had been excellent at about 84.5 percent for the observed years. It has been found that, the decline of performance in this aspect have been contributed by the use of cheaper, poor quality materials and/or labor to some projects.

However, on average TANROADS has been performing better in overall competitiveness of the most economic tender where there was public accountability which leads to prescribed methods of tendering and prescribed policies towards the selection of the suppliers. If the situation is continued it ensures the value for money. The idea behind competitive tendering is that it forces suppliers to compete and consequently the purchaser and taxpayer will gain better “value for money” (Murray et al, 2011).

In Australia, government procurement guidelines only allow suppliers who actually tender to be considered for a procurement decision. If the leading supplier or suppliers do not tender, the purchaser can only consider bids from suppliers who do tender. If leading suppliers are not
considered, the purchaser may end up buying inferior product or service (McKell institute, 2016).

Defining prevailing market prices is key challenge to this parameter. It is however assumed the RFB will develop software which will enable consultants to apply in specific regions to establish competitiveness on major items (VFMI, 2013).

2.2.6 Capacity and Competence of Selected Contractor in Relation to Project Size and Complexity

Contractor means a firm, company, corporation, organization, partnership or individual person engaged in civil, electrical or mechanical engineering or in construction or building work of any kind including repairs and renovation, and who is, according to the context, a potential party or the party to a procurement contract with the procurement entity (URT, 2011). Selecting a contractor is such an important part of the construction process that it is well worth investing plenty of time and resources in the task.

In this parameter the Auditor should assess if the contractor still possess qualification criteria evaluated during evaluation tenders. Emphasis should be on the personnel, equipment/plants and financial soundness (line of credit/credit facilities) as described in the contract (VFMI, 2013).

Table 2.2 shows that capacity and competence of selected contractor in relation to project size and complexity has decreased by about 6.2 percent from 97 percent in FY 2013/14 to 91.1 percent in FY2014/15. However, on average the capacity and competence of selected contractor in relation to project size and complexity had been excellent at about 94 percent for the observed years. The decrease in performance in this aspect was influenced by poor planning of some contractor and poor workmanship in some of TANROADS project (RFB, 2015). However, the TANROADS have got better performance in this aspect since it has been having good selection of the contractors and compliance to PPA 2011 and its Regulations 2013. And also the bidder’s evaluation procedure was followed as well as awards and notifications to bidders were done as per PPA and regulations.
Like in other countries, in Nigeria procurement sectors has got shortcomings like lack of capacity to deliver due to: abandonment of projects, cost and time overrun, poor performance, poor workmanship, poor management capability, financial difficulties, poor planning, poor mechanization, and high frequency of litigation (Inuwa et al. 2014). A lot of good efforts are spent up to the point of selection of contractor without further questioning whether what is being delivered is actually what is being paid for (Mamiro, 2010).

2.2.7 Overall performance

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely to identify the contribution of efforts upon completion of tasks for final managerial decisions; whether to empower the exiting or invest new efforts.

Table 2.2 shows TANROADS performance has slightly declined by about 2.8 percent from 86 percent in FY 2013/14 to 83.6 percent in FY 2014/15. However, on average the performance of procurement stage has been excellent at about 83 percent for the observed years.

The overall good performance was stipulated by the improvement of procurement methods in accordance to PPA, good policy, tenderers and good management, good market condition, signing contracts on time and capability of contractors. Other factors for good performance include good evaluation process and award of contracts, compliance of procurement process with PPA and its regulation; the rates provided by contractors were within engineers’ estimates; evaluation procedures were followed; and awards and notification were done based on regulations.

However, there was decline of TANROADS performance for the observed years which was contributed by several factors such as noncompliance with PPA and its regulations to some projects. Prevalence of bureaucracy through vetting processes before award of tenders hence delay in procurement processes. In some projects lowest bidders were not competent enough to
handle projects awarded to them, and also unsuccessful bidders were not informed. Also the corrections of errors in tenders were not communicated to bidders (RFB, 2015).

2.3. Construction Stage

Construction is the process of preparing for and forming buildings/structures roads budgets etc. Construction starts with planning, designing, financing and continues until the structure is ready for occupancy (Nikolas, 2008). Far from being a single activity, large scale construction is a feat of human multitasking. Normally, the job is managed by a project manager, and supervised by a construction manager, design engineer, construction engineer or project architect. For successful execution of a project, effective planning is essential. Those involved with the design and execution of the infrastructure in question must consider the zoning requirements, the environmental impact of the job, the successful scheduling, budgeting, construction site safety, availability and transportation of building materials, logistics, inconvenience to the public caused by construction delays.

Table 2.3 presents the TANROADS performance in construction stage in FY 2013/14 and 2014/15.
Table 2.3: Construction Stage

<table>
<thead>
<tr>
<th>Construction Stage</th>
<th>N/A</th>
<th>Very Poor</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Total</th>
<th>N/A</th>
<th>Very Poor</th>
<th>Poor</th>
<th>Fair</th>
<th>Good</th>
<th>Total</th>
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<td>%</td>
<td>%</td>
<td>%</td>
<td>%</td>
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<td>0</td>
<td>5</td>
<td>92</td>
<td>100</td>
<td>1.1</td>
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<td>1.1</td>
<td>8.9</td>
<td>88.9</td>
<td>100</td>
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<td>23</td>
<td>65</td>
<td>100</td>
<td>1.1</td>
<td>0.0</td>
<td>5.6</td>
<td>38.9</td>
<td>54.4</td>
<td>100</td>
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<tr>
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<td>27</td>
<td>57</td>
<td>100</td>
<td>4.4</td>
<td>0.0</td>
<td>8.9</td>
<td>25.6</td>
<td>61.1</td>
<td>100</td>
</tr>
<tr>
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<td>3</td>
<td>4</td>
<td>15</td>
<td>73</td>
<td>100</td>
<td>2.2</td>
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<td>0</td>
<td>41.1</td>
<td>56.7</td>
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<td>1</td>
<td>0</td>
<td>8</td>
<td>89</td>
<td>100</td>
<td>1.1</td>
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<td>1.1</td>
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<td>93.3</td>
<td>100</td>
</tr>
<tr>
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<td>1</td>
<td>11</td>
<td>71</td>
<td>100</td>
<td>3.3</td>
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<tr>
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<td>7</td>
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<td>100</td>
<td>5.6</td>
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<td>10.0</td>
<td>30.0</td>
<td>54.4</td>
<td>100</td>
</tr>
<tr>
<td>Quality of environmental management plan</td>
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<td>9</td>
<td>36</td>
<td>100</td>
<td>5.6</td>
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<td>27.8</td>
<td>100</td>
</tr>
<tr>
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<td>8</td>
<td>8</td>
<td>72</td>
<td>100</td>
<td>5.6</td>
<td>0.0</td>
<td>6.7</td>
<td>21.1</td>
<td>66.7</td>
<td>100</td>
</tr>
<tr>
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<td>3</td>
<td>1</td>
<td>23</td>
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<td>100</td>
<td>7.8</td>
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<td>3.3</td>
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<td>100</td>
</tr>
<tr>
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<td>0</td>
<td>1</td>
<td>63</td>
<td>100</td>
<td>32.2</td>
<td>1.1</td>
<td>0</td>
<td>6.7</td>
<td>60.0</td>
<td>100</td>
</tr>
<tr>
<td>Assessment including validity of claims and related cost overruns</td>
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<td>0</td>
<td>3</td>
<td>53</td>
<td>100</td>
<td>39</td>
<td>0.0</td>
<td>1.1</td>
<td>6.7</td>
<td>53.3</td>
<td>100</td>
</tr>
<tr>
<td>Assessment including validity of project delays and extension of time</td>
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<td>1</td>
<td>4</td>
<td>8</td>
<td>65</td>
<td>100</td>
<td>20</td>
<td>0.0</td>
<td>5.6</td>
<td>12.2</td>
<td>62.2</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

2.3.1. Timeliness of the site possession

Timeliness of site possession deals with the relationship of the detention, ownership and the control of work in the site. Possession of the site is given to the contractor in accordance with the terms and conditions of the contract. The contract generally grants the contractor exclusive possession of the site until practical completion when a handover meeting takes place and possession reverts to the clients. The contract must state clearly the date for possession of the site.
by the contractor (or commencement date), or, if not, then the site must be handed over to the contractor within a reasonable time after signing of the contract. If the client fails to give possession of the site to the contractor, and there are no provisions for delay in the contract, then they will be in breach of contract (Malconlaw, 2012).

Table 2.3 shows that, the TANROADS performance in timeliness of site possession has dropped by about 3.4 percent from 92 percent in FY 2013/14 to 88.9 percent in FY 2014/15. However, on average compliance of timeliness of site possession has been excellent at 90.5 percent of the years under scrutiny. In most of the projects the possession of site to the contractors was done according to the terms and conditions of the contract. The situation had been giving room to contractors to be in a position of working confidently and finally producing quality products. However, the trend shows that, the TANROADS performance in this aspect has slightly dropped since some projects site possession to contractors were late and not matched with terms and conditions stipulated in contracts (RFB, 2015).

The possession of the site is required on time to give the contractor such possession, occupation or use of the site as is necessary to enable him to perform the works under the contract and timely completion of works. If the client fails to give possession of the site to the contractor, and there are no provisions for delay in the contract, then they will be in breach of contract (Malconlaw, 2012).

Experience from Malaysia shows that during the contract period, possession will usually provide the contractor with exclusive occupation and use of the site as required for constructing the works. At the end of the contract period, the contractor may require partial occupation of the site to carry out performance tests. In this case, the contractor use will usually override the employers operation or use of the facility to conduct such tests. During the defects correction period, the contractor will usually only require sufficient access to those parts of the facility which allow him to correct the defects or outstanding minor works. His access and use will usually be secondary to the employers operation or use of the facility (Word Press 2012).
2.3.2. Quality of Project Program (schedule of work)

The project schedule is the listing of a project's milestones, activities, and deliverables, usually with intended start and finish dates. It takes into account balancing time, cost, and the scope of the project. It is used as a tool that communicates what work needs to be performed; which resources of the organization will perform the work; and the timeframes in which that work needs to be performed. It can be categorized by their level of sophistication, intended usage, or by their nature of content (Uyttewaal & Woolf, 2011). The project schedule reflects all of the work associated with delivering the project on time.

Table 2.3 shows that the quality of project program (schedule of work) has dropped by about 16.3 percent from 65 percent in FY 2013/14 to 54.4 percent in FY 2014/15. In spite of such decline, the data shows that on average the quality of project program (schedule of work) has been satisfactory at about 59.7 percent of the observed years. The decline of quality of the project program in the year 2014/15 was due to failure of TANROADS project management to manage the preparation of project schedule and make sure it was submitted to them by the contractors since it has been observed that in some projects there were no schedules of works prepared and submitted by contractors, and some programs were not revised and updated (RFB, 2015).

Through having outdated schedules, the project managers were unable to communicate the complete efforts in terms of cost and resources necessary to deliver the project. The lower quality of the project program created the barriers to track the project progress, monitoring, control, and evaluation of the project activities by TANROADS management. For any successful project it is crucial to have a project schedule that ensures all activities are on track and there is no violation of contract. Also this minimizes the unnecessary risk on work and assures the good standard and quality of work.

2.3.3. Adherence to the project program

Adherence to project program is the degree to which agents or project teams stick to their schedules i.e. Timetables, workflow, timings, project schedules measured as a percentage. It is
the common parameter which supports the project program. It is very important to any project program as it assures that all activities on schedule are on track and there is no any violation of contracts in the process of project execution at the construction stage.

Table 2.3 shows that the adherence to project program has increased by about 7.2 percent from 57 percent in FY 2013/14 to 61.1 percent in FY 2014/15. However, the average performance of adherence to project program has been satisfactory at about 59.05 percent of the observed years, due to the absence of work program and lack of updates of work program available in some projects (RFB, 2015). Although, the observed an increase in adherence to the project program of about 7.2 percent in FY 2014/15 was stipulated by some of TANROADS projects which were strictly adhered to project schedule and updated programs (RFB, 2015).

Adherence to project program is very essential to project success; by providing additional early warning information to project managers, thereby enabling improved decision making and enhancing the probability of project success. It simplifies the process of carrying out monitoring and evaluation. To achieve optimal project objectives within stipulated time according to the contract. It follows that project managers should do their utmost to ensure project execution conforms to it (World Press, 2012).

2.3.4. Quality of contractors’ site organization and staff

A contractor’s site organization is the unit of people that is structured and managed to meet a need or to pursue collective construction goals at the place where construction activities are undertaken. The organization has a management structure that determines relationships between different activities and the members. It subdivides as well as assigns roles, responsibilities and authority to carry out different tasks.

This indicator should be assessed based on contractor’s submission as per requirements of the bidding documents which made the contractor to be awarded the contract include site organization (organization chart) and key staff. The contractor’s bid includes also names, qualifications and experience of key staff; hence the Auditor should examine whether the staff of
the contractor were those contained in his tender, or if replacement had been made, the replacement should have similar or superior qualifications and experience. It is also a requirement that the replacement should obtain employer’s written approval (VFMI, 2013).

A staff is a person as an employee charged with carrying out the work of an establishment or executing some undertakings. Usually key staff employed by contractor on a civil engineering construction site is: the agent who is in charge, section engineers, a site coordinator, the general foremen and the office manager.

Table 2.3 reveals that the quality of contractors’ site organization and staff for TANROADS projects has declined by about 22.3 percent from 73 percent in FY 2013/14 to 56.7 percent in FY 2014/15. However, on average the quality of contractor’s site organization and staff has been moderate at about 64.9 percent for the observed years. Under the year of quality declining, it has been observed that a good number of projects organization charts were missing. On other side, there has been moderate performance in most of the projects which was influenced by presence of organization charts that described the relationships between units and members respectively to their assigned roles, responsibilities and authority to facilitate project implementation. And also there was site meetings held to discuss project progress and progress report were prepared (RFB, 2015).

The declined quality of contractors’ site organization and staff transpires the incompetence of contractors employed to carry out the projects as stipulated in the contract. It affects the quality of the project under implementation to deliver the intended potential outcomes and earn value for money respectively. The quality of contractors’ site organization and staff are essential components which guarantee the possibility of project to be successfully implemented and produce quality products since it is a key determinant of the project results and performance.

2.3.5. Quality of Supervising Engineers Site Staff

A supervising engineer is a technical person who plans, directs and reviews the work of an assigned section in a project. He/she supervises and participates in designing and supports
services as well as provides the responsible and technical staff assistance reviewing, informing design, plans and agreements in other engineering areas.

The Supervising Engineer or Technician from the Employer should have the adequate academic qualifications and experience to supervise the project of the size, complexity and magnitude. It is also important to establish whether he/she was or is full time on the project, and at site (VFMI, 2013).

Table 2.3 shows that the Quality of supervising engineers’ site staff has increased from 89 percent in year 2013/14 to 93.3 percent in year 2014/15. This is equivalent to 4.8 percent increase in growth rate. The overall average performance on the quality of supervising engineers’ site staff had been excellent at about 91.15 percent in the observed years.

Generally this criteria has performed well and it has been observed that most of projects were supervised by professional engineers, site meetings were conducted and the progress reports were prepared on time. The contractors were capable enough as they were experienced professional engineers. Projects supervised by professional engineers have been implemented successfully and produced best quality products within the specified period (RFB, 2015).

Good quality of supervising engineers is the guarantee of good-quality implementation of the construction project with optimal costs pursuant to the contract agreement, technical standards and norms. It is responsible for the successful of the project, corresponding to the contract agreement and budget, implementation of the project from the very beginning up to the end.

2.3.6. Quality of Quality Assurance Program

Quality assurance is a planned and systematic action necessary to provide adequate confidence that a project product or service will satisfy or meet a given requirement of quality standard. Quality of the quality assurance program is the key component in quality management and it focus in providing confidence that quality requirement will be fulfilled according to the contract or agreement (Majcen, 2010). It should specify ways in which it can be measured and tested to ensure conformance of the result. In construction project it is the key determinant of the overall
project result: it determines the quality and capacity for which constructed roads in all project meet the required standard.

In order to ensure compliance on quality of work done and materials used, contracts specify under General and Special specifications, requirements should be met. The specifications will specify the type of tests to performed to ascertain the works done have attained the required quality (VFMI, 2013).

Table 2.3 shows that the quality of quality assurance program has declined by about 18.6 percent from 71 percent in FY 2013/14 to 57.8 percent in FY 2014/15. In spite of such decrease, the data shows that on average the performance of the quality of the quality assurance program has been moderate at about 64.4 percent of the observed years. The dramatic decline in quality of quality assurance of programs was stipulated by lack of quality assurance program in most of the TANROADS projects, and this prevailed because a good number of engineers lack knowledge on the necessities of quality assurance program in the construction projects. Also there are no policies and guidelines to create conducive environment of having standard quality assurance programs in roads projects.

The impact of not having quality assurance program results to poor outcome of overall project deliverables due to lack of standard quality for conformance and maintenances of project quality to keep on the right track while complying with the terms of contract. Moreover, poor quality could lead to unnecessary cost to the organization where it could create costs due to failure, appraisal and prevention (Majcen, 2010).

According to Mallaarachchi & Senaratne (2015) directing a construction project towards quality with low cost and time is a greater concern today. It is because quality is required to meet project requirements of the owners, constructors and other parties involved with a greater satisfaction. Hence, this creates a great potential for quality improvements in construction projects, as the poor quality could negatively effect to project failures.
It is important to consider quality of quality assurance programs as it sets the levels of quality assurance standards. And deals with right needs of the project and it helps on minimizing and eliminating mistakes and errors. In the contrary, failure to consider quality assurance may lead poor outcomes from the projects.

2.3.7. Adherence to Quality Assurance Program

Adherence to quality assurance programs means sticking or complying with the accepted standards of quality assurance programs in constructions. In projects, quality assurance is very crucial as it ensures all aspects in construction are on track as it determine adequate technical requirement of inputs and outputs, certification and rating of suppliers, testing of procured material for its conformance to established quality, performance, safety, and reliability standards, proper receipt, storage, and issue of material, audit of the process quality, evaluation of the process to establish required corrective response, and audit of the final output for conformance to technical, reliability, maintainability, and performance requirements.

From table 2.3 adherence to quality assurance program has dropped by about 10.8 percent from 61 percent in FY 2013/14 to 54.4 percent in FY 2014/15. However, the data shows that on average adherence to quality assurance program has been satisfactory at about 57.7 percent of the observed years. Since some of the completed project adhered to the quality assurance and met the specification requirements and discrepancies were corrected (RFB et al, 2015).

The decline in the adherence to quality assurance in FY 2014/15 was due to some project which did not adhere to quality assurance since it was not prepared and implemented. This situation happens due to incompetence of some contractors, and failure of project management to manage quality assurance program while other contractors were not aware of the importance of quality assurance program. It is revealed that no tests were taken to some of the projects. This implies that; the project standard was not well fulfilled (RFB, 2015).

Inadequate quality assurance program results to low quality infrastructures hence increase of road accident, contestation, cost of road maintenance and development. Therefore it is essential
for TANROADS management to increase awareness to constructors on the importance of having quality assurance program and adherence to it. This will improve performance of the overall project result (NAO, 2010).

2.3.8. Quality of Environmental Management Plan (EMP)

An EMP is a site-specific plan developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with environmental legislation. It is the contractor’s responsibility to prepare a site-specific EMP and submit it to the project manager for approval. The quality environmental management plan looks at the level of standards in a site or project specific plans developed to ensure that appropriate environment practices are followed during project construction and/or operation. The EMP provides the means to identify risks and manage and monitor environmental risks associated with road construction activities.

The attention of this parameter is drawn to the fact that interventions of maintenance nature do not warrant for a rigorous EMP. Thus establish whether adequate plan was spelled out in the contract documents to mitigate both short-term and long-term negative impacts. However, some or all of the following short term impacts need to be examined: destruction of vegetation; water pollution; reduced air quality due to dust emission; vibrations due to compactions; noise (from construction vehicles and plants); disturbance on the cultural heritage; waste generation; accidental spills/contamination; poor sanitation; occupational hazards/ accidents; and loss of land (VFMI, 2013).

According to table 2.3, the Quality of EMP for TANROADS projects has declined from 36 percent in FY 2013/14 to 27.8 percent in FY 2014/15. This is equivalent to 22.8 percent decline in growth rate. Also on the average performance had been low at about 31.9 percent for the observed financial years. The observed low performance was contributed by lack of EMP attached in most of the TANROADS projects. This was associated by limited knowledge of engineers on the importance of EMP on roads projects as they were not including the respective clause in most of the contracts. Also the policies and guidelines were not widely distributed to
road projects IAs engineers. Moreover, in some of the projects the EMP clause was included in contracts but the contractors did not implement it (RFB, 2015).

The trend of environmental management plan has been declining consecutively from FY 2012/13 to FY 2014/15, this continuous decline have a negative impact in the environment and it pose the risk to the well-functioning of the ecological system and welfare of the living organism in general.

Environmental management plan is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of projects. The plans should indicate the details as to how various measures have been or are proposed to be taken including cost components as may be required. It is also an essential means of ensuring that development project programs and legislation requirements are met during project implementation as may be required under planning/consent conditions to implement environmental commitments and requirements (MOEF, 2013).

2.3.9. Management of Contractual Documents, Including Safety and Insurance Bonds

Management of contractual documents is the state of controlling all documents which, when combined, form the bases of the contract, including all pre-tender, tender and contractual documentation. Surety is a promise by a guarantor to pay one party (the obligee) a certain amount if a second party (the principal) fails to meet some obligation such as fulfilling the terms of contract. The surety bond protects the obligee against losses resulting from the principal’s failure to meet the obligation. An insurance bond (or investment bond) is a single premium life assurance policy for the purposes of investment.

The assessment of this parameter must include advance payment guarantee, insurance cover, and performance security. The Auditor should examine whether these contractual documents were correctly worded, provided by the contractor in compliance with the terms and conditions of contract (timely submission & correct amount), and whether their validity periods is in
compliance with the contract or updated as appropriate. In addition, the Auditor should assess whether securities were returned once contract was completed (VFMI, 2013).

The table 2.3 shows that, the Management of contractual documents, including safety and insurance bonds has declined by about 7.4 percent from 72 percent in FY 2013/14 to 66.7 percent in FY 2014/15. However, on average TANROADS performance in management of contractual documents, including safety and insurance bonds has been moderate at about 69.4 percent for the observed years. It has been observed that in a good number of projects, tender and contractual documents were not customized. Mismanagement of the contractual documents, including safety and insurance bonds poses the project at risk in terms of financial and operational performance (RFB, 2015).

Electronic management of the contract document is the efficient way of managing the risks associated with project from inception stage to termination. It also reduce the amount of time it takes to create, negotiate, review, execute, and approve contracts with an electronic approach that automates workflows, automatically notifies stakeholders, retains document version history, provides for electronic signatures, and builds a log of all activities.

2.3.10. Quality and Management of Project Documentation

Project documentation is used to define the way projects are managed and the governance surrounding them. In this aspect of quality and management of project documentation, evaluation based at the level and standards of project management and the governance surrounding them with respect to, site instructions, minutes of the meetings, progress reports, works measurement and inspection records, material testing records, interim and final payment certificates, variation orders, claims, etc. The fact is, the manner in which project documents are managed by project leaders can either be the driving force behind a project's success or the bottleneck that often places a project in despair resulting in its failure to meet its time line, budget and scope (Stolovitsky, 2010).

According to table 2.3, the quality and management of project documentation with respect to general correspondence, site instructions, minutes of site meetings, progress reports, works
measurement and inspection records, interim and final payment certificates, variation orders and claim has been constant at 69 percent in both financial years 2013/14 and 2014/15. Also, the average performance of the quality and management of project documentation had been moderate at about 69 percent in the observed year.

The constant performance is associated with the maintenance of project documentation at the same quality in most of the TANROADS projects in the observed years with respect to site instructions, work measurement and inspection records, interim and final payment certificates, variation orders and claim. The performance could have improved but some project did not have project documentation with respect to minutes of meetings, material testing records and progress reports (RFB, 2015).

Effective document management for projects has a practical impact on improving the visibility of a project's status to better respond to the inevitable reality of change in the day-to-day work. Also a high standard management of project documentation is the driving force behind a project's success, as it provides a room for the project manager to respond on the unexpected events.

In the construction stage, this variable is important as quality management is closely connected with defining procedures and documentation management. It includes, among others, the introduction of documents and records supervision; specifying the processes for product or service provisions; and the verification and measurement of customer satisfaction levels and the quality of processes and goods.

2.3.11. Assessment (Including Validity) of Variations

A variation (sometimes referred to as variation instruction, variation order or change order) is an alteration to the scope of works in a construction contract in the form of an addition, substitution or omission from the original scope of works. Almost all construction projects vary from the original design, scope and definition. Whether small or large, construction projects will have inevitably departed from the original tender design, specifications and drawings prepared by the
design team. This can be due to technological advancement, statutory changes or enforcement, change in conditions, geological anomalies, non-availability of specified materials, or simply because of the continued development of the design after the contract has been awarded.

As a rule variation orders should be evaluated based strictly on the provisions of contract and all VOs must be numbered, dated, background about the VO, its time and cost implications and should be signed by all parties. Also all variation orders must get approval of the Tender Board prior to issuing change order to the contractor (VFMI, 2013).

Data on table 2.3 illustrates that the assessment (including validity) of variations for the TANROADS projects has dropped by about 4.8 from 63 percent in FY 2013/14 to 60 percent in FY 2014/15. However, on average the performance in assessment (including validity) of variations has been moderate at about 61.5 percent in the observed years. The moderate performance is the results of alterations to the design, quantities, quality, working conditions and the sequence of work. Almost all construction projects vary from the original design, scope and definition.

The increase in variation from original design has huge impact on construction cost of the project as well as the completion date of the project. And variations are often sources of dispute either in valuing the variation, or agreeing whether part of the works constitutes a variation at all (ARCOM, 2010). Whilst some variations are unavoidable, it is wise to minimize potential variations and subsequent claims by ensuring that uncertainties are eliminated before awarding the contract, (Baker and McKenzie, 2016).

2.3.12. Assessment (Including Validity) of Claims and Related Cost Overruns

Cost overrun can be defined as when the project objectives have not been achieved within estimated budget (Avots 1983). In constructions, cost overrun also known as cost increase or budget overrun, involves unexpected costs incurred in excess of budgeted amounts due to an underestimation of the actual cost during budgeting. Cost overrun should be distinguished from cost escalation which is used to express an anticipated growth in a budgeted cost due to factors
such as inflation. The reason of that overruns is poor management of the resources such as, labor, material and money (Serdar et al, 2012).

Table 2.3 shows that the assessment (including validity) of claims and related cost overruns for TANROAD projects has improved from 53 percent in year 2013/14 to 53.3 percent in year 2014/15. This is equivalent to 0.6 percent increase. However, the average assessment (including validity) of claims and related cost overruns had been satisfactory at about 53.2 percent for the observed years. The ground for this trend improvement is to properly adhere to procedures by some contractors. Although, it has been observed that there are some projects with invalid cost overrun to a larger amount. In some of the projects there are claims and cost overrun which lacks validation and this implies that, there are additional costs which were not approved (RFB, 2015).

Cost overruns are a major problem in both developed and developing countries (Angelo and Reina 2002). Therefore, problem of cost overruns is critical and needs to be alleviated in future by policy makers. In developing countries the trend is more severe where the cost overrun sometimes exceeds 100% of the estimated cost of the project (Serdar et al, 2012).

2.3.13. Assessment (Including Validity) of Project Delays and Extensions of Time

In the construction stage, assessment of project delays and extensions of time is the way of examining long or extending time of the actual time line/ deadline of the actual time a project was supposed to be handed over. Here the presentation focuses on the assessment of project delays and extensions of time including its validity.

Table 2.3 shows that project validity delays and extensions of time for TANROADS projects has dropped by about 4.3 percent from 65 percent in FY 2013/14 to 62.2 percent in FY 2014/15. However, on average validity TANROADS project delays and extensions of time had been moderate at about 63.6 percent for the observed financial years. Lack of proper adherence to Procedures and absence of justifications in records for granted extension of time as well as expiry of contract are the key causes of project delays and extensions of time. There is the
instance of late replies to request for extension of time (from client side) and late request for extension of time (RFB, 2015).

Construction projects typically involve multiple parties performing their specialized functions in a coordinated effort, which sometimes leads to opportunities for issues to impact the completion of a project. In other cases, projects are impacted by unforeseen conditions discovered during the course of construction or an owner simply needs to initiate a change in the work that causes project delay. When a project is delayed, all parties involved experience some impact whether it can be measured through cost increases or not.

According to Exponent (2012), all impacts result in a corresponding delay to the project’s completion date, therefore, it becomes necessary to determine which delays were critical to the project’s overall completion. In order to determine those time impacts, the project must be evaluated using industry recognized and accepted methodologies to identify and quantify the overall impact to the project’s completion resulting from those delays that are incurred. In any construction, it is crucial to assess delays of project and extension of time because it helps to control project time line and avoid project roll over as it costs time and resources like funds.

2.3.14. Average Performances

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely to identify the contribution of efforts upon completion of tasks for final managerial decisions; whether to empower the exiting or invest new efforts.

Table 2.3 shows that TANROADS overall performance in construction stage has dropped by about 6.9 percent from 66.6 percent in FY 2013/14 to 62 percent in FY 2014/15. However, on average the overall performance in construction stage has been moderate at about 64.3 percent for the observed years. It has been observed there was decline in performance to almost all parameters in construction stage. There are some parameters its performance has dropped
dramatically including quality of contractor’s site organization and staff; quality of a project and quality assurance program as well as adherence to those programs; quality of EMP; and quality and management of project documentation. Moreover, IAs were been unable to manage well roads projects since there was insufficient flow of funds from RFB, hence some of contractors suspends the contracts or slow down the progress of work and fail to complete the contracts within stipulated period.

The moderate performance of construction stage stimulates the socio-economic development of the society through improvement of road networks. It also reduces the occurrence of accident, cost of road maintenance as well as increase the mobility of people with their goods to market places (NAO, 2010). Parameters such as environmental management plan and quality assurance plan should be emphasized by TANROADS project management team to create awareness to contractors on the importance of this aspect on durability and sustainability of road projects (URT, 2012).

2.4. Project Completion and Closure

Road projects activities are planned to be implemented over a specific period of time. Therefore, each project requires a formal closure up on completion of project activities. A project may also require formal closure if a decision has been made to terminate the project. Closure of a project includes completion of all operational activities and financial accounts of the project.

Table 2.4 contains data which show the performance of operational and financial aspects specifically at project completion and closure stage in two years 2013/14 and 2014/15.
Table 2.4: Project Completion and Closure Stage

| Project Completion and Closure Stage | 2013/14 | | | | Total | 2014/15 | | | | Total |
|--------------------------------------|---------|---------|---------|---------|--------|---------|---------|---------|---------|--------|---------|
| Quality and completeness of as-built-drawings. | N/A | Very Poor | Poor | Fair | Good | Total | N/A | Very Poor | Poor | Fair | Good | Total |
| | % | % | % | % | % | % | % | % | % | % | % | % |
| Compilation and management of snag list | 57 | 8 | 16 | 4 | 15 | 100 | 84.4 | 2.2 | 5.6 | 2.2 | 5.6 | 100 |
| Timely issuance of completion certificates, settlement of final account. | 23 | 7 | 8 | 12 | 51 | 100 | 62.2 | 0 | 2.2 | 7.8 | 27.8 | 100 |
| Management of the defect liability period. | 31 | 8 | 1 | 13 | 47 | 100 | 62.2 | 1.1 | 1.1 | 12.2 | 23.3 | 100 |
| Quality and adequacy of final project report | 33 | 12 | 11 | 21 | 23 | 100 | 71.1 | 0 | 6.7 | 14.4 | 7.8 | 100 |
| Compliance of final quantities paid. | 36 | 9 | 4 | 9 | 41 | 100 | 71.1 | 0 | 2.2 | 7.8 | 18.9 | 100 |
| Compliance of project cost as per final account with accepted tender price | 24 | 8 | 1 | 9 | 57 | 100 | 63.3 | 0 | 0 | 8.9 | 27.8 | 100 |
| Compliance of actual project completion time with the contract period | 16 | 5 | 9 | 11 | 59 | 100 | 63.3 | 0 | 0 | 2.2 | 34.4 | 100 |
| Average Performance | | | | | | | | | | | 44 | 21.8 |

Source: Roads Fund Board, 2014

2.4.1. Quality and Completeness of As Built-Drawings

As built drawings are usually the original design drawings revised to reflect any changes made in the field that is; design changes issued by change order, component relocations required for coordination rerouting of distribution systems etc. They are considered as more vital for just basic purposes; these are records from which future system changes and additions can be designed, and it can be a valuable tool for the operations and maintenance activities.

The table 2.1 shows that quality and completeness of as-built-drawing has dramatically dropped from 15 percent in the year 2013/14 to 5.6 percent in the year 2014/15 by about 62.7 percent. On average quality and completeness of as-built-drawings has been very low at about 10.3 percent for the observed years. The road related projects managed by TANROAD lost its quality and not fully completed as to comply with as-build-drawings, since in most of the projects as-built-drawings were not prepared (RFB, 2015). On other hand, low quality and deviation from
completeness of as-built-drawings influenced by using outdated information and poor communications between client and contractor. Design and update process of as-built-drawings has been having low/none participation of interdisciplinary or cross-organizational collaboration team so as to enrich its quality and completeness (Taggart et al, 2013). Lack of as-built-drawings led the projects submitted tend to have low quality and others lacks fully completeness as it was described in contracts.

The assurance of the quality and completeness of the projects is primarily based on the compliance with as-built-drawings. TANROADS project management is seems to be paralyzed since it has proved failure to manage the preparation of as-built-drawings to its projects. Most of the project contracts have not included as-built-drawings clause that is why they were not prepared (RFB, 2014).

2.4.2. Compilation and Management of Snag List

The snag list is the lists of pending activities/defects that must be attended by the contractor during defects liability period that they can be put right before complete accept the project. Where faults subsequently put right or fixed by the constructor. It is a necessary evil turned-to-good for the project owner and a final closure for the contract that the job is finalized and accomplished. Although the longer the snagging list, the more bothered the construction will be, as each item takes from the final profit.

Table 2.1 shows that compilation and management of snag lists has been dramatically dropped from 51 percent in the year 2013/14 to 27.8 in the year 2014/15 by about 45.5 percent. On average compilation and management of snag lists has been low for about 39.4 percent for the observed years. The project management was observed to be paralyzed since in more projects snag lists were not prepared (RFB, 2014). Also management and design team failed to collaborate and form a mechanism to hold periodic site visit and detect snags. Moreover, snag lists compilation and management usually influenced by ambiguous working instructions, poorly trained operatives and inadequate supervision (Koskela et al, 2013).
The project with snags and sometimes might be attributed to poor workmanship lead to cost overrun. There are contractors who fail to correct the defects despite being notified hence the project management supposed to use other funds so as to cover the cost of these repairs carried out by someone else (Tembo and Blokhuis, 2007).

To some extent there is successful compilation and management of snag lists as a result of satisfactory performance proved by the TANROAD project management in the country. Still failure have been seen to some projects since those projects their snag lists were not prepared; this kind of situation proves that their some deviations in management.

2.4.3. Timely Issuance of Substantial Completion Certificates, Final Certificate and Settlement of Final Account

Completion certificates are documents prepared by an architects, engineer, or owner of a construction project that the project is substantially complete and is approved for payment to the general contractor on the date of final payment. The final certificate is certification by the contract administrator that the project has been fully completed. It is issued at the end of the defects liability period and has effect of releasing all remaining money due to the contractor, including any remaining retention.

The three aspects in this variable normally follow the sequential order as follows Firstly, a Substantial Completion Certificate is issued when works are substantial completed save for the minor outstanding works and defects which will not substantially affect the use of the works for the intended purpose. The Final Certificate is issued after the Defects Liability Period and final inspection has been conducted and ascertain that all defects and outstanding works have been completed as per contract and parties to the contract discharged from the contractual obligation without violating accrued rights and obligations in the contract and Lastly, the Contractor should submit the final account represents full and final settlement of all monies due to the contractor under or in connection with the contract (VFMI, 2013).

Table 2.1 shows that timely issuance of completion certificates and settlements of final accounts have dramatically dropped from 59 percent in the year 2013/14 to 28.9 percent in the 2014/15 by
51 percent. On average timely issuance of completion certificates and settlement of final accounts has been low at about 44 percent for the observed year.

Completion certificates are issued on time once the projects are completed in relation to the contract agreements, (ADB, 1995). The most influencing factor to performance drop in issuance of completion certificates and settlement of final accounts was lack of funds for payment since there was late release of funds and management issues such as inadequate project supervision and contract management (RFB et al, 2015). Also the delays are experienced to contractors since there is late submission of the valuation report to supervising consultants hence the consultant delays to prepare a certificate, (Tembo and Blokhuis, 2007).

The delay of project completion has got impacts includes the possible to calculate on the losses. There are proportions of the final costs which are caused by longer time than duration period. The contractors are not paid the funds on time although they have been awarded completion certificates by their employer, (NAO et al, 2010). These delays are very disturbing for the contractors since they fail to pay the wages to the laborers and procure fuel and materials. And contractors who secured loans fail to meet their payment installments to the lenders, (Tembo and Blokhuis, 2007).

2.4.4. Management of the Defects Liability Period

A defects liability refers to the period of time after a construction project has been completed during which a contractor has the right to return to the site and rectify defects so as to complete minor outstanding works listed in the Snag list. If the contractor does not rectify the defects, the Employer has the contractual right to utilize 50% of retained monies to correct the defects or to complete minor outstanding works. A typical defects liability for most contracts audited period range between 6 and 12 months; and it likely to be more economical and efficient for it carry out remedial works itself than to pay the costs of another contractor hired by the employer (VFMI, 2013).
The table 2.1 shows that management of the defects liability period has significantly improved from 47 percent in the year 2013/14 to 23.3 percent in the year 2014/15 by about 50 percent. On average management of the defects liability period has been low at about 35.2 percent. In some projects there was no evidence if the contractors were attending defects liability period as it is stipulated in contracts. Also there is deviance of the project management to manage well defects liability period since some projects stage were not carried out. Moreover, there some projects where the contractors were not notified the date which defects liability period commence hence it was difficult for them to remade defects on time required, (RFB, 2014).

Defects liability period has been worked as tool for employer and contractors to resort to dispute resolution (McKenzie, 2014). Although, defects are one major cause of disputes and construction litigation; then once the project management has low capacity in law, building technology and practices automatically will fail to deal with construction failures (Glover, 2008). And hence it has been observed that there are contractors who fail to correct the defects despite being notified then led to the incurrence of other costs to employ another contractor to remade defects identified, (The Entrusty Group et al, 2007).

2.4.5. Quality and Adequacy of the Final Project Report

The final project report summarizes the work done by contractors and its results. It is clearly communicating the project’s problems, the communities and customer it influences, and the solution proposed or delivered. These are documents which present focused, silent content to specific audience, and are usually used to display the results of an experiment, investigation or inquiry. Reports use features such as graphics, images, voice or specialized vocabulary in order to persuade that specific audience to undertake an action.

Table 2.1 shows that quality and adequacy of final projects reports has little dropped from 23 percent in the year 2013/4 to 7.8 percent in the year 2014/15 by about 66 percent. On average quality and adequacy of final project reports has been low at about 15.4 percent for the observed years. The performance in preparing quality and adequate reports is inadequate, since in most of the projects the evidenced final project reports were not prepared. The TANROADS project
management to a larger extent has failed to manage the preparation of final reports to its projects (RFB, 2015).

Absence of final project result has been hindering to carry out evaluation to the implemented projects so as to obtain information for decision making, learning purposes and for more detailed studies (RFB, 2014). Data is vital to the success of any road project management system hence without good data it is not possible to conduct prosper analyses or monitor the network. Problems with data are one of the main causes of failure of road project management system (McPherson & Bennett, 2005).

Contrary, in other countries final project reports are submitted immediately after the project is completed. In Kenya the project of Mumias – Kakamega road the final construction report was prepared by supervising consultant and submitted immediately after the completion. And also the project completion report was prepared and submitted to the donor after completion of the project (ADF, 1995).

Most of the projects lack its final reports and this happen due to failure of TANROADS project management. With consideration the necessity of data in management of any project, there is a need for TANROADS to improve its road project management system particularly in aspects of processes, people, technology and funds. Also there must be placed a statutory requirement to prepare final project reports purposely to evaluate the existing performance and also forecasts future investments (ibid).

2.4.6. Compliance of Final Quantities Paid for with those Reflected By the Actual Investment As Per As-Built-Drawings.

Quantity of payment refers to the price paid to a seller or supplier of goods or services. The seller may request amount to be paid which is called asking price; and the actual payment amount which is so known as transaction price. In modern economy, the quantity of payment is generally expressed in units of some form of currency.
This parameter should be assessed by comparing the final quantities on major items Vs as built drawings on major items only. Where it is impractical to compare the two or as built drawings are missing, the comparison should base on the final quantities in the Final Completion Certificates and jointly measurement taken at site (sign-off by the Auditor and Employer’s representative). During assessment the available information such as variation orders and site instructions should be used to check compliance of final quantities paid for with those reflected in actual investment (jointly measurement) (VFMI, 2013).

Table 2.4 shows that compliance of final quantities paid for with those reflected by the actual investments as per as-built-drawings has dropped from 41 percent in the year 2013/14 to 18.9 percent in the year 2013/15 by about 54 percent. However, on average compliance of final quantities paid for with those reflected by the actual investment as per as-built-drawings has been low at about 30 percent for the observed years. It has been observed the quantities paid were not with those reflected by the actual investment as per as-built-drawings (RFB, 2015).

Corruption and other unethical conducts in road projects contract award affect the quantity payment as the winning bidder may bill for work not done. Also the contractor produce low quality product which do not comply with stated requirement and get paid. Existence of unethical supervising engineers/consultants who find out the project quality have been low than required then still certifying the contractor’s payment requests (World Bank, 2011).

Quantities paid expected to comply with the actual investment done. Unethical conducts has been resulted the non-compliance between quantities paid and actual investment done. Resources used have been high than the quality of work required. The contractors have been using low quality materials in road construction projects contrary from the specified standards (ibid).

Non-compliance between quantity paid and actual investment done in road projects has been experienced in developing and developed countries. In Zambia 18 road projects were found to be low quality since they were constructed using low quality materials than the standards specified in the contracts. In Latin America evidenced that the engineers certified invoices for charges not
covered in contracts. In Africa in return for approving inflated invoices the engineer received 15 percent of the amount overbilled (World Bank et al, 2011).

Doubtful, there is prevailing environment of corruption and other unethical conducts in project management that affect the compliance final quantities paid with actual investment done as per as-built-drawings. The engineers have been responsible to manage project integrity; unfortunately those engineers have either failed to spot fraud or corruption in project execution or became willing participants (Enshassi et al, 2013).

2.4.7. Compliance of Project Cost as Per Final Account with Accepted Tender Price

Project cost is the value of money that has been used to produce a project intended product. Tender price is the price offered by the investors at which they are willing to buy/pay a new issue. The issuing project usually sets predetermined limits within which the tender price can be made.

In this sub-indicator, the assessment should consider if there is any difference between the final project cost and original contract price; what were the causes and technical justifications of the difference as well as whether proper channels of approvals were followed during contract management. The causes of difference could be variation orders issue (negative or positive) during execution of the contract, increase or decrease of quantities and price adjustment made in the contract. All these three aspects have provision in the contract how should be dealt with (VFMI, 2013).

Table 3.4 shows that compliance of project costs as per final account with accepted tender price has dramatically dropped from 57 percent in the year 2013/14 to 27.8 percent in the year 2014/15 by about 51 percent. On average compliance of project cost as per final account with accepted tender price has been low at about 42.4 percent for the observed years. In some of the projects there were having additional costs due to extra metres added contrary to the contract and Performance Agreement (PA). And also there were projects having additional time more than the initial contracted time and no payment have made (RFB, 2015).
Successful compliance of project costs with tender prices is essential to any carried out projects and it require sound project management. To some points the TANROADS management has failed to manage project costs since there was overpayment made to contractors. And also there is quick revision of project budgets and costs which led to cost overrun to various projects. There should be deliberately exerted efforts to pre-contract stages of projects implementation to ensure that the designs are improved to reflect the reality on the ground and avoid unnecessary adjustments during the implementation (NAO, 2010).

2.4.8. Compliance of Actual Project Completion Time with the Contract Period

Project completion time is the time given when all phases of a project are to be finished. Contract period is the number of days or calendar days from a specified commencement date to a specified completion date as provided for in a contract. Project management usually relies on setting an attainable project completion time and analyzing the schedule of events that must take place for completion of a project, then organizes them so that will be completed within specified time.

The difference between actual project completion time and original contract period is major factor while assessing compliance. If the difference is positive and there was no extension granted, then, this would imply project was completed in time or before time. In case there were delays in the execution of project it would imply that extension of time was granted as a result of excusable compensatory delays or liquidated damages were deducted as a result of non-excusable delays. If the delays were non-excusable and no action was taken by IA, it would imply that there was no sound contract management and the Auditor should investigate non-enforcement by IA (VFMI, 2013).

Table 2.4 shows that compliance of actual project completion time with the contract period has dropped from 59 percent in the year 2013/14 to 34.4 percent in the year 2014/15 by about 42 percent. The trend shows that performance dramatically dropped in the year 2015. On average compliance of actual project completion time with the contract period has been low at about 46.7 for the observed years. Most of the projects have not been completed within a specified time in the contract hence an extension of time requested frequently. An extension of time requested
when there is an addition of task which was not stated in the performance agreement and project contract (RFB, 2015). Delays in project completion may occur due to management issues such as poor supervision and monitoring, and contract management. Not only that, but also delays in project completion may occur due to contractors issues such as lack of skills of the contractor’s personnel, lack of adequate equipment and contractor’s work program miscalculations (NAO, 2010).

Delayed completion of the road construction projects implies different kinds of immaterial and material losses and delayed benefits for the society. The society is losing the opportunity of having new roads which would be able to reduce accidents, traffic delays as well as vehicle wear and tear. In material terms it is also possible to calculate on the losses. It increases chances for cost overrun to occur and make the project to be implemented higher than the budget estimated (ibid).

The completion of projects in time is critically influenced by late disbursement of funds to TANROADS so as to carry out projects activities. Some projects fail to comply within the time stated in contracts due lack of funds at the time required and frequent adjustments of projects scope, budget and costs. Moreover, there were revisions done more than one time during the overall process especially in the middle or later stage of the construction phase and still it’s common with deviations hence delay of project completion. This is indication of shortcomings in planning and monitoring, (NAO, 2010).

2.4.9. Overall performance

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely to identify the contribution of efforts upon completion of tasks for final managerial decisions; whether to empower the exiting or invest new efforts.
Overall TANROADS performance was 44 percent in the year 2013/14 and it was 21.8 percent in the year 2014/15. The performance trend shows that TANROADS has maintained its performance in both sampled years. However, on average the performance of TANROAD in project completion and closure stage has been low at 32.9 percent for the observed years.

TANROAD performance in project completion and closure stage has been observed to be unsatisfactory as it was expected by the stakeholder and public as whole. Unsatisfactory performance of TANROADS has been influenced by late release of funds from RFB; and finally fails to carry out projects activities within the time required. Also there are contractors employed who seems to be incompetent and incapable to handle projects assigned (RFB et al, 2015).

TANROADS management system has been seen as not effective enough in handling road projects. The management has been failing to prepare project final reports, as-built-drawings and snag lists. Also there is observed inadequate communication between employer and contractors since it has been observed that the contractors were not notified about the defect liability period to when it commences (Taggart et al, 2013). Furthermore, doubtful there is loss of integrity in project management since there is prevailing environment of corruption and other unethical conducts that affects the performance of implementing agency. These unethical practices affect the quality of projects and lead to cost overrun hence implemented projects do not comply with value for money expected, (World Bank, 2011).

2.5. Executed Work

This stage ensures that planned project activities are carried out in an effective and efficient way while ensuring that measurements against project plans, specifications, and the original project feasibility concept continue to be collected, analyzed and acted on throughout the project lifecycle. Without a defined project execution process each project team would execute projects using their own best practices, experience, and methods; allowing certain control, tracking and corrective action activities to be missed. Once a project moves into the Execution Phase, the project team and the necessary resources to carry out the project should be in place and ready to perform project activities.
Table 2.5 presents the performance of TANROADS in the stage of executed works in the FY 2013/14 and 2014/15

Table 2.5: Executed works

<table>
<thead>
<tr>
<th>Executed Works Aspects</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A</td>
<td>Very Poor</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Based on visual assessment on quality of workmanship, materials used, riding surface, and absence of defect.</td>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>Comply with drawings and technical specification</td>
<td>12</td>
<td>4</td>
</tr>
<tr>
<td>Dimension of curvet and bridge comply with technical drawings and specification</td>
<td>15</td>
<td>3</td>
</tr>
<tr>
<td>Quality of materials used in pavement structure comply with technical specification</td>
<td>15</td>
<td>4</td>
</tr>
<tr>
<td>Quality of materials used in concrete and masonry works comply with technical specification</td>
<td>17</td>
<td>3</td>
</tr>
<tr>
<td>Compliance of site cleanup and restoration of disturbed and/or damaged areas with EM</td>
<td>29</td>
<td>4</td>
</tr>
<tr>
<td>Compliance of ongoing construction activities with safety and EMP requirement</td>
<td>29</td>
<td>0</td>
</tr>
<tr>
<td>Average performance</td>
<td>60.1</td>
<td></td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

2.5.1. Complete work satisfaction

Work satisfaction refers to the situation where by the assigned work is completed in all components according to the given guidelines. In this sub-indicator, the visually assessment should base on the quality of workmanship, quality of the materials incorporated, quality of riding surface, absence of defects in the road surfaces and in the structures, drainage (mitre drains, catch-water drains, camber and/or super elevation) have completed in accordance with
terms and conditions of contract. Since this is visual assessment, the, the Professional judgment of the Auditor is called upon to determine to what extent the completed works are in compliance with the specifications (VFMI, 2013).

Table 2.5 shows that completed work satisfaction has dropped from 68 percent in FY 2013/14 to 63.9 percent in year 2014/15. This is a drop of about 6.9 percent. However, on average, completed work satisfaction has been moderate at about 65.7 percent for the observed years. Generally, the average performance of completed work satisfaction is moderate at about 65.7 percent due to low quality of workmanship, material used in construction; low level of project supervision; presence of defects such as cracks, ruts and localized potholes (RFB, 2015).

The socio-economic costs of poor road are borne primarily by road users. When a road is completed poorly the cost of maintenance increases; increase the cost of road transport; raise level of road traffic; and level of vehicle operation will also increase sharply (Heggie and Vickers, 1998).

However, road construction sector/contractors still face drawbacks like high costs, both for infrastructure and operations; low quality of services with high backlog of infrastructure maintenance and rehabilitation requirements; outdated institutional arrangements, laws, regulations and procedures; insufficient investment; low level of enforcement of safety, regulations and procedures as well as low capacity for monitoring and evaluation, (URT, 2015).

2.5.2. Dimensions of Construction Items

Dimensions of construction items are the criteria measurements of construction project in different components based the related project. At this juncture of construction, the observed dimensions are based on drawings and technical specifications like pavement structure, road carriageway, foot path, road side drains, mitre drains as well as road signs (RFB, 2015). This sub indicator assesses physical site measurements in order to determine compliance with drawings and Technical Specifications.
In specific occasions, the Terms of Reference may specify works or part of works in to particular project, physical measurements to be done otherwise in all cases the Auditor has the responsibility of sampling depending on what he/she has observed. The physical site measurements of works performed should be done jointly with IA’s representative(s) and results countersigned (VFMI, 2013).

TANROADS compliance of major construction items of the completed works with drawings and technical specification has dropped at about 20.4 percent from 67 percent in year 2013/14 to 53.3 percent in year 2014/15 due to absence of drawings; weak work supervision; absence of footpath, road side drains, road, mitre drains as well as lack of design calculations (RFB, 2015). On average the compliance with drawings and technical specification has been satisfactory at about 60.2 percent for the observed financial years.

Clear and efficient signing and drawings are an essential part of the road system and roads with poor signs or with badly maintained signs are unsatisfactory roads. Road users depend on signing for information and guidance to the enforcement of traffic regulations, traffic control and as an aid to road safety (MWT, 1997). Hence, signs and drawings are provided to control and guide traffic as well as promote road safety. This is likely to other countries as it has been observed in Ghana; the compliance of drawings and technical specifications is far less that of South Africa and Tanzania (RTSM, 2012 & OAG, 2010).

Traffic signals are one of the most common and widely accepted forms of traffic control and affect the daily lives of virtually all road users. Traffic signals can be very effective in improving traffic flow and facilitating access. However, traffic signals can also cause significant disbenefit and possible danger to road users when installed inappropriately. There is unfortunately at times a tendency to use traffic signals indiscriminately in an attempt to solve problems where traffic signals are not appropriate. Traffic signals are often seen as the solution to almost all traffic problems, and pressures are often applied for the installation of unwarranted signals (RTSM, 2012).
Road works on or near a carriageway, cycle way or footway might impair the safety and free movement of vehicles, cyclists and pedestrians (particularly those with mobility and visual impairments). All reasonable steps should be taken to ensure that the effects of the works are reduced to a minimum, (TSO, 2009).

2.5.3. Compliance of Culverts and Bridges Drawings and Technical Specifications

A culvert is a closed conduit used to convey water from one area to another, usually from one side of a road to the other side. A culvert is required where the roadway crosses a stream channel or other embankment (HDHC, 2000). Thus, it allows water to pass downstream. When a road needs to extend across a river or valley, a bridge is built to connect the two land masses. Since, the average car cannot swim or fly, the bridge makes it possible for automobiles to continue driving from one land mass to another.

This sub indicator covers Physical Site Measurements of Culverts and Bridges Determine with Drawings and Technical Specifications (VFMI, 2013).

Table 2.5 presents the compliance of constructed culverts and bridges to the technical drawings and specifications in the FY 2013/14 and 2014/15. It shows that, there is a decrease of compliance at about 17.7 percent from 77 percent in year 2013/14 to 63.3 percent in FY 2014/15. This drop is the result of absence of drawings and drawings details to some projects as well as inconsistency of drawings with technical specifications (RFB, 2015).

On the other hand, the average compliance of culverts and bridges dimensions with regards to technical drawings and specification had been high at about 70.2 percent. This is due to annual stakeholders meetings and provision of training engineers, and frequent site visit (RFB; 2014).

Culverts and bridges are necessary in order to cross waterways during road construction since it support the stability on the movement of the people with their goods; decreased occurrence of natural hazards like floods due to absence of water leading channels; frequent collection of road revenues (road tolls) which finally drive the economy to the apex level are the expected
outcomes of better culverts and bridges. However, poor roadway drainage is one of the leading culprits responsible for roadway infrastructure damage, increased maintenance costs and roadside environmental impact.

2.5.4. Compliance of the Quality of Materials Used in Pavement Structures with Technical Specifications

The components and definitions of materials essential for pavement structures include the subgrade, a granular base course, and a surfacing of asphalt concrete (Albert, 1997). In order to meet the construction policy of 2003 of the United Republic of Tanzania, all works are to be carried out in accordance with the directive standards, general conditions of contract, specification of drawings and selection of materials to be used. The selection of the materials to be used in terms of its quality should be carried out to the satisfaction of the Engineer by producing the output with required quality (TSCW, 2008).

Table 2.5 reveals that, the quality of materials used in pavement structure has dropped from 68 percent in FY 2013/14 to 48.9 percent in FY 2014/15. This is dramatic drop of about 28.1 percent. In addition, data shows that, the average performance of quality materials used in pavement structure with technical specifications had been also low at about 50.4 percent. This is due to absence of material tests; violation of conditional survey; and poor project supervision (RFB, 2015).

It is well known that the rate of road deterioration increases if the water content of the granular material increases. In rigid pavements (i.e., concrete), temperature gradients across the concrete slab can cause structural defects (CER, 2013). Quality material is an important feature in determining the ability of any given road pavement structure to withstand the effects of traffic and environment. Proper and well maintained roads from good materials to road pavements construction will increase their life span but low quality materials causes’ failure of road pavements at its early age thereby drastically reducing their service lifespan, (CER, 2013).
2.5.5. Quality of Materials Used in Concrete and Masonry Work

The term masonry work refers to the construction work performed during the erection of stone work on either buildings or any other structures made of natural and artificial masonry materials as a result of complex process that includes, lying of brick or other stones in the mortar.

This parameter covers field tests in order to determine the quality of the materials used and drainage Structure to establish compliance with the Technical Specifications. The structures may include bridges, culverts (box, pipe, vented), drifts, access slabs, or lined drains (VFMI, 2013).

The purpose of the proposed test is to test concrete structures after the concrete has hardened to determine whether the structure is suitable for its designed used and assess the structural integrity or adequacy. Ideally such testing should be done without damaging the concrete and that’s why non-destructive test has been adopted. The test specified to be performed by the Auditor in the structures is a Rebound Hammer. The test should be carried out according to the Laboratory Testing User Guide of the Central Materials Laboratory (CML) of the Ministry of Works. The Auditor should compare the results with those conducted during construction (idid).

Table 2.5 shows that the quality of materials used in concrete and masonry works complied with the technical specifications at about 67 percent in FY 2013/14 and dropped to 48.9 percent in FY 2014/15 by about 27 percent. On average, the compliance of the quality of materials used in concrete and masonry works to technical specifications was satisfactory by about 57.9 percent for the observed financial years. This situation was contributed by number of factors including limited field tests done on the executed project; absence of conditional survey and also violation of some engineering principals (RFB, 2015).

The revealed trend of the quality of construction materials will increase costs of road construction and maintenance; limit the carrying ability and strength of roads as well as frequent close of the road for maintenance. Also regarding to the slow progress revealed in this section, make the transport sector to experience high costs, both for infrastructure and operations; and low quality services with high backlog of infrastructure maintenance and rehabilitation requirements (NTP, 2011).
The mission and vision of the National Transport Policy 2012 draft clearly places the importance of having efficient and cost effective domestic transport services to all segments of the population and development of safe, reliable, effective, efficient and fully integrated transport infrastructure which is possible through the application of easy and cost effective technologies with high quality materials.

Contribution of transport sector on achieving the national vision of 2025 should be supported by improving the average quality of materials used in concrete and masonry works; compliance with technical specifications of the required materials; strengthen site supervision so as contractors doesn’t violate the settled construction criteria’s.

2.5.6. Compliance of Site Clean-Up and Restoration of Disturbed and/or Damaged Areas with EM

In principle the contract will spell out the responsibility of the contractor regarding the protection of the environment. If it is provided in the contract, the contract will take all reasonable steps to protect the environment and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations on site (VFMI, 2013).

Furthermore, the contractor should comply with the Statutory Regulations in force in Tanzania regarding environmental protection and waste disposal and should liaise with the responsible authorities to understand rules and procedures. For contracts which Environmental and Social Impact Assessment [ESIA] was conducted, the safeguards outlined in such assessment should be the basis of the assessing compliance (ibid).

The assessment of this sub-indicator should base on the basis of the environmental management provisions provided in the contract. For the contractor to fulfill his contractual obligation there must an Environment Management Plan prepared and followed. Issues such as reinstatement of borrow pits, excavations, water pollutions, nuisance and etc. have addressed and implemented (ibid).
Table 2.5 shows that the compliance of site clean-up and restoration of disturbed areas and/or damaged areas with EM has dramatically dropped by about 42.9 percent from 35 percent in FY 2013/14 to 20 percent in FY 2014/15. On the other hand, the average performance of compliance to the site clean-up and restoration of disturbed areas had been low at about 27.5 percent during the observed financial years.

This trend implies that, there was no compliance of site clean-up and restoration of disturbed or/and damaged areas with EM. The observed factors for non-compliance of environmental matters were not well addressed in the contract as well as to the contractors; presence of weak Safety and Environmental Management Plan; weak follow-up of the environmental conservation by environmental friendly and pioneer organs and absence of IA’s environmental policy for better implementation of contracts (RFB, 2015).

It has been noted that, major construction projects, such as roads and freeways are important to the economic development. During construction, however, such projects pose a significant risk to the environment like damage to waterways and wetlands, kill fish, upset aquatic ecological systems and wildlife communities and results in contamination of land and groundwater which must be addressed by developers and contractors (Brian; 1996).

As a master of the nature, the world is now in a position to make a substantial contribution to the greening of the planet through ecological engineering and ecosystem restoration. Societies find themselves in a restorative period of human history both politically and economically whereby, although not necessarily questioning all what they have built and engineered to date, if they are determining whether to continue practices as usual and whether they can afford to do so, what new approaches are available for restoring the bodily functions of nature on which society depend (Mitsch, 2002).

Since the National Transport Policy seeks to provide the framework for making fundamental changes that are needed to bring environmental considerations into the mainstream of decision making in Tanzania. It calls for stakeholders to promote long-term economic growth, creating incentives for sustainable utilization of natural resources, disincentives for environmental
pollution and degradation, and effective management of the overall environment for the future benefits (NEAP, 2012).

2.5.7. Compliance of On-Going Construction Activities with Safety and EMP Requirements

The construction project which is still in the progress is also known as on-going construction. This part covers uncompleted projects by assessing the compliance of on-going construction activities with safety and EMP requirements. This parameter assess uncompleted project on compliance with Safety and Environment Management Plans stipulated in the contract documents.

For the ongoing contract, the assessment is done on whether the plans in place are followed and will yield required results in terms of compliance with safety and environment management. On the safety issues, it covers whether the contractor is taking all reasonable precautions to maintain the health and safety of his personnel at site physically (VFMI, 2013).

Data reveals that, compliance of on-going construction activities with safety and EMP requirements sharply decreasingly by 37.3 from 39 percent in FY 2013/14 to 24.4 percent in FY 2014/15. Also, the average compliance of on-going construction activities with safety and EMP requirements had been very low at about 31.7 percent due to absence of warning signs especially for excavated trenches; lack of safety gear to the contractor’s workers due to the use of low quality tools which is the results of limited coverage of National Environmental Policy to the road construction area (RFB, 2015).

Potential impacts of this low compliance include: pollution of rivers, irrigation canals and cultivated lands; increased dust, noise and other nuisances on local communities; increased traffic on local roads; impacts caused by presence of a large workforce in and near local communities as well as disposal of construction wastes (Infra-Thang Long; 2010). On top of that there is land degradation, lack of accessible good quality water, loss of wildlife habitats and biodiversity, threatening the national heritage and creating an uncertain future for the tourist industry as well as deforestation (Maro, 2008).
The purpose of Environmental Management Plan (EMP) is to establish a set of mitigation and monitoring measures to help minimizing the adverse environmental and social impacts that can occur during the construction and operation to the acceptable levels. According to Tanzania Environmental and Management Act of 2004, all surroundings of the on-going projects should be cleaned up and protected by the respective contractors/organizations in order to mitigate the expected side effects to the environments. So the contractors should comply with the requirements of the National Environmental and Management Act of 2004.

2.5.8. Average performance

TANROADS average performance represents the summation of all parameters within the executed works stage which are divided by the number of variables within the stage. Data on table 2.1 explain that, average performance of executed works decreased dramatically by 23.5 percent from 60.1 percent in FY 2013/14 to 46.0 percent in FY 2014/15. This suggests that, executed works had been highly complying with technical specifications.

Absence of EMP plans and quality assurance; designs calculations; concrete structure; strip maps; road signs; late release of funds and missing of costs estimates on some projects are the factors behind such dramatic drop performance. Not only that but also, violation of contractor’s rules and regulations like preparation of drawings and program charts; absence of site conditional survey; snag list; presence of potholes, cracks and fractures as well as violation of accuracy and completeness of BOQ’s decelerates the overall TANROADS performance (RFB, 2015).

Generally, all variables/or parameters are responsible for the decrease of average performance since all of them depicts the drop trends from the FY 2013/14 to FY 2014/15 due to the exogenous factors above. Moreover, different Studies shows that construction projects and the industry at large have performed poorly in both the developed and under developed countries assert that shortage of skills of manpower, poor supervision and poor site management; unsuitable leadership; shortage and outdated equipment are among the factors that contribute to construction delays and subsequent performance problem (Olim &Alinaite, 2010).
A study conducted in South Africa (Hanson et al., 2003) reveals that conflict, poor workmanship and incompetence of contractors are among the factors affecting project performance. And on a lot of Nigerian roads across the country having inadequate drainage systems, deterioration often begins with the origin of cracks or pot holes on the road pavements either at the edges or along the drive way which differs by their shapes, configuration, amplitude of loading, movement of traffic and rate of deformation compared to those of Tanzania although the nature of performance of has been dropped for the Tanzania roads (CER, 2013).

To establish the good road performance factors, project success has been widely considered by many scholars as an indicator of good performance. Project success can be categorized into the objective measures of time, cost, safety and environmental considerations and subjective measures of quality, functionality and satisfaction of project participants (Olim & Alinaite, 2010). Hence the ministry of works, TANROADS and other stakeholders should employ those project successes for the better projects outputs.

2.6. TANROADS Overall and Weighted Average Performance

The term performance refers to the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. In a contract, performance is deemed to be the fulfillment of an obligation in a manner that releases the performer from all liabilities under the contract. Table 2.6 and graph 2A, B and C presents the TANROADS overall and weighted average performances for the financial years 2013/14 and 2014/15. They cover five Tanzania road projects construction stages namely [1] Planning, Designing and Tender documentation; [2] Procurement Stage; [3] Construction Stage; [4] Project Completion and Closure Stage and [5] Executed Works.

Table 2.6 and graph 1A and B shows the overall weighted average performance of TANROADS in respect to each project stage.
### A1: TANROADS Average and Weighted performance

<table>
<thead>
<tr>
<th>Stages</th>
<th>2013/14</th>
<th>2014/15</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Planning and Designing</td>
<td>72.4</td>
<td>71.8</td>
<td>72.1</td>
</tr>
<tr>
<td>[2] Procurement Stage</td>
<td>86</td>
<td>83.6</td>
<td>84.8</td>
</tr>
<tr>
<td>[3] Construction Stage</td>
<td>66.6</td>
<td>62</td>
<td>64.3</td>
</tr>
<tr>
<td>[4] Project Completion Stage</td>
<td>44</td>
<td>21.8</td>
<td>32.9</td>
</tr>
<tr>
<td>[5] Executed Works</td>
<td>60.1</td>
<td>46.0</td>
<td>53.05</td>
</tr>
<tr>
<td><strong>Weighted Average</strong></td>
<td><strong>65.82</strong></td>
<td><strong>57.04</strong></td>
<td><strong>61.43</strong></td>
</tr>
</tbody>
</table>

**Source:** Roads Fund Board, 2015

### A2a: TANROADS Average and Weighted performance

![Graph showing performance over stages](image)

**Source:** Roads Fund Board, 2015
A2b: TANROADS Average and Weighted performance

Source: Roads Fund Board, 2015

Table 2.6, Graph 1A and Graph 1B show that TANROADS average performance was good at planning, design and tender documentation at about 72.1.4 percent, procurement stage at about 84.8 percent, and moderate on construction stage at about 66.2 percent. However, performance trend of project completion stage revealed to be decreasing. According to table 2.6 and graph 1A and B, the general performance of completion and project closure and executed works has been low at about 32.9 and 53.5 percent respectively.

The revealed decreasing trend of three road construction stages (construction stage; completion and closure stage and executed works) is the result of inadequate project supervision, low capacity of local contractors and engineers, poor contract management, political interference, presence of heavy rainfall in some places as well as limited staff/outsources (RFB, 2015).
A3: Average Performance

Graph 1C presents the overall average performance of TANROADS roads constructed projects for financial years 2013/14 and 2014/15. It also reveals that the overall average performance decreased from 65.8 percent in FY 2013/14 to 57.04 in FY 2014/15. This is equivalent to 15.4 percent decrease. However, overall average performance was moderate at about 61.4 percent.

The reported factors for that decline in performance were; some projects were still in progress at the time of audit, failure of TANROADS project management to manage the preparation of project schedule and make sure it was submitted to them by the contractors since it is observed that in some projects there were no schedules of works prepared and submitted by contractors, and some programs were not revised and updated, low quality of workmanship and the material used in construction, low level of project supervision, presence of defects such as cracks, ruts and localized potholes. (RFB, 2015)

The TANROAD project management to a larger extent has failed to manage the preparation of final reports to its projects (RFB, 2015), poor determination on the selection of the most appropriate procurement method for the specific need to some of the projects. One of the reasons contributing to the poor performance of the construction industry principally is the inappropriateness of selection of procurement method (Ali et al, 2011). The selection of an
inappropriate procurement method may lead to undesirable project outcomes and hindrance in obtaining value for money and may not make effective use of both State government and private sector resources.

The last FYs, the TANROADS performance was good due to the facts that, most of the projects were consistency with drawings, accuracy and completeness of BOQs, application of good cost estimation methods, good preparation of tender documents as well as adherence to the procurement process and regulations (RFB, 2015). Therefore TANROADS should take these factors under consideration for the improvement and achievement of the intended objectives.
Chapter Three

LGA Performance Status in Road Construction Projects

3.0. Introduction

LGAs are road agencies responsible for the maintenance and development of the urban and feeder roads. Technical auditing is conducted to evaluate the performance of these road agencies in handling road projects in their areas of jurisdiction. This evaluation of technical audit reports shows the current status on performance in each stage of project and has suggested some recommendations for improvements.

This Chapter has 7 main sections. Section 3.1 gives an introduction to the chapter; section 3.2 covers issues related to planning, designing and tender documentation; section 3.3 covers issues related to procurement; and section 3.4 covers issues related to construction. Furthermore, section 3.5 covers issues related to project completion and closure; section 3.6 covers issues related to executed works; and section 3.7 covers issues related to LGA’s overall performance.

3.1 Project Planning, Design and Tender Documentation

Planning, design and tender documentation is the first phase for project completion. Planning includes; collecting and arranging traffic accounts, planning and evolving development plans for roads, liaison with other Ministries for road requirements, feasibility studies for long range planning; road classification, project evaluation and cost estimates for seeking finance from treasury (RK. 1997).

The design of project activities is a control and supervision of the survey and photogrammetry sections, drawing office and design engineers in their work through invoicing road geometric design; formulation of design standards and specifications and preparation of contract documents which include conditions of contracts; bill of quantities; acquisition of land for roads in collaboration with the commissioner of lands and registration and pre-qualification of contractors (ibid).
Table 3.1 shows the performance of project planning, designing and tender documentation completion for LGAs projects for FY 2012/13 and FY 2013/14.

Table 3.1: Project Planning, Design and Tender Documentation

<table>
<thead>
<tr>
<th>Project implementation aspects</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A %</td>
<td>N/A %</td>
</tr>
<tr>
<td>Compliance of project planning with requirements of the PA</td>
<td>13.2 % 0 %</td>
<td>1.1 % 0.5 %</td>
</tr>
<tr>
<td>Accuracy and completeness of the design calculations and technical drawings</td>
<td>11.9 % 0 %</td>
<td>1.8 % 0.5 %</td>
</tr>
<tr>
<td>Accuracy, appropriateness and completeness of technical specifications</td>
<td>1.1 % 0 %</td>
<td>2.7 % 0 %</td>
</tr>
<tr>
<td>Overall appropriateness of the design (economy and function)</td>
<td>2.9 % 0.2 %</td>
<td>1.1 % 0.6 %</td>
</tr>
<tr>
<td>Accuracy and completeness of the design of BOQs</td>
<td>13 % 2.7 %</td>
<td>0.2 % 0.6 %</td>
</tr>
<tr>
<td>Accuracy of the engineers’ estimate</td>
<td>3.1 % 8.7 %</td>
<td>1.1 % 0.2 %</td>
</tr>
<tr>
<td>Accuracy and completeness of tender documents</td>
<td>0.7 % 3.8 %</td>
<td>0.7 % 3.7 %</td>
</tr>
<tr>
<td>Overall performance</td>
<td>49.6</td>
<td>49.8</td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

3.1.1 Compliance of Project Planning with Requirement of Performance Agreements

A planning performance agreement is a project management tool which the planning authorities and applicants can use to agree timescales, actions and resources in the form of performance standards for the consideration and determination of the planning application. Planning performance agreements can be particularly useful in establishing appropriate measures for monitoring compliance with the respective parties’ and setting out an efficient and transparent process for determining large and/or complex planning applications. Quality and accurate standard of project planning rely on rules and regulations that govern the frame of projects activities to meet stakeholders’ expectations. Project completion is achieved when the compliance of project constructed by local government (LGAs) to plan with terms and conditions is accurate (ERYC, 2005).
For effective evaluation of this variable, the following criteria should be considered: assessment of competing alternatives based on updated road inventory and condition survey, Analysis of feasibility based on appropriate road maintenance software (such as HDM 4, DROMAS, or RMMS) and Timely appointment of in-house/ independent design professional or Consultant should be considered (VFMI, 2013).

According to table 3.1, project planning with requirement of PA for LGA’s has increased by 50 percent from 14.1 percent in FY 2013/14 to 21.2 percent in FY 2014/15 with low average performance of 17.7 percent. This implies a slight significant progress for LGA’s in the compliance of planning with requirement of the PA compared to the previous year.

Performance improvement in project planning with requirements of the performance agreement is due to the following reasons; there was slight improvement in support of the appropriate road management system in all LGAs, and site inventory as well as meetings used to make decisions in most of the projects rather than the road maintenance software (RFB 2015).

The improved performance score for the current financial year has revealed the impacts of not using road maintenance software jeopardize decision made in managing, and renewing road assets on budget and on schedule, also upgrading quality and accuracy of project planning standard with requirements of PA, through relying on rules and regulations that govern the frame of projects activities to meet stakeholders’ expectations (ibid).

Generally the performance of project planning with requirement of PA is assessed by the competing alternatives based on updated road inventory and condition survey, the use of road maintenance software (DROMAS); throughout the observation LGA’s performance is still poor and unsatisfactory. Hence every decision in the analysis of feasibility should be based on results from the road maintenance software in order to enhance their performance (ibid).
3.1.2 Accuracy and Completeness of Design Calculations and Technical Drawings

The technical equations used for expressing the value of projects designed for execution should be free from material errors and consistent if the same estimates are used from different time periods. With no relevant information excluded from being used in the calculation and drawings of the technical provisions without justification, technical drawings determine the structure of designed projects in order to compose plan to visually communicate the scope of a project to be undertaken (IFA, 2013).

Data on table 3.1 revealed that, the accuracy and completeness of design calculations and technical drawings has increased by 22.7 percent from 40.1 percent in FY 2013/14 to 49.2 percent in FY 2014/15. And on average LGAs performance in accuracy and completeness of design calculations and technical drawings has been low at about 44.7 percent for the two financial years. This was low LGAs performance where in most of projects there was inaccuracy and incomplete design calculations and technical drawings since there was minor errors in the calculation and technical drawings, and inadequate details in designs (RFB, 2015).

The performance progress in design calculations and technical drawings was due to some improvement in design calculation, relevant drawings, using strip map for technical drawings in some projects, most of project works performed conform to the lines, grades, cross-sections and dimensions shown on the drawings or as directed by the Engineer, subject to the permitted tolerances described herein-after and specifications of technical drawings were clearly elaborated to projects team and stakeholders and consistence of design calculations (ibid).

This incremental performance has impacted the progress in design calculations and technical drawings; appropriate equations and drafting with at most important details included in design, develop analysis that defines the required system, producing technical portion of construction contract documents and facilitated preparation of project cost (PDP, 2014).

Hence emphasize should be pressed on relevance of information being used in the calculation and drawings of the technical provisions with justification, and technical drawings that determine
the structure of designed projects should be observed for minor error and exclusion of relevant
details in order to compose plan to visually communicate the scope of a project undertaken. Also
the contractor and/or the designer shall be certified by an independent quality institution so as to verify their ability on the respective field (ERA, 2002).

3.1.3 **Accuracy, Appropriateness and Completeness of Technical Specifications**

A detailed description of technical requirements usually with specific acceptance criteria stated in terms suitable to form the basis for the actual design, development and production processes of the project having the qualities specified in the operational characteristics. Technical specifications contain all detailed information reviewed by projects’ team in order to understand the requirements and refine them, facilitate developing projects budget and resource needed to implement solutions. Thus technical specifications included in the design ensure that the system, if built in accordance with the plans and specifications, will be in compliance with the building codes and good engineering practice current at the time of design (CTA, 1997).

Observation from table 3.1 shows the performance of accuracy, appropriateness and completeness of technical specifications has increased by about 13.9 percent from 61 percent in FY 2013/14 to 69.5 percent in FY 2014/15. And on average the LGAs performance has been moderate at about 65.25 percent for the two financial years.

The moderate performance of LGA’s in accuracy and completeness of design calculations and technical drawings is influenced by fair progress in classification of soil for earth work in excavation and filling for site grading work. All materials used, methods adopted and works performed were strictly in accordance with the requirements of these specifications (WSDOT, 2014).

The incremental LGAs performance in accuracy and completeness technical specifications have simplified the planning of upgrading works, improvement in standard designs, and detailed information on the type, space and number of test to be done during construction which has
increased the accuracy, appropriateness and completeness of technical specifications hence project budget enhanced (RFB, 2015).

3.1.4 Overall Appropriateness of Design in Terms Of Economy and Function

The intention of engineers for projects construction is conveyed to the contractors by drawings. Road design typically begins by creating an existing conditions surface and compiling a base map of existing conditions, information about the topography, parcels, utilities, and other potential impacts to a route design. Creating structural ground maps for roads is based on the quality measure of stakeholders’ criteria. Project design reflects the functional operational activities to be undertaken by considering the available resource. To design project work is a task which needs experience in estimating structure of work schedule with comparison to the available resource (Autodesk, 2012).

Table 3.1 shows that the overall appropriateness of design in terms of economy and function has declined by about 8 percent from 64.8 percent in FY 2013/14 to 59.6 percent in FY 2014/15. However, the average performance has been moderate at about 62.2 percent for the two financial years. It has been observed that there was insufficient/no use of software for road maintenance i.e. District Roads Management System (DROMAS) since the available software was damaged hence it was no longer in use. Also there was no comparison made hence led to improper design (curvature, grades, roadway width, drainage facilities) calculation (RFB, 2015).

The results on table 3.1 has adverse effects on consistence of project plans in determining the precise alignment of a road in an established corridor, variance of the safety, inefficiency in minimizing environmental damage and cost and livability.

For the best of design the requirements of the client to be identified and the constructive aspects and the standards of quality to be well defined through procedures, drawings and technical specifications should be employed. Furthermore design should be carried out with interaction between the construction and design teams in order to avoid problems during construction such as incomplete designs, change orders, rework, and construction delays (IBRD, 2005).
3.1.5 Accuracy and Completeness of Bills of Quantity (BOQs)

The Bill of Quantities (BOQ) shows a list of brief descriptions and estimated quantities. The quantities are defined as estimated because they are subject to admeasurement and are not expected to be totally accurate due to the unknown factors which occur in civil engineering work (Atkinson, 2000). The objective of preparing Bill of Quantities is to assist estimators to produce an accurate tender efficiently and to assist the post contract administration to be carried out in an efficient and cost-effective manner. It should be noted that the quality of drawings plays a major part in achieving these aims by enabling the engineer to produce an accurate bill and also by allowing the estimator to make sound engineering judgments on methods of working (Tweeds, 2014).

Table 3.1 shows that accuracy and completeness of bills of quantity (BOQs) has dropped at about 30.6 percent from 54.5 percent in FY 2013/14 to 37.8 percent in FY 2014/15. And on average the LGAs performance in accuracy and completeness of BOQs has been low at about 46.2 percent for the observed financial years. It is revealed that the decline of accuracy and completeness of the design of BOQs contributed by number of factors including irrelevancy of BOQs and specifications to the maintenance interventions executed, drawings were not availed and missing of items such as material testing, inaccurate estimates, high margins of bids, delay of funds and increased claims and disputes (RFB, 2015).

Mistakes in the BOQs descriptions or quantities are unlikely to be remedied as a legal rectification of the terms of the contract to reflect the true intention of the parties. It is more likely than not, that the common intention will be that the tendered price should prevail, rather than a price revised to account of the error. Most standard forms of contract which adopt Bills of Quantities make provision to deal with errors in bill descriptions and quantities, distinct from the effect of variations (Atkinson, 2000).

Thus it is very important that bills of quantities are prepared according to a standard, widely recognized methodology by doing so will help avoid any ambiguities or misunderstandings and so helps avoid disputes arising through different interpretations of what has been priced.
3.1.6 Accuracy of the Engineer’s Estimates

The Engineer’s estimate is an important part of the overall design process. It is a determination of the construction costs based on the details in BOQs for any given project. The estimate is then used for programming and funding proposes. Preparing the estimate requires knowledge of construction methods, fabrication processes and construction costs based on the measurement and payment section in the Specifications. Cost estimates are prepared manually to determine preliminary or alternative cost estimates. When design details are limited may be rounded based on the experience of the cost engineer, whereby the end cost is not significantly affected (Yakowenko, 2004).

Table 3.1 shows that the accuracy of engineer’s estimates has dropped by about 2.3 percent from 62.1 percent in FY 2013/14 to 60.7 percent in FY 2014/15. And on average the LGAs performance in accuracy of engineer’s estimates has been moderate at about 61.4 percent for the observed financial years. This is a suggested consecutive decline of accuracy of the engineer’s estimates implying estimations were made with errors.

Generally, LGAs’ performance on accuracy of the engineer’s estimates was dropped due to fact that the estimates were inaccuracy since there was unavailability of clear and detailed information. In the current economic climate of greater than ever strains on public funds, the pressure for accurately estimate the ultimate cost of a project is increasing, most of the projects and tender documents were adequate in all IA’s including engineer’s estimates with minimum variations and rescheduling of works (RFB 2015).

On the other hand, the decline in engineers estimate for financial year 2014/15 has impacted the performance of road construction estimates; code number, an item description, unit of measure, quantity, unit cost and total cost for each item which are summarized to receive the overall engineer’s estimate. Hence estimator must be capable of mentally constructing the project, accounting for all the activities necessary to complete it, and then estimating the cost using prices prevailing at the time the estimate is prepared (MOTI, 2013).
Thus the most important factors in obtaining a good engineer's estimate based on the experience of estimator. While documented estimating procedures are helpful as well as contracting agencies are encouraged to provide sufficient training opportunities for their staff in order to enhance the performance of accuracy of the engineer’s estimates.

Generally, the success or failure of a project is dependent on the accuracy of several estimates done throughout the course of the project. Therefore, the preparation of a cost estimate of the project is one of the most difficult tasks in project management because it must be done before the work is accomplished (Adna at el, 2013).

3.1.7 Accuracy and Completeness of Tender Documents

Tender document is the document containing the necessary application papers and informs of additional information that the suppliers must deliver in order to apply for the tender and enter the selection process. It gives a detailed explanation of the deadlines, requirements, necessary information and criteria. In general it consists of the following documents: a cover letter, an invitation to tender, the form of the tender, the terms and conditions of the contract, a bill of quantities, the specifications, designs/drawings and/or plans, the quality requirements, the evaluation criteria and the tender return label. The criteria upon which a supplier is usually chosen are the proposed prices and costs, delivery times and terms, availability and quality (EBRD 2010).

Table 3.1 shows that growth rate of accuracy and completeness of tender documents has dropped at about 0.4 percent from 50.7 percent in FY 2013/14 to 50.5 percent in FY 2014/15. The accuracy has satisfactory average performance of about 50.6 percent for the observed years. These results implies that there is client impatience, reluctance to invest more in good quality documents as well as unawareness and incompetence on the accuracy and completeness of tender documents compared to the previous years (RFB, 2015).

Poor specification writing, disparities between bill of quantities; drawings and specifications and poorly prepared tender documents are the common causes for the consecutive decline in tender documents performance (Brook, 2004: 46). Poor contract planning necessitates changes to the
scope of the work, increasing time and cost, accelerates weaknesses in evaluation of tender documents, it allow competence and track record to be unchecked, poor contract management during implementation results in delays and costs due to late mobilization and increase weaknesses in supervision are the possible outcomes of the decrease compliance in tender documentations.

Generally the issues associated with quality of information in drawings, specifications and bills of quantities included missing information, late information, wrong information, insufficient detail, impracticable designs, inappropriate information, unclear information, provisional information, poorly arranged information, uncoordinated information and conflicting information (Van, 2006; Shaw, 2010). Thus poor quality tender documents lead to inaccurate estimates, higher margins in bids as well as increase of claims and disputes.

Trend observation of tender documents for LGA’s is a sequential decline, to overcome this the tenderer must comply with all the conditions and instructions has stated to the road maintenance contracts, improve project planning and budgeting so that both scope of works and estimates to be realistic, renew efforts to improve selection using contractor prequalification, registration and performance track records, strengthen evaluation criteria and processes to improve the credibility of information provided by contractors.

### 3.1.8 Overall Performance

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely to identify the contribution of efforts upon completion of tasks for final managerial decisions; whether to empower the exiting or invest new efforts.

Table 3.1 shows that the overall performance of planning, design and tender document has raised by about 0.4 percent from 49.6 percent in FY 2013/14 to 49.8 percent in FY 2014/15. And on average the LGAs overall performance of planning, design and tender document has been low at about 49.7 percent for the observed financial years. The improvements have been observed to
some parameters namely project planning with requirements of the PA; accuracy and completeness of the design calculations and technical drawings; accuracy, appropriateness and completeness of technical specifications. However, parameters such as overall appropriateness of the design (economy and function); accuracy and completeness of the design of BOQs; accuracy of the engineers’ estimate; and accuracy and completeness of tender documents have been declining consecutively.

The successful implementation of any project depends much on effective and efficiency in its planning and design. Planning and design of road projects in LGAs is influenced by political influences. It has been observed that political leaders in LGAs have been influencing Council engineers to carry out road projects in their respective areas, although they were not a priority at a particular financial year. Furthermore, designing software called DROMAS for district road maintenance in the current year was damaged and therefore it was no longer in use. For the period of software repair project planning and design stage affected to a larger extent (RFB, 2015).

It should be noted that, economic costs of poor road maintenance are borne primarily by road users. When a road is allowed to deteriorate from good to poor condition, each dollar saved on road maintenance increases. Far from saving money, cutting back on road maintenance increases the cost of road transport and raises the net cost to the economy as a whole. Furthermore, when traffic levels rise, as they have been in most countries, the proportion of total road transport costs attributable to vehicle operation will also increase sharply, while those attributable to road expenditures will decline (Heggie and Vioker, 1998)

### 3.2 Procurement Stage

Procurement means buying, purchasing, renting, leasing or otherwise acquiring any goods, works or services by a procuring entity and includes all functions that pertain to the obtaining of any goods, works or services, including description of requirements, selection and invitation of tenderers, preparation and award of contracts (URT, 2011).
Table 3.2 shows the procurement stage performance of LGA in terms of appropriateness of method of procurement, compliance of procurement process with PPA 2011, evaluation process and award of contract, competitiveness of rates quoted for major items of construction, overall competitiveness of most economic tender compared with market price, capacity and competence of selected contractors in relation to project size and complexity.

Table 3.2: Procurement stage

<table>
<thead>
<tr>
<th>Procurement Aspects</th>
<th>2013/14 N/A %</th>
<th>Very Poor %</th>
<th>Poor %</th>
<th>Fair %</th>
<th>Good %</th>
<th>Total</th>
<th>2014/15 N/A %</th>
<th>Very Poor %</th>
<th>Poor %</th>
<th>Fair %</th>
<th>Good %</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriateness of method of procurement.</td>
<td>0.4</td>
<td>0</td>
<td>0</td>
<td>9</td>
<td>91</td>
<td>100</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>7</td>
<td>91</td>
<td>100</td>
</tr>
<tr>
<td>Compliance of procurement process with PPA 2004.</td>
<td>4.7</td>
<td>0.2</td>
<td>1</td>
<td>29</td>
<td>65</td>
<td>100</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>31</td>
<td>68</td>
<td>100</td>
</tr>
<tr>
<td>Evaluation process and award of contract.</td>
<td>0.2</td>
<td>4</td>
<td>4</td>
<td>50</td>
<td>42</td>
<td>100</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>50</td>
<td>44</td>
<td>100</td>
</tr>
<tr>
<td>Competitiveness of rates quoted for major items of construction.</td>
<td>0.2</td>
<td>0</td>
<td>0.9</td>
<td>25</td>
<td>74</td>
<td>100</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>34</td>
<td>63</td>
<td>100</td>
</tr>
<tr>
<td>Overall competitiveness of most economic tender compared with market price.</td>
<td>0</td>
<td>0</td>
<td>0.2</td>
<td>26</td>
<td>74</td>
<td>100</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>35</td>
<td>62</td>
<td>100</td>
</tr>
<tr>
<td>Capacity and competence of selected contractor in relation to project size and complexity.</td>
<td>0</td>
<td>0</td>
<td>0.4</td>
<td>6</td>
<td>94</td>
<td>100</td>
<td>2</td>
<td>0</td>
<td>5</td>
<td>12</td>
<td>81</td>
<td>100</td>
</tr>
<tr>
<td><strong>Average Performance</strong></td>
<td><strong>73</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td><strong>100</strong></td>
<td><strong>68</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Source: Roads Fund Board, 2015*

3.2.1. Appropriateness of Methods of Procurement

Procurement methods are the procedures used by the procuring entity to acquire goods, services and works (GNWT, 2009). Table 2.2 shows that appropriateness of method of procurement has remained constant at 91 percent for both financial years 2013/14 and 2014/15. And on average the appropriateness of methods of procurement has been excellent about 91 percent for the period under consideration.

Appropriateness of Procurement Methods is evaluated based on the adherence to Regulation 47(2) of G.N. No. 97 stipulates that approval of the AO or CEO must be held either by inclusion of that procurement in a procurement programme or plan or by request an individual item of procurement. Regulation 54(1) of G.N. No. 97 states that approval of the tender documents by
the TB is required before the tender is advertised. Furthermore, section 30(d) of PPA 2004 lists approving of procurement procedures as one of the TB functions. The Second Schedule of the G.N. No. 97 of 2005 also specifies Methods of Selection and Limit of Application of each method (VFMI, 2013).

The reported factors for high performance were; most of the contracts observed procurement regulations, capacity of contractor and good selection of methods of procurement, good selection of procurement methods, most of the project observed procurement regulation, capacity of contractor and good selection of methods of procurement (RFB, 2015).

The selection of an appropriate procurement method lead to desirable project outcomes and obtaining value for money and should make effective use of both State Government and private sector resources. A systematic process for identifying and justifying the selection of a best procurement method is more emphasized to sustain the performance and ensure desired results.

3.2.2. Compliance of the Procurement Process with PPA and its Regulations

Procurement process means the successive stages in the procurement cycle, including planning, choice of procedures, measures to solicit offers from tenderers, examination and evaluation of those offers, award of contract and contract management (URT, 2011). Public Procurement Act regulates the purchasing by public sector bodies and certain utility sector bodies of contracts for goods, works or services. This section examine the extent to which LGAs projects conform to rule such as specifications, policy, standard or law of procurement process with PPA and its regulation.

Table 3.2 shows compliance of the procurement process with PPA and its regulations has increased by 4.4 percent from 65 percent in year 2013/14 to 68 percent in year 2014/15. Also the average performance on appropriateness of method of procurement had been moderate at about 66.5 percent for the observed years. The reasons for the increase in performance include; in some projects procurement process followed the regulations and tendering procedure was adhered, evaluation considered criteria set in the tender dossier.
However, the compliance of the procurement with PPA and its regulations has not been high since some of the LGAs projects did not comply with regulations, for example, most of the LGAs advertisement was done only once, however section 68 of the PPA 2011 and Reg. 18, 19 of G.N. No.446 of 2013 of PPRA 2004 specifies advertisement to be done twice in different newspapers, in most of the LGAs unsuccessful bidders were not informed which is contrary to Reg. 235 (1) of G.N. No. 446 of 2013 (RFB, 2015).

Non-compliance of regulations hinders the increasing of performance in procurement process, due to unaccountability, efficiency and effectiveness. This is likely to other African countries like Nigeria where there are procurement laws and regulations placed purposely to monitor public procurement but unfortunately the compliance to those laws remained a problem in the public sector (Nworgu et al, 2015).

3.2.3. Evaluation Process and Award of Contract

Evaluation process is the situation where a contracting authority identifies which one of the tenderers meets the set requirements. In order to award the lowest bidder, there must be responsive and meet all the technical requirements stated in the invitation for bids. Holt (1998) defined Contractor evaluation as the process of investigating or measuring contractor attributes, and contractor selection as the process of aggregating the results of evaluation to identify an optimum choice.

Table 3.2 shows that the evaluation process and award of contract has increased by about 4.5 percent from 42 percent in year 2013/14 to 44 percent in year 2014/15. However, on average LGAs performance in evaluation process and award of contracts had been low at about 43 percent for the observed years. Reported causes for the low performance are; publication of awards was not done in most LGAs which are contrary to Reg. 236 of G.N. No. 446 of 2013, vetting regulation was source of delay in contract signing, which leads to delay of works in most of IAs (RFB 2015). In Egypt, the selection of the contractor is mainly associated with the lowest price, but lowest bid price is not always the best (Mohamed, 2009).
The lowest bidder may lead to poor quality, construction delays, and many more consequences which results in more expenses. Concerns should not be only on lowest bidder but it needs to check also on capability and competence of a contractor considering with the project size and complexity. The criteria to select a consultant or a contractor should be based on skill, experience and previous performance, rather than automatically accepting the lowest in all cases, financial capability, past performance and past experience is the top in the Contractor’s selection criteria.

3.2.4. Competitiveness of Rates Quoted for Major Items of Construction

According to Yanping (2005), “Evaluated tender price” means that the price should not be lower than the bidder’s cost or the consultant’s estimate and that the bid should be substantially responsive to the requirements of the bidding documents.

Table 3.2 shows that competitiveness of rates quoted for major items of construction has decreased by about 2.7 percent from 74 percent FY 2013/14 to 72 percent in FY 2014/15. However, on average the competitiveness of rates quoted for major items of construction had been good at about 73 percent for the observed years. The high performance was influenced by good rates based on market condition (RFB, 2015).

This sub indicator possesses a serious challenge to fill in because the Auditor is expected to have or know the prevailing market rates within the region where the IA is located, which is not always the case. Further, assumption that the Auditor may use engineer’s estimates as basis for comparison is not strictly correct because IAs may not have the capacity to prepare realistic engineer’s estimates and sometimes the engineer’s estimates do not reflect market prices of the inputs (VFMI, 2013).

According to (Tony, 2013) factor that may lead to the decrease in this variable could have been price fluctuations on the market at a particular period. When demand for construction work is high, contractors typically experience supply and capacity constraints, labor shortages, which result in rising tender levels. Conversely, when work is scarce margins are cut in an attempt to
secure work, and may be insufficient to adequately cover risks eventuating during a project. In these instances contractors may be trading at a loss, which, ultimately cannot be sustained.

3.2.5. Overall Competitiveness of the Most Economic Tender

Tender means an offer, proposal or quotation made by a supplier, contractor or consultant in response to a request by a procuring entity (URT, 2011). The contract shall be awarded to the tender with the lowest price or to the one that is the most economically advantageous as a whole taking into account for example quality, price, technical merit, aesthetic and functional characteristics, environmental characteristics, running costs, cost effectiveness, after sales service and technical assistance, delivery date and delivery period or period of completion. (Alhola et al, 2000).

This sub indicator assesses the overall competitiveness of the most economic tender when compared with prevailing market prices in both private and public sectors. It is understood that road construction in private sector are rare and obtaining their costs is difficult. Further, the most economic tender (lowest evaluated tender) is selected based on criteria contained in the tender dossier; hence questioning competitiveness may not be realistic (VFMI, 2013).

Table 3.2 shows that the overall competitiveness of the most economic tender has decreased from 74 percent in FY 2013/14 to 62 percent in FY 2014/15 by about 19.4 percent. On the other hand, on average LGAs performance on overall competitiveness of the most economic tender had been moderate at about 68 percent. It has been revealed that the unsuccessful bidders were not informed which is contrary to Reg. 235 (1) of G.N. No. 446 of 2013, correction of errors was not communicated to bidders, advertisement were done only once, however Section 68 of the PPA 2011 and Reg. 18, 19 of G.N. No. 446 of 2013 of PPRA 2004 specifies advertisement to be done twice in different newspapers (RFB, 2015).

A capable contractor could not be acquired if procuring entity does not follow the regulations particularly from PPA and PPRA as a result, also it can leads to unsatisfactory performance.
Procuring entity should comply with PPA 2011 and Reg. 18, 19 of G.N. No. 446 of 2013 of PPRA 2004 specifies advertisement to be done twice in different newspapers.

3.2.6. Capacity and Competence of Selected Contractor in Relation to Project Size and Complexity

Contractor means a firm, company, corporation, organization, partnership or individual person engaged in civil, electrical or mechanical engineering or in construction or building work of any kind including repairs and renovation, and who is, according to the context, a potential party or the party to a procurement contract with the procurement entity (URT, 2011). Selecting a contractor is such an important part of the construction process that it is well worth investing plenty of time and resources in the task.

In this parameter the Auditor should assess if the contractor still possess qualification criteria evaluated during evaluation tenders. Emphasis should be on the personnel, equipment/plants and financial soundness (line of credit/credit facilities) as described in the contract (VFMI, 2013).

Table 3.2 shows that the capacity and competence of selected contractor in relation to project size and complexity has decreased by about 16 percent from 94 percent in year 2013/14 to 81 percent in year 2014/15. Meanwhile, on average the capacity and competence of selected contractors in relation to project size and complexity had been excellent at about 87.5 percent for the observed years.

The reported causes for the decrease were; low capacity of the contractor especially in LGAs were most of contractors lack key personnel, capital, poor planning and negotiation meetings were not held by LGAs which affected the performance of contractors during the implementation of works. However, in some LGAs there was an improvement compared to the last year. Capable contractors were contracted and procurement cycle was completed (RFB, 2015).

Selecting a contractor who has high capacity, capability and competence is important because it leads to accomplishment of a project but it is also depends on method use on that selection. There is a need to use multi criteria selection practice instead of low bid price. In United
Kingdom and Australia the criteria is not only the lowest bid, the low price bid shifting to multi criteria selection practice in the selection of a contractor (Cooper, (1999) & Willey, (2009).

3.2.7. Overall performance

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely to identify the contribution of efforts upon completion of tasks for final managerial decisions; whether to empower the exiting or invest new efforts.

Table 3.2 shows that, the LGAs overall performance in procurement stage has declined by about 7.4 percent from 73 percent in FY 2013/14 to 68 percent in FY 2014/15. However, on average the overall performance in procurement stage has been good at about 70.5 percent for the observed years. The factors that contributed to the decline including the capacity of contractor especially in LGAs were most of contractors lack key personnel, capital, poor planning and negotiation meetings were not held by LGAs which affect the performance of contractors during works implementation, Unsuccessful bidders were not informed which is contrary to Reg. 235 (1) of G.N. No. 446 of 2013, correction of errors was not communicated to bidders, advertisement were done only once, however Section 68 of the PPA 2011 and Reg. 18, 19 of G.N. No. 446 of 2013 of PPRA 2004 specifies advertisement to be done twice in different newspapers, publication of awards was not done in most of LGAs which is contrary to Reg. 236 of G.N. No. 446 of 2013, vetting regulation was source of delay in contracting signing, which leads to delay of works in most of IA (RFB, 2015).

3.3 Construction Stage

Construction is the process of preparing for and forming buildings/structures and building systems. Construction starts with planning, design, and financing and continues until the structure is ready for occupancy (Nikolas, D 2008). Far from being a single activity, large scale construction is a feat of human multitasking. Normally, the job is managed by a project manager, and supervised by a construction manager, design engineer, construction engineer or project
architect. For successful execution of a project, effective planning is essential. Those involved in designing and execution of the infrastructure in question must consider the zoning requirements, the environmental impact of the job, the successful scheduling, budgeting, construction site safety, availability and transportation of building materials, logistics, inconvenience to the public caused by construction delays and bidding, etc.

Table 3.3 shows the LGAs performance in construction stage in FY 2013/14 and 2014/15.

**Table 3.3 construction stage**

<table>
<thead>
<tr>
<th>Construction Stage</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N/A</td>
<td>Very Poor</td>
</tr>
<tr>
<td></td>
<td>%</td>
<td>%</td>
</tr>
<tr>
<td>Timeless of a site possession</td>
<td>2.9</td>
<td>0.4</td>
</tr>
<tr>
<td>Quality of a project program</td>
<td>3.1</td>
<td>1.3</td>
</tr>
<tr>
<td>Adherence to the project program</td>
<td>2.7</td>
<td>0.4</td>
</tr>
<tr>
<td>Quality of contractors site organization and staff</td>
<td>2.2</td>
<td>1.1</td>
</tr>
<tr>
<td>Quality of supervising engineers’ site staff</td>
<td>2.5</td>
<td>0.7</td>
</tr>
<tr>
<td>Quality of quality assurance program</td>
<td>8.3</td>
<td>4.5</td>
</tr>
<tr>
<td>Adherence to quality assurance program</td>
<td>14.6</td>
<td>1.8</td>
</tr>
<tr>
<td>Quality of environmental management plan</td>
<td>39.7</td>
<td>12.1</td>
</tr>
<tr>
<td>Management of contractual documents including surety and insurance bonds</td>
<td>22.9</td>
<td>1.3</td>
</tr>
<tr>
<td>Quality and management of project documentation</td>
<td>5.6</td>
<td>2.2</td>
</tr>
<tr>
<td>Assessment including validity of variation</td>
<td>48.4</td>
<td>3.8</td>
</tr>
<tr>
<td>Assessment including validity of claims and related cost overruns</td>
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<td>3.4</td>
</tr>
<tr>
<td>Assessment including validity of project delays and extension of time</td>
<td>20</td>
<td>3.1</td>
</tr>
<tr>
<td>Average Performance</td>
<td></td>
<td></td>
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<tr>
<td></td>
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</tr>
</tbody>
</table>

**Source:** Roads Fund Board, 2015
3.3.1. Timeliness of Site Possession

Timeliness of site possession deals with the relationship of the detention, ownership and the control of work in the site. Possession of the site is given to the contractor in accordance with the terms and conditions of the contract. The contract generally grants the contractor exclusive possession of the site until practical completion when a handover meeting takes place and possession reverts to the client.

The contract must state clearly the date for possession of the site by the contractor (or commencement date), or, if not, then the site must be handed over to the contractor within a reasonable time after signing of the contract. If the client fails to give possession of the site to the contractor, and there are no provisions for delay in the contract, then they will be in breach of contract (Malconlaw, 2012).

According to table 3.3, the timeline of site possession for LGAs project has dropped by 4.8 percent from 70.7 percent in FY 2013/14 to 67 percent in FY 2014/15. However, the average performance of timeline of site possession has been moderate at about 68.7 percent during the observed years. Although there is a slight decrease on trend of performance, the general timeline of site possession performance is moderate due to adherence of contract handover on timeliness in some council (RFB, 2015).

The incremental decline in the site possession of the LGAs projects indicates poor project management by LGAs. This decline is influenced by inappropriate adherence to the contract by the management for instance in most of LGAs project there were no site possession despite signing of the contract and late release of fund by Road Fund Board contributed a lot in late possession of the site (RFB, 2015).

A continuous decline in the timeliness of the site possession has the negative impact on the deliverables of the project if there is no provision of delay on the contract, and then they will be in breach of contract. If an employer fails to give possession of the site to the Contractor on or before the date stated within the Contract, it is a breach of contract and, if the failure to give
possession continues for any significant time, it will be a material of the contract. This is because without possession of the site the contractor cannot execute the Works under the contract (Malconlaw, 2012).

In the case of Malaysia, during the contract period, possession will usually provide the Contractor with exclusive occupation and use of the site as required for construction works. At the end of the contract period, the contractor may require partial occupation of the site to carry out performance tests. In this case the contractor use will usually override the employer’s operation or use of the facility to conduct such tests. During the defects correction period, the contractor will usually only require sufficient access to those parts of the facility which allow him to correct the defects or outstanding minor works. His access and use will usually be secondary to the employers operation or use of the facility (Word Press, 2012).

In the construction stage, timeliness of site possession carries weights and it is very important to be assessed before projects continue. And here must be an agreement on handing over the site for project execution so as to enhance performance also the contractor should commence the construction of the project works within the time fixed in the contract. Good performance on timeliness of site possession opens rooms for good performances on other areas in the process of project execution by LGAs.

3.3.2. Quality of Project Program (Schedule of work)

Quality of project program is defined as the acceptable level of quality which is typically defined by the stakeholders and describes how the project will ensure this level of quality in its deliverables and work processes while focusing on schedule of work as per agreements/contracts.

It involves the listing of a projects milestones, activities, and deliverables, usually with intended start and finish dates. It takes into account balancing time, cost and the scope of the project. It is used as a tool that communicates what work needs to be performed; which resources of the organization will perform the work; and the timeframes in which that work needs to be
performed. It can be categorized by their level of sophistication, intended usage or by their nature of content. The project schedule reflects all of the work associated with delivering the project on time (Uyttewaal & Woolf, 2011).

Table 3.3 shows that, the quality of project program (project schedule) for LGAs project has dropped by 6.2 percent from 51.3 percent in year 2013/14 to 48.1 percent in year 2014/15, also the average performance of the project program quality had been low at about 49.7 percent for the observed years 2013/14 and 2014/15. The incremental decline in growth rate and poor average performance was triggered by poor updates of programs; limited information on the starting and end times to the contractors; irrelevance of the programs and poor preparation of work schedules to some of LGAs projects (RFB, 2015). The impacts of low performance in project program are poor organization of the work during the construction stage and poor deliverables of the project outcomes. Therefore there should be policy to emphasize the quality of the project program to ensure projects are performed on time and avoiding unnecessary project delay and extension of time while maintaining high quality results to overall LGAs projects.

3.3.3. Adherence to Project Program

Adherence to project program is the degree to which agents or project teams stick to their schedules i.e. Timetables, workflow timings, project schedules, measured as a percentage. It is the common parameter which supports the project program. It is very important to any project program as it assures that all activities on schedule are on track and there is no any violation of contracts in the process of project execution at the construction stage. In most of construction contracts require the contractor to produce a program of works. This can be a non-contractual reference point for how work will be carried out or it can impose obligations to deliver the works in a certain way and by certain dates. If the program of works is included in the list of contract documents it will become binding on the parties.
Table 3.3 shows that, adherence to project program for LGAs project have decreased from 51.8 percent in FY 2013/14 to 48.6 percent in FY 2014/15. This is equivalent to 6.2 percent decline in growth rate. Also the table reveals that: the average performance is satisfactory at 50.2 percent in the observed years. The decline in performance for LGAs is the results of inadequate project program in most of the projects hence there is no appropriate adherence to the project program done. For example, many contractors did not submit progress reports and photographs (RFB report 2015). Also, reports reveals that the programs were not usually listed as a contract document and were therefore not considered binding on the parties, this is the sign of poor project management by the key player.

The impact of continuously decrease in adherence to the project program it is the key factor for poor performance in any project also is the breach of the contract. Moreover any project accomplishment not in accordance with the planned schedule frequently has adverse repercussions such as cost increases and duration is elongated (Lipke, 2003).

Appropriate adherence to project program is the sufficient condition for any successful project as it assures that all activities on schedule are on track and there is no any violation of contracts in the process of project execution at the construction stage and overall project lifecycle. Also schedule adherence provides additional early warning information to the project manager thereby enabling improved decision making and enhancing the probability of project success (ibid).

3.3.4. Quality of Contractors’ Site Organization and Staff

A contractor’s site organization is the unit of people that is structured and managed to meet a need or to pursue collective construction goals at the place where construction activities are undertaken. The organization has a management structure that determines relationships between different activities and the members. It subdivides as well as assigns roles, responsibilities and authority to carry out different tasks

This indicator should be assessed based on contractor’s submission as per requirements of the bidding documents which made the contractor to be awarded the contract include site
organization (organization chart) and key staff. The contractor’s bid includes also names, qualifications and experience of key staff; hence the Auditor should examine whether the staff of the contractor were those contained in his tender, or if replacement had been made, the replacement should have similar or superior qualifications and experience. It is also a requirement that the replacement should obtain employer’s written approval (VFMI, 2013).

Table 3.3 reveals that the quality of contractors’ site organization and staff for LGAs has dropped by about 27.3 percent from 54.3 percent in FY 2013/14 to 39.5 percent in FY 2014/15. And on average the quality of contractors’ site organization and staff had been low at about 46.9 percent during the observed years. This performance indicates disorganization of contractor’s site and staff. The forces behind the consecutive decline in performance are; disorganization of the sites whereby some of the site lacked site meetings; absence of contractor’ Curriculum Vitae attachment; lack of quality contractors’ site organization (RFB, 2015).

Success of a project depend much the high quality of site organization and its staff respectively to project intended to implemented. Low quality of contractor’s site organization and staff automatically produces low quality projects. Most of the road projects having implemented with low quality site organization and staff have been not attaining value for money as expected. To a larger extent LGAs road projects have been implemented with low quality contractor’s site organization and staff as a result those projects have not earning value for money and fail to deliver the expected outcomes to the beneficiaries.

In the construction stage it is crucial to make sure that the quality of contractors’ site organization and staff are met in order to achieve intended goals/objectives of construction projects. It is believed that contractors’ job site organization approach can play a key role in helping achieve project success at a time when there is little tolerance for underperformance. Thus, it is important to understand both quantitative and qualitative dimensions of job site organizations and their links with project performance.
3.3.5. Quality of Supervising Engineers’ Site Staff

A supervising engineer is a technical person who plans, directs and reviews the work of an assigned section in a project. He/she supervises and participates in designing and supports services as well as provides the responsible and technical staff assistance in reviewing designed maps, subdivision maps, plans and agreements in other engineering areas. Supervising engineers’ site staff is simply looking and monitoring the level of standards in relationship to engineers’ site staff.

The Supervising Engineer or Technician from the Employer should have the adequate academic qualifications and experience to supervise the project of the size, complexity and magnitude. It is also important to establish whether he/she was or is full time on the project, and at site (VFMI, 2013).

Table 3.3 shows that the quality of supervising engineers’ site staff for LGAs project has dropped by about 16.7 percent from 67 percent in FY 2013/14 to 55.8 percent in FY 2014/15. On the other hand, on average the quality of supervising engineers’ site staff had been moderate at about 61.4 percent during the observed financial years.

The decline in the quality of supervising engineers site staff of the LGAs projects have been triggered by poor supervision in most of the project, whereby in most of the LGAs projects there were no engineers on the site at the time of auditing. This is a serious impact which can lead to the breach of contract. The technical impact of declining in quality of supervising engineer’s site staff is provision of inadequate technical advice about, plan, organization and supervision in construction projects, as well a poor management of the project (RFB, 2015).

Striving for quality in this area insures the quality of works. Supervising engineers’ staff in construction needs special attention as they ensure construction works are carried out to an acceptable level of quality. Therefore, supervision is very important. In this context competent staff and clear supervision roles are necessary in the success of the project.
3.3.6. Quality of Quality Assurance Program

Quality assurance is a planned and systematic action necessary to provide adequate confidence that a project product or service will satisfy or meet a given requirement for quality standard. Quality of the quality assurance program is the key component in quality management and it focus in providing confidence that quality requirement will be fulfilled according to the contract or agreement (Majcen, 2010). It should specify ways in which it can be measured and tested to ensure conformance of the result. In construction project it is the key determinant of the overall project result: it determines the quality and capacity for which constructed roads in all project meet the required standard.

In order to ensure compliance on quality of work done and materials used, contracts specify under General and Special specifications, requirements should be met. The specifications will specify the type of tests to performed to ascertain the works done have attained the required quality (VFMI, 2013).

Table 3.3 reveals that the quality of quality assurance program for LGAs project has declined from 45.5 percent FY 2013/14 to 34.6 percent in FY 2014/15. This is equivalent to 24.1 declines in growth rate. The average performance of the quality of quality assurance program has been low at 40.1 percent in the observed years. The decline indicates the poor quality of quality assurance program.

The low performance in quality of quality assurance of programs was stipulated by lack of quality assurance program in most of the project in LGAs and this was because engineers lacks knowledge on the necessities of quality assurance program in the construction projects and they had no guidelines and policy needs with respect to quality assurance. The impact of not having quality assurance program results to poor outcome of overall project deliverables due to lack of standard quality for conformance and maintenances of project quality to keep on the right track while complying with the terms of contract (Majcen, 2010). Failure to consider quality assurance may lead poor outcomes from the projects.
It is important to consider quality of quality assurance programs as it sets the levels of quality assurance standards. And deals with right needs of the project and it helps on minimizing and eliminating mistakes and errors. A contractor’s quality assurance system is essential in preventing problems and the reoccurrence of problems. This system ensures consistent quality for the contractor’s client (Abdulaziz et al, 1999).

3.3.7. Adherence to Quality Assurance Program

Adherence to quality assurance programs means sticking or complying with the accepted standards of quality assurance programs in constructions. In projects, quality assurance is very crucial as it ensures all aspects in construction are on track as it determine adequate technical requirement of inputs and outputs, certification and rating of suppliers, testing of procured material for its conformance to established quality, performance, safety, and reliability standards, proper receipt, storage, and issue of material, audit of the process quality, evaluation of the process to establish required corrective response, and audit of the final output for conformance to technical, reliability, maintainability, and performance requirements.

Table 3.3 shows that, adherence to quality assurance program has declined by about 25.4 percent from 35 percent in FY 2013/14 to 26.1 percent in FY 2014/15. And on average, adherence to quality assurance program has been low at about 30.6 percent for the observed years. Absence of quality assurance programs; poor management of test results as well as poor technical management which results to absence of materials testing are the possible causes for poor performance of quality assurance program (RFB, 2015). Inadequate quality of quality assurance program results to low quality infrastructures hence increase of road accident, contestation, cost of road maintenance and development.

Adherence to quality assurance is very important as it requires that the procedures for incorporating design changes into the construction plans be well developed and fully utilized. The earlier that design changes are recognized and implemented the lower the cost
Another area of activity for quality assurance in construction that must be continuously monitored is the development of plans and specifications. Architectural and engineering plans and specifications often change during the construction phase of a complex project. Adherence to quality assurance program is crucial as it reduces construction cost while meeting all of the specifications in the plans and design. It also requires that the advertising for bids and awarding of contracts be closely monitored.

3.3.8. Quality of Environmental Management Plan (EMP)

An EMP is a site-specific plan developed to ensure that all necessary measures are identified and implemented in order to protect the environment and comply with environmental legislation. It is the contractor’s responsibility to prepare a site-specific EMP and submit it to the project manager for approval. The quality environmental management plan looks at the level of standards in a site or project specific plans developed to ensure that appropriate environment practices are followed during project construction and/or operation. The EMP provides the means to identify risks and manage and monitor environmental risks associated with road construction activities.

The attention of this parameter is drawn to the fact that interventions of maintenance nature do not warrant for a rigorous EMP, Thus establish whether adequate plan was spelled out in the contract documents to mitigate both short-term and long-term negative impacts. However, some or all of the following short term impacts need to be examined: destruction of vegetation; water pollution; reduced air quality due to dust emission; vibrations due to compactions; noise (from construction vehicles and plants); disturbance on the cultural heritage; waste generation; accidental spills/contamination; poor sanitation; occupational hazards/accidents; and loss of land (VFMI, 2013).

The data on table 3.3 reveals that the quality of environmental management plan has improved by about 0.4 percent from 23.5 percent in FY 2013/14 to 23.6 percent in FY 2014/15. However, on average the quality of EMP has been low at about 23.6 percent for the observed years. This was stipulate by lack of EMP attached in most of the LGA project this was associated by limited knowledge to LGAs engineers on the importance of EMP on roads construction projects as a
result they were not included in most of the contracts. Also EMP policies and guidelines were not distributed to LGAs engineers.

Missing EMP has a harmful effect to the environment, living organism as well as ecosystem in general. Lack of EMP in a project contract no doubtful lead to environment mismanagement contrary to the prevailing national and international environmental laws and regulations. To a larger extent, in road construction fields environment have been disturbed/damaged where there are huge holes remained uncovered. The places where construction materials were extracted plants have been removed and after completion of a project the area remained barely (RFB, 2015).

Environmental management plan is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of projects. The plans should indicate the details as to how various measures have been or are proposed to be taken including cost components as may be required (MOEF, 2013). It is also an essential means of ensuring that development project programs and legislation requirements are met during project implementation as may be required under planning/consent conditions to implement environmental commitments and requirements.

3.3.9. Management of Contractual Documents, Including Surety and Insurance Bonds

Management of contractual documents is the state of controlling all documents which, when combined, form the bases of the contract, including all pre-tender, tender and contractual documentation. Surety is a promise by a guarantor to pay one party (the obligee) a certain amount if a second party (the principal) fails to meet some obligation such as fulfilling the terms of contract. The surety bond protects the obligee against losses resulting from the principal’s failure to meet the obligation. An insurance bond (or investment bond) is a single premium life assurance policy for the purposes of investment.

The assessment of this parameter must include advance payment guarantee, insurance cover, and performance security. The Auditor should examine whether these contractual documents were correctly worded, provided by the contractor in compliance with the terms and conditions of
contract (timely submission & correct amount), and whether their validity periods is in compliance with the contract or updated as appropriate. In addition, the Auditor should assess whether securities were returned once contract was completed (VFMI, 2013).

According to data on table 3.3, management of contractual documents, including surety and insurance bonds for LGAs projects has improved by about 36 percent from 37.2 percent in FY 2013/14 to 50.6 percent in FY 2014/15. However, on average the management of contractual documents, including surety and insurance bonds had been low at about 43.9 percent for the observed years. Low LGAs performance in management of contractual documents, including surety and insurance bonds was the result of the fact that some LGAs were not issued performance bond as per contract, and also there were no evidence of performing surety/insurance bonds. Moreover, there was expiry of advance payment guarantee and mismanagement of contractual documents in different projects (RFB, 2015).

On contrary, LGAs to some extent has improved its performance in management of contractual documents, including surety and insurance bonds. It has been observed that, in a good number of projects the performance bonds were issued as per contract. Also the projects were having surety/insurance bonds for security during its implementation (ibid). The continuous improvement is essential has a good management of contractual documents including surety and insurance bonds in all stages of the project is crucial for the purpose of maximizing financial and operational performance and minimizing risk. The contract documents are one of the most important pieces that guarantee success of a project.

3.3.10. Quality and Management of Project Documentation

Project documentation is used to define the way we manage projects and the governance surrounding them. In this aspect of quality and management of project documentation, we look at the level and standards we manage projects and the governance surrounding them with respect to, site instructions, minutes of the meetings, progress reports, works measurement and inspection records, material testing records, interim and final payment certificates, variation orders, claims, etc. The fact is, the manner in which project documents are managed by project
leaders can either be the driving force behind a project's success or the bottleneck that often places a project in despair resulting in its failure to meet its time line, budget and scope (Neil Stolovitsky, 2010).

Table 3.3 shows that, the quality and management of project documentation have dropped by about 30.4 percent from 46 percent in FY 2013/14 to 32 percent in FY 2014/15. On top of this decline, on average the quality and management of project documentation had been low at about 39 percent for the observed years. In this regards, data suggests that the general quality and management of project documentation performance is low due to inadequate management in project documentation; absence of measurement sheets attached to the interim payment certificates; inadequate site possession records management; absence of test results records as well as absence of final and interim payment certificates, also no progress report were made and submitted to the AO and inspections of works were done only when payments are due to the contractors in most of LGAs project (RFB, 2015).

The impact of poor quality project documentation is the inefficiency in construction process, leading to directly delays, rework and variations and contributing to increases in project time and cost, for both client and contractors alike. Also it increases the chances for the occurrence of risk in the project (Tille et al, 1999).

Quality and management of project documentation is a very important aspect as it covers up a lots of sub issues which are very important to be documented during construction stage. In the contrary, the construction stage remained incomplete without assessing the quality of site instructions, minutes of the meetings, progress reports, works measurement and inspection records, material testing records, interim and final payment certificates, variation orders, claims. As they contribute to the efficiency and effectiveness of the overall performance of the projects.

3.3.11. Assessment (Including Validity) of Variations

A variation (sometimes referred to as variation instruction, variation order or change order) is an alteration to the scope of works in a construction contract in the form of an addition, substitution
or omission from the original scope of works. Almost all construction projects vary from the original design, scope and definition. Whether small or large, construction projects will have inevitably departed from the original tender design, specifications and drawings prepared by the design team. This can be because of technological advancement, statutory changes or enforcement, change in conditions, geological anomalies, non-availability of specified materials, or simply because of the continued development of the design after the contract has been awarded. A valid variation can be evaluated and administered against the provisions of the contract, with measurement rules and applicable rates stated clearly and agreed between the parties to the contract (Batchelor, 2013).

As a rule variation orders should be evaluated based strictly on the provisions of contract and all VOs must be numbered, dated, background about the VO, its time and cost implications and should be signed by all parties. Also all variation orders must get approval of the Tender Board prior to issuing change order to the contractor (VFMI, 2013).

Table 3.3 reveals that, assessment (including validity) of variations for LGAs projects has increased by about 31.8 percent from 42.2 percent in FY 2013/14 to 55.6 percent in FY 2014/15. In spite of such an improvement, the on average LGAs performance in assessment (including validity) of variations had been low at about 48.9 percent for the observed financial years. This implies that the performance of assessment (including validity) of variations was low and this indicates that most of the variations which occurred were invalid.

The low performance was the results of inadequate project estimate in the sense that the contractors do not have capable professional staff to carry out investigations and estimates at the initial investigation and designing stage (RFB, 2015). According to (Enshassi et al, 2010) the factors related to consultant are the most important causes of variation orders in construction project followed by the factors related to owners. Also the political pressure during construction stage is identified as a dominant factor of variations. For example, in a country like Siri Lanka political interferences in the road projects in the country have affected a lot in road construction projects.
Variation orders result in time delay, cost overrun, quality defects, and other negative impacts (Enshassi, 2010). The maximum project performance would be achieved if the work invariably flows smoothly within time limits and anticipated budget. And this can be achieved by capable professional staffs to carry out investigations and estimates, which help to reduce several unnecessary variations which occur during the construction stage (Halwatura et al, 2013).

3.3.12. Assessment (Including Validity) of Claims and Related Cost Overruns

Cost overrun can be defined as when the project objectives have not been achieved within estimated budget (Avots 1983). In constructions, cost overrun also known as cost increase or budget overrun, involves unexpected costs incurred in excess of budgeted amounts due to an underestimation of the actual cost during budgeting. Cost overrun should be distinguished from cost escalation which is used to express an anticipated growth in a budgeted cost due to factors such as inflation. The reason of that overruns is poor management of the resources such as, man, material and money (Ismail et al, 2012). A claim occurs only if the engineer/employer rejects the application for the variation and the contractor disagrees with the decision and subsequently pursues a claim (Batchelor, 2013).

Table 3.3 shows that, assessment of (including validity) claims and related cost overruns for LGA project has improved by about 32.1 percent from 40.8 percent in FY 2013/14 to 53.9 percent in FY 2014/15. However, on average LGAs performance in the assessment of claim and related cost overruns for LGA projects has been low at 47.4 percent in the observed years. The improvement in growth rate is stipulated by adherence to the contract and budget by some of the LGAs. However, the claims related to cost overrun is influenced by inaccurate design, cost estimate, planning and change in the scope of work, and poor execution of project management tasks can lead to increased costs as the project management fail to forecast and track the cost to avoid cost overrun (RFB, 2015).

Due to the magnitude and frequency of claims and cost overruns have been posing a significant financial risk to both clients and contractors, in addition to the impact exerted on the sustainability of the project (Adam et al, 2014). The problem has been more serious in
developing countries where the trend is more severe as a result the cost overrun sometimes exceeds 100 percent of the estimated cost of the project (Ismail, 2012).

3.3.13. Assessment (Including Validity) of Project Delays and Extensions of Time

In the construction stage, assessment of project delays and extensions of time is that way of examining long or extending time of the actual time line/ deadline of the actual time a project was supposed to be handed over. This section focuses on the assessment of project delays and extensions of time including its validity.

According to data in table 3.3, the assessment (including validity) of project delays and extension of time for LGAs projects has improved by about 3.6 percent from 55.6 percent in FY 2013/14 to 57.6 percent in FY 2014/15. Also on average LGAs performance in assessment of project delays and extension of time has been satisfactory at 56.6 percent for the observed years. LGAs satisfactory performance in this parameter has been influenced the adherence to contractor’s procedures during the implementation of projects. Also there was effective time management by contractors to make sure every activity in a project is performed within a stipulated period of time (RFB, 2015).

In some circumstance there are projects delayed in completion due to climate change. Long rainfall is mentioned as one of the constructors’ stumbling block to over delay and extensions. In other cases, projects are impacted by unforeseen conditions discovered during the course of construction or an owner simply needs to initiate a change in the work that causes project delay. When a project is delayed, all parties involved experience some impact whether it can be measured through cost increases or not (ibid).

Due to the unique nature of construction projects and the accompanying uncertainties and risk allocations, most contracts and subcontracts suffer from delays which cause overruns to the completion date. It is necessary for all those involved to be well prepared to ensure proper contract compliance and the prompt award of the appropriate extensions of time. Also contractors should adhere to the approved programs of works and complete the works as per contract terms and conditions.
3.3.14. Average Performances

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely to identify the contribution of efforts upon completion of tasks for final managerial decisions: whether to empower the exiting project or invest new efforts.

This section examines the overall performance of LGAs’ construction stage for FYs 2013/14 and 2014/15. Table 3.3 shows that the LGAs average performance of construction stage has declined by about 4.4 percent from 47.7 percent in FY 2013/14 to 45.6 percent in FY 2014/15. And on average LGAs overall performance in construction stage has been low at about 46.7 percent for the observed years. Such a decline have been influenced by massive decline in performance in construction stage parameters such as quality and management of project documentation, quality of environmental management plan, quality of contractors site organization and staff, quality of supervising engineers site staff, quality assurance program and adherence to quality assurance program (RFB, 2015).

The management of construction projects requires knowledge of modern management as well as an understanding of the design and construction process. While the relevant technology, institutional arrangements or processes will differ, the management of such projects has much in common with the management of similar types in other specialty of technology domains such as aerospace, pharmaceutical and energy development (Hendrickson, 2008).

3.4 Project Completion and Closure Stage

Road projects activities are planned to be implemented over a specific period of time. Therefore, each project requires a formal closure upon completion of project activities. A project may also require formal closure if a decision has been made jointly by the implementing institutions, contributing development partners and Roads Fund Board (RFB) to terminate the project. Closure of a project includes completion of all operational activities and financial accounts of the project.
Table 3.4 contains data that show the performance of operational and financial aspects, specifically, at project completion and closure stage in two financial years, i.e., 2013/14 and 2014/15.

<table>
<thead>
<tr>
<th>Project Completion and Closure Aspects</th>
<th>2013/14</th>
<th>2014/15</th>
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<tbody>
<tr>
<td></td>
<td>N/A</td>
<td>Very Poor</td>
<td>Poor</td>
<td>Fair</td>
<td>Good</td>
<td>Total</td>
<td>N/A</td>
<td>Very Poor</td>
<td>Poor</td>
<td>Fair</td>
<td>Good</td>
<td>Total</td>
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<td>15.7</td>
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<td>31.6</td>
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<td>8.8</td>
<td>11.2</td>
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<td>9.9</td>
<td>16.6</td>
<td>43</td>
<td>100</td>
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<td>7.7</td>
<td>13.7</td>
<td>21.4</td>
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<td>Management of the defect liability period.</td>
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<td>7.2</td>
<td>16.6</td>
<td>36.8</td>
<td>100</td>
<td>58</td>
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<td>16.6</td>
<td>20.1</td>
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<td>Quality and adequacy of final project report</td>
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<td>100</td>
<td>67.5</td>
<td>2</td>
<td>13.7</td>
<td>12.4</td>
<td>4.4</td>
<td>100</td>
</tr>
<tr>
<td>Compliance of final quantities paid.</td>
<td>39.0</td>
<td>6.1</td>
<td>2</td>
<td>10.3</td>
<td>41.7</td>
<td>100</td>
<td>64.4</td>
<td>0</td>
<td>1.8</td>
<td>11.3</td>
<td>22.5</td>
<td>100</td>
</tr>
<tr>
<td>Compliance of project cost as per final account with accepted tender price</td>
<td>29.1</td>
<td>3.8</td>
<td>2.2</td>
<td>9</td>
<td>55.8</td>
<td>100</td>
<td>58.5</td>
<td>0</td>
<td>1.1</td>
<td>11.5</td>
<td>28.9</td>
<td>100</td>
</tr>
<tr>
<td>Compliance of actual project completion time with the contract period</td>
<td>26</td>
<td>2.7</td>
<td>5.2</td>
<td>17.3</td>
<td>48.9</td>
<td>100</td>
<td>57.4</td>
<td>0</td>
<td>0.9</td>
<td>5.1</td>
<td>36.6</td>
<td>100</td>
</tr>
<tr>
<td>Average Performance</td>
<td>33.8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>30.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

3.4.1 Quality and completeness of as-built-drawings

As-built-drawings are usually the original design drawings revised to reflect any changes made in the field, that is, design changes issued by change order, component relocations required for coordination rerouting of distribution systems, etc. They are considered as more vital for just basic purposes. These are records from which future system changes and additions can be designed and can be a valuable tool for the operations and maintenance activities.

Table 3.4 shows that the quality and completeness of as-built-drawings to the road projects dropped by about 7 percent from 6.7 percent in the FY 2013/14 to 6.2 percent in the FY 2014/15.
And on average, the quality and completeness of as-built-drawings had been low at about 6.5 percent for the observed years. And according to data presented in table 3.4 reveal, LGAs performance is unsatisfactory. It was observed that, most of the LGAs’ projects reports were not having As-Built-drawings (RFB, 2015). On other hand, low quality and deviation from completeness of as-built-drawings influenced by using outdated information and poor communications between client and contractor (Taggart et al, 2013).

The construction projects have to be checked on its quality and completeness as per as-built-drawings after being completed. Negligence of checking the project quality and completeness allows the submission of projects which do not match with the quality as have been described in the as-built-drawings. And this has created the environment whereby LGAs have been accepting low quality and sometimes not full completed projects as per as-built-drawings. Moreover, materials used for road projects construction are with low quality compared to their requirements (World Bank, 2011). The road related projects have not been submitted as per as-built-drawings and this occurs due to LGAs having employed inadequate road project management (RFB, 2015).

3.4.2 Compilation and management of snag list

A snag list is a list of problems that must be presented to the constructor so that it can be put right before completing and accepting the project. Snag list occurs in a phase at the end of a building project and is essentially a defects liability period, where faults can be noted and subsequently put right or fixed by the constructor. It is a necessary evil turned-to-good for the project owner and a final closure for the contract that the job is finalized and accomplished. Although the longer the snagging list, the more bothered the constructor will be, as each item takes from the final profit.

The table 3.4 shows that compilation and management of snag lists dropped by about 34 percent from 31.6 percent in FY 2013/14 to 21 percent in FY 2014/15. However, on average, compliance and management of snag lists had been poor at about 26.3 percent for the observed years. LGAs dropped their performance in FY 2014/15, still it had been inadequately performing since in
most of projects snag lists were not prepared and no any information was found. Moreover, there were some projects whose snag lists were not compiled and managed well. Lack of snag lists and its poor management led to the acceptance of road projects with defects hence having roads with low quality (RFB, 2015). On other hand, the causes of low quality and deviation completeness of as-built-drawings categories that is common and special causes. Common causes include using outdated information and poor communication between client and contractor as well as inadequate supervision. Special causes include unilateral client changes and adverse weather conditions (Taggart et al, 2013).

It has been observed that there is failure have been seen to some projects since those projects their snag lists were not prepared; this kind of situation proves that their some deviations in management. There are three factors which makes road management system successful which are; people, efficient funding and technology, if any of these are weak or fail then the road management system will be compromised (McPherson & Bennett, 2005).

3.4.3 Timely Issuance of Substantial Completion Certificates, Final Certificate and Settlement of Final Account

Completion certificates are documents verified by an architect, engineer, or owner of a construction project that the project is substantially complete and is approved for payment by the general contractor on the date of final payment. The final certificate is certification by the contract administrator that the project has been fully completed. It is issued at the end of the defects liability period and has effect of releasing all remaining money due to the contractor, including any remaining retention.

The three aspects in this variable normally follow the sequential order as follows Firstly, a Substantial Completion Certificate is issued when works are substantial completed save for the minor outstanding works and defects which will not substantially affect the use of the works for the intended purpose. The Final Certificate is issued after the Defects Liability Period and final inspection has been conducted and ascertain that all defects and outstanding works have been completed as per contract and parties to the contract discharged from the contractual obligation without violating accrued rights and obligations in the contract and Lastly, the Contractor should
submit the final account represents full and final settlement of all monies due to the contractor under or in connection with the contract (VFMI, 2013).

Table 3.4 shows that issuance of completion certificates and settlement of final accounts dramatically dropped from 43 percent in FY 2013/14 to 21.4 percent in FY 2014/15. This is a drop of about 50 percent. However, on average, issuance of completion certificates and settlement of final accounts had been low for about 32.2 percent under the observed year.

Completion certificates are issued on time once the projects are completed in relation to the contract agreements (ADB, 1995). The most influencing factor to drop in performance in issuance of completion certificates and settlement of final accounts was lack of funds for payment since there was late release of funds and management issues such as inadequate project supervision and contract management (RFB et al, 2015). Also the delays are experienced to contractors since there is late submission of the valuation report to supervising consultants hence the consultant delays to prepare a certificate (Tembo and Blokhuis, 2007). Due to delay of project completion, LGAs did not manage to issue completion certificates and settle final accounts. Moreover, LGAs were lacking enough funds for payment to contractors so as to facilitate issuance of completion certificates and settle final accounts (RFB, 2015).

Road construction related projects, as other projects, once are completed the next stage is to issue completion certificates to certify its completeness. Delay in issuance of completion certificates and settlement of final accounts leads to unnecessary additional project costs such as capital and administrative costs. It also leads to deteriorating the relationship between the employer and contractors and hence the image of the employer becomes worsened.

Nonetheless, to some extent, LGAs improved its performance in this aspect where completion certificates and settlement of final accounts were done on time. Also, contractors employed were competent enough and capable to handle construction of road related projects within the time. However, project management performance remains unsatisfactory (RFB, 2015).
3.4.4 Management of the defects liability period

A defects liability refers to the period of time after a construction project has been completed during which a contractor has the right to return to the site and rectify defects so as to complete minor outstanding works listed in the Snag list. If the contractor does not rectify the defects, the Employer has the contractual right to utilize 50% of retained monies to correct the defects or to complete minor outstanding works. A typical defects liability for most contracts audited period range between 6 and 12 months; and it likely to be more economical and efficient for it carry out remedial works itself than to pay the costs of another contractor hired by the employer (VFMI, 2013).

The table 2.1 shows that management of the defects liability period has dropped by about 45 percent from 36.8 percent in FY 2013/14 to 20.1 percent in FY 2014/15. However, on average, management of the defects liability period had been low at about 28.5 percent for the observed years. LGAs’ project management proved failure in managing defects liability period since in most of the projects, the management of defects liability period was not done at all. And it was observed that in some of the projects, defects liability period clause was not included in the contracts even though it is something necessary to be there. Moreover, in some of the projects, contractors were not informed the date of defects liability period (RFB, 2015).

The defects liability period management gives room to contractors to remedy defects and at the end leading to quality projects produced and submitted to LGAs. Most of the projects which had not given defects liability period had proved to lose their quality since there were no room for remedial activities to be done (McKenzie, 2014). The critical issue is that, there is unsatisfactory contract management as it had been observed that some contracts did not include defects liability period to on the part of contracts then finally there were no period to remedy defects that emerged. And to some extent, there is unsatisfactory relationship between the management and contractors as it has been seen that the contractors are not informed the start date of defects liability period (RFB, 2015).
3.4.5 Quality and Adequacy of the Final Project Report

The final project report summarizes the work done by contractors and its results. It clearly communicates the project’s problems, the communities and customer it influences, and the solution proposed or delivered. These are documents which present focused, salient content to specific audience and are usually used to display the results of an experiment, investigation or inquiry. Reports use features such as graphics, images, voice or specialized vocabulary in order to persuade that specific audience to undertake an action.

Table 3.4 shows that the quality and adequacy of final reports dropped by about 30 percent from 6.3 percent in the year 2013/14 to 4.4 percent in the year 2014/15. On average, the quality and adequacy of the final reports had been very low at about 5.4 percent for the observed years. The quality and adequacy of the final reports is unsatisfactory and the reason behind is that in most of the projects it was evident that final reports were not prepared (RFB, 2015).

In most LGAs the project management systems were paralyzed since most of its road construction related projects were had no final completion reports which were prepared. And this situation led to the authorities to fail to conduct evaluation of the completed projects so as to obtain the status of the projects in terms of its expenditure and viability in relation to the contracts/agreements and finally they were not in a position to make any decisions (RFB, 2015).

The LGAs’ project management had some problems in its performances since it failed to manage well the preparation of final project completion reports and at the end most of projects were lacking final reports. Data is vital to the success of any road project management system hence without good data it is not possible to conduct prosper analyses or monitor the network. Problems with data are one of the main causes of failure of road project management system (McPherson & Bennett, 2005).
3.4.6 Compliance of Final Quantities Paid for with those Reflected by the Actual Investment as Per As-Built-Drawings.

Quantity of payment refers to the price paid to a seller or supplier of goods or services. The seller may request amount to be paid which is called asking price; and the actual payment amount which is so known as transaction price. In modern economy, the quantity of payment is generally expressed in units of some form of currency.

This parameter should be assessed by comparing the final quantities on major items versus as built drawings on major items only. Where it is impractical to compare the two or as built drawings are missing, the comparison should base on the final quantities in the Final Completion Certificates and jointly measurement taken at site (sign-off by the Auditor and Employer’s representative). During assessment the available information such as variation orders and site instructions should be used to check compliance of final quantities paid for with those reflected in actual investment (jointly measurement) (VFMI, 2013).

Table 2.1 shows that compliance of final quantities paid for with those reflected by the investment as per as-built-drawings has dropped from 41.7 percent in FY 2013/14 to 22.5 percent in FY 2014/15. Thus, during this period of time, there was a dramatic drop of about 46 percent. On average, compliance of final quantities paid for with those reflected by the actual investment as per as-built-drawings had been low at about 32.1 percent for the observed years.

There were a substantial number of projects in which final certificates were not issued so as to reflect the bill of quantities and actual investments as per as-built-drawings. Moreover, most of projects had cost overrun whereby there were overpayment to contractors. The situation resulted into projects which had got low value for money and more funds were used for single projects other than being used in other activities (RFB, 2015). Corruption and other unethical conducts in road projects contract award affect the quantity payment as the winning bidder may bill for work not done. Existence of unethical supervising engineers/consultants who find out the project quality have been low than required then still certifying the contractor’s payment requests (World Bank, 2011).
The compliance of final quantities of payment with reflection of actual investments requires strong management systems so as to be capable to successfully handle all matters related to quantities to be paid. The LGAs project management to some extent failed since some projects quantities paid did not even comply with the as-built-drawings and the contractors were overpaid (RFB, 2015).

3.4.7 Compliance of Project Costs as Per Final Account with Accepted Tender Price

Project cost is the value of money that has been used up to produce a project intended product and hence is not available for use anymore. Tender price is the price offered by investors at which they are willing to buy/pay a new issue. The issuing project usually sets predetermined limits within which the tender price can be made.

In this sub-indicator, the assessment should consider if there is any difference between the final project cost and original contract price; what were the causes and technical justifications of the difference as well as whether proper channels of approvals were followed during contract management. The causes of difference could be variation orders issue (negative or positive) during execution of the contract, increase or decrease of quantities and price adjustment made in the contract. All these three aspects have provision in the contract how should be dealt with (VFMI, 2013).

Table 2.1 shows that compliance of project costs as per final account with accepted tender price has dropped by about 48 percent from 55.8 percent in FY 2013/14 to 28.9 percent in FY 2014/15. On average, compliance of project costs as per final account with accepted tender price had been low at about 42.4 percent for the observed years. In most of the projects there was cost overrun due to additional costs added beyond the specified budget for a particular project. In some projects there was overpayment where two certificates were paid to a single project (RFB, 2015).

The insurance of project costs and final account to comply with accepted tender price demands sound financial and contract management. Under this circumstance, to some extent, LGAs’
project financial management was weak since in some projects there were overpayments done during the execution of projects.

3.4.8 Compliance of Actual Project Completion Time with the Contract Period

Project completion time is the time given when all phases of a project are to be finished. Contract period is the number of days or calendar days from a specified commencement date to a specified completion date as provided for in a contract. Project management usually relies on setting an attainable project completion time and analyzing the schedule of events that must take place for completion of a project, then organizes them so that to be completed within a specified time.

The difference between actual project completion time and original contract period is major factor while assessing compliance. If the difference is positive and there was no extension granted, then, this would imply project was completed in time or before time. In case there were delays in the execution of project it would imply that extension of time was granted as a result of excusable compensatory delays or liquidated damages were deducted as a result of non-excusable delays. If the delays were non-excusable and no action was taken by IA, it would imply that there was no sound contract management and the Auditor should investigate non-enforcement by IA (VFMI, 2013).

Table 2.1 shows that compliance of actual project completion time with the contract period improved by about 25 percent from 48.9 percent in FY 2013/14 to 36.6 percent in FY 2014/15. Compliance of actual project completion time with the contract period, on average, had been slightly low at about 42.8 percent during the observed years.

There are projects which requested extension time in order to complete those projects and this was because contractors failed to complete those projects within the contract period (RFB, 2015). Also there were redesigning and introduction of new technical specifications mostly during the construction stage. This led to delays in projects completion. It could also be caused by shortcomings in LGAs’ management like delayed information, late decisions, poor
supervision and monitoring. Moreover, delays could occur as the result of other factors, like late payment by the financiers, processing time for approval of tax exemptions or force majeure (NAO, 2010).

The completion of projects within time was critically influenced by late disbursement of funds to the LGAs so as to carry out project activities. Many projects failed to comply with the time stipulated in the contracts due to lack of funds at the required time and finally those projects started and finished late.

3.4.9 Overall Performance

Performance is the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. It determines the contribution of invested efforts against the successful achievement of the organization. Measurement of performance is done purposely to identify the contribution of efforts upon completion of tasks for final managerial decisions: whether to empower the exiting project or invest new efforts.

The average performance of LGAs in handling road construction projects was 33.8 percent in FY 2013/14 and in FY 2014/15 the performance dropped up to 20.1 percent. There decline of LGAs performance in handling road projects in FY 2014/2015 compared to last FY 2013/14 particularly in aspect of project completion and closure. To a larger extent, the projects were not achieved value for money as it was expected. LGAs management system was paralyzed hence failed to manage fully the roads projects under area of jurisdictions. Under the year of observation, in most necessary aspects of project completion and closure were not such as as-built-drawings, snag lists and final project reports were not prepared. Also substantial and final certificates were not issued on time due to lack of funds by the time required because of late release of funds from RFB. Furthermore, there was non-compliance between project cost as per final account with accepted tender price, and actual project completion time with contract period (RFB, 2015).

The projects implemented under the year of decline have been seen to have depreciated its quality and finished beyond stipulated time in contracts. There were extension of time requested
by the contractors to finish projects and hence there were chances for cost overrun since projects were implemented beyond the estimated budget. Low quality of roads which were constructed might increase chances for accidents, traffic jams as well as wear and tear (NAO, 2010).

The performance trend shows that LGAs are backward stepping toward ineffective management of road construction projects as they have been declining over time. Factors that made project management ineffective are process, people, technology and sufficient funding. But if any of these are weak or fail, then, project management would be compromised. Therefore, strong involvement of executives and managers prior to and during the implementation of the system is absolutely necessary (McPherson & Bennett, 2005).

### 3.5 Executed Work

This part presents the executed works of the road projects done by Local Government Authority (LGAs). The analysis covers seven variables which are satisfaction of the completed works based on the visual assessment; compliance of the completed works to the drawings and technical specifications; compliance of the culverts and bridges to the technical drawings and specification. It also covers the compliance of the materials used in the pavement structure to the quality technical specifications; compliance of the materials used in concrete and masonry works to the technical specifications; compliance of site clean-up and restoration of disturbed and/or damaged areas with EM as well as compliance of on-going construction activities with safety and EMP requirements.

Table 3.5 shows LGAs performance in executed works stage in FY 2013/14 and 2014/15.
Table 3.5: Executed Works

<table>
<thead>
<tr>
<th>Executed Works aspects</th>
<th>2013/14</th>
<th>2014/15</th>
<th>2013/14</th>
<th>2014/15</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on visual assessment on quality of workmanship, materials used, riding surface, and absence of defect.</td>
<td>N/A %</td>
<td>Poor %</td>
<td>Fair %</td>
<td>Good %</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>1</td>
<td>2</td>
<td>29</td>
</tr>
<tr>
<td>Comply with drawings and technical specification</td>
<td>14</td>
<td>1</td>
<td>0.4</td>
<td>28</td>
</tr>
<tr>
<td>Dimension of culvert and bridge comply with technical drawings and specification</td>
<td>12</td>
<td>2</td>
<td>5</td>
<td>11</td>
</tr>
<tr>
<td>Quality of materials used in pavement structure comply with technical specification</td>
<td>24</td>
<td>2</td>
<td>7</td>
<td>11</td>
</tr>
<tr>
<td>Quality of materials used in concrete and masonry works comply with technical specification</td>
<td>25</td>
<td>3</td>
<td>12</td>
<td>12</td>
</tr>
<tr>
<td>Compliance of site cleanup and restoration of disturbed and/or damaged areas with EM</td>
<td>29</td>
<td>2</td>
<td>6</td>
<td>25</td>
</tr>
<tr>
<td>Compliance of ongoing construction activities with safety and EMP requirement</td>
<td>38</td>
<td>3</td>
<td>13</td>
<td>21</td>
</tr>
<tr>
<td>Average performance</td>
<td>51.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Road Fund Board, 2015

3.5.1 Completed work satisfaction

Work satisfaction refers to the situation where by the assigned work is completed in all components according to the given guidelines. In this sub-indicator, the visually assessment should base on the quality of workmanship, quality of the materials incorporated, quality of riding surface, absence of defects in the road surfaces and in the structures, drainage (mitre drains, catch-water drains, camber and/or super elevation) have completed in accordance with terms and conditions of contract. Since this is visual assessment, the Professional judgment of the Auditor is called upon to determine to what extent the completed works are in compliance with the specifications (VFMI, 2013).
This aspect examines the completed works in terms of meeting the required needs or desired needs from the employers’ guidelines. Table 3.5 shows that completed work satisfaction dramatically dropped by 32.4 percent from 63 percent in the FY 2013/4 to 42.6 percent in FY 2014/15 due to poor workmanship of pavement; presence of wing walls & headwalls, gabions, localized potholes and observation of poor riding surface as well as late release of funds (RFB, 2015). The average performance of completed work satisfaction was satisfactory at about 52.8 percent.

The outcomes of this situation are the increase maintenance and development costs to the Government; decreased contribution of roads to the national development in terms of increase accidents, congestion, and fuel usage as well as vehicle maintenance costs.

The construction industry is dynamic in nature due to the increasing uncertainties in technology, budgets, and development processes that is why nowadays construction of road projects are becoming much more complex and difficult (Albert et al, 2004).

The fact is that, Tanzania transport sector still swims within high operational costs; low quality of services with high backlog of infrastructure maintenance and rehabilitation requirements; outdated institutional arrangements, laws, regulations and procedures; insufficient investment and low capacity for monitoring and evaluation hence acceleration of unsatisfactory completed works. Thus more efforts should be put on modifying them.

3.5.2 Dimensions of construction items

Construction items covers machinery and equipment together with necessary supplies for upkeep and maintenance. It also includes all other tools and apparatuses necessary for the construction and acceptable completion of work based on the drawings and technical specification of pavement structure, road carriageway, foot paths, road side drains, mitre drains and other road signs (Bailey, 2010).
This sub indicator assesses physical site measurements in order to determine compliance with drawings and Technical Specifications.

In specific occasions, the Terms of Reference may specify works or part of works in to particular project, physical measurements to be done otherwise in all cases the Auditor has the responsibility of sampling depending on what he/she has observed. The physical site measurements of works performed should be done jointly with IA’s representative(s) and results countersigned (VFMI, 2013).

Table 3.5 shows that, compliance of dimension of major construction items of completed works with the drawings and technical specifications has dropped by 26.2 percent from 52 percent in FY 2013/15 to 42 percent in FY 2014/15. Its average performance is satisfactory at about 50 percent for the observed years.

This suggests that, the compliance is dropped due to different factors like application of low technology (which led to the road side drains not to be well trimmed), limited supervision staffs and facilities, climatic change in some areas and low capacity of contractors’ management. This situation, if left to continue, will be the catalyst to the increase of traffic accidents and poor discharge of storm water hence eruption of disease.

Road signs are an integral part of a modern road system. They convey significant safety benefits as well as user amenity. Signs will remain functional and achieve their safety objectives only if they are adequately maintained. Tignor (1993) and Kneebone (1998) indicate that the installation of curve warning signs leads to about 20-57 percent average accident reduction.

3.5.3 Compliance of culverts and bridge drawings and technical specifications

Culvert means any structure not classified as a bridge that provides an opening under the roadway while bridge refers to a structure including supports erected over a depression or over an obstruction such as water, railway or for elevated roadway, for carrying traffic or other moving loads and having a length, measured along the center of the roadway of more than 20
feet between the inside faces of end supports. A multiple-span box culvert is considered a bridge where the length between the extreme ends of the openings exceeds 20 feet (Bailey, 2010).

This sub indicator covers Physical Site Measurements of Culverts and Bridges Determine with Drawings and Technical Specifications (VFMI, 2013).

This part presents the dimensions of culverts and bridges compliance with technical drawings and specifications. Table 3.5 illustrates that the dimensions of culverts and bridges compliance with technical drawings and specifications dropped from 71 percent in FY 2013/14 to 57.4 percent in FY 2014/15 by 19.1 percent. However, the average performance of culverts and bridges dimensions based on technical drawings and specifications had been moderate at about 64.2 percent.

The decrease performance is the result of no installation of culverts in some projects; absence of design calculations for the projects and late release of funds (RFB, 2015). Culverts and bridges are an essential element of our transportation networks, allowing roads to pass over rivers and streams. Our communities and our economies depend on functioning road networks and safe crossings. These Road-stream crossings are the once helps the society in different ways like healthier rivers and streams; enhanced river-related recreation; improve safety and mobility; avoid flooding as well as improve water quality (Jessica, 2013).

The Government with cooperation from other road stakeholders should develop a computer model for identifying environmental priority culverts on the respective maintained roads across the stream based on habitats and species of importance as well as stream conditions. Also close supervision should be employed to the contractors so as to put some influence on the compliance to the required specifications (ibid).
3.5.4 Compliance of the quality of materials used in pavement structures with technical specifications

Pavement structures refer to all courses of selected and collected specified materials placed on a foundation or sub-grade soil other than layers or courses constructed in grading operations.

Table 3.5 shows that, the compliance of the quality of materials used in pavement structures with technical specifications dramatically dropped by 38.6 percent from 56 percent in FY 2013/14 to 34.4 percent in FY 2014/15. The average performance on compliance distribution of the quality of material used in pavement structure based on technical specifications has been low at about 45.2 percent for the observed financial years.

The noticed trend is the result of detected potholes; cracks and joints; sink holes to the most of the projects; absence of quality assurance and quality tests to some projects (RFB, 2015). The outcome of this situation is the increase of accidents; road congestion; car and road maintenance costs.

The frequently distinct engineering behavior of naturally occurring construction materials within implementing agency should been identified as a key factor in determining the long-term engineering success or failure of road projects in developing countries (DFID, 1999). Also the councils should strengthen field supervision and tests of the project construction materials so as to minimize utilization of construction materials with low quality.

3.5.5 Quality of materials used in concrete and masonry work

Masonry is used to indicate the art of building a structure in either stones or bricks. The masonry constructed project is built of individual blocks materials such as stones, bricks, concrete, hollow blocks, cellular concrete and laterite, usually in horizontal courses cemented together with some form of mortar (Pearson, 2016).
This parameter covers field tests in order to determine the quality of the materials used and drainage structure to establish compliance with the Technical Specifications. The structures may include bridges, culverts (box, pipe, vented), drifts, access slabs, or lined drains (VFMI, 2013).

The purpose of the proposed test is to test concrete structures after the concrete has hardened to determine whether the structure is suitable for its designed use and assess the structural integrity or adequacy. Ideally such testing should be done without damaging the concrete and that’s why non-destructive testing has been adopted. The test specified to be performed by the Auditor in the structures is a Rebound Hammer. The test should be carried out according to the Laboratory Testing User Guide of the Central Materials Laboratory (CML) of the Ministry of Works. The Auditor should compare the results with those conducted during construction (idid).

Table 3.5 shows that, the compliance of quality materials used in concrete and masonry works with technical specifications decreased by 26.1 percent from 48 percent in FY 2013/14 to 35.5 percent in FY 2014/15. However, the average compliance of quality materials used in concrete and masonry works with technical specifications had been as low as 41.7 percent.

Data shows that there is a decrease on the trend of the quality due to limited supervision; application of new technologies in some areas where there is accessibility; absence of concrete structure; violation of engineer’s principals and specifications (RFB, 2015). The end result is the existence of low quality infrastructures which call for frequent repair and maintenance. The quality of construction materials used in Brutan is high compared to that of Tanzania and Kenya at about 25 percent (IDRG, 2009).

With the acceleration in the process of urbanization, and consequently, the rapid growth in urban population, the urban infrastructure and public amenities need to be strengthened to address the emerging urban requirement (IDRG, 2009). This situation can be implemented by strengthen site supervision and guidance on the settled construction principals.
3.5.6 Compliance of Site Clean-Up and Restoration of Disturbed and/or Damaged Areas with EM

The construction process involves large amount of materials and employees who are often working on a tight schedule. It is no surprise that at the end of most projects, the site is quite messy, full of debris, extra materials and dirt. Before road construction is considered as a complete project, the site must be cleared of all construction materials (Emily, 1999).

The term restoration of the disturbed area refers to the measures taken to return a construction site to the previous conditions. Environmental restoration involves many different approaches and technologies depending on the requirements of the situation. It involves heavy equipment like cranes, graders, bulldozers or excavators as well as hand processes like planting of trees and other vegetation.

In principle the contract will spell out the responsibility of the contractor regarding the protection of the environment. If it is provided in the contract, the contract will take all reasonable steps to protect the environment and to limit damage and nuisance to people and property resulting from pollution, noise and other results of his operations on site (VFMI, 2013).

Furthermore, the contractor should comply with the Statutory Regulations in force in Tanzania regarding environmental protection and waste disposal and should liaise with the responsible authorities to understand rules and procedures. For contracts which Environmental and Social Impact Assessment [ESIA] was conducted, the safeguards outlined in such assessment should be the basis of the assessing compliance (ibid).

The assessment of this sub-indicator should base on the basis of the environmental management provisions provided in the contract. For the contractor to fulfill his contractual obligation there must an Environment Management Plan prepared and followed. Issues such as reinstatement of borrow pits, excavations, water pollutions, nuisance and etc. have addressed and implemented (ibid).
Table 3.5 shows that, the compliance of site clean-up and restoration of disturbed and/or damaged areas with EM decreased from 38 percent in year 2013/14 to 23.8 percent in year 2014/15. This is a decrease of about 37.5 percentage rate. On the other hand, the average compliance of site clean-up and restoration of disturbed and/or damaged areas had been low at about 30.9 percent for the observed period. This averagely low performance is the result of environmental matters not being well addressed in contracts; Poor management of the sites’ used materials which lead to most of construction materials being left on roads and being partially cleaned as well as absence of environmental management ideas to the contractors (RFB, 2015).

Since the preparation of NEAP of 1994, the Government has undertaken various initiatives to improve environmental management in the country. These include, among others, formulation of the National Environmental Policy (NEP) of 1997; enactment of the Environmental Management Act No. 20 of 2004; mainstreaming of environment into MKUKUTA I (2005-2010) and II (2010-2015) as well as sectorial policies, strategies and plans. These initiatives aim to ensure environmental sustainability in the country (URT, 2012).

It is true that there are several environmental policies that influence environmental management in Tanzania. There are several legal and regulatory instruments which are relevant to environmental management in Tanzania as well as environmental friendly societies and institutions in the country. Thus, it is now their turn to offer protection of destructed road construction environment as well as pioneer the formulation of safety and environmental policy by IA’s with implementation during contract execution.

### 3.5.7 Compliance of On-Going Construction with EMP Requirements

Understanding which segments of the environment are vulnerable is a prerequisite to identifying and managing environmental risks (EPA, 1996). This aspect explains the compliance of the construction activities of the projects which are not yet completed (which are still in progress) to the safety and EMP requirements.
For the ongoing contract, the assessment is done on whether the plans in place are followed and will yield required results in terms of compliance with safety and environment management. On the safety issues, it covers whether the contractor is taking all reasonable precautions to maintain the health and safety of his personnel at site physically (VFMI, 2013).

Table 3.5 reveals that, the compliance of on-going construction activities with safety with EMP requirements has declined by the average range of 19.6 percent from 25 percent in FY 2013/14 to 20.1 percent in FY 2014/15. Moreover, the average compliance of on-going construction activities with safety and EMP requirements had been low at about 22.6 percent for the observed financial years. This performance trend and average performance implies that the compliance of on-going constructions was very low.

The forces behind these outcomes are poor contractors’ human resources management which led to the workers work without wearing safety gears; weak contractors’ management systems which resulted into no installation of warning signs especially for excavated trenches; absence of danger tapes as well as no evidence of contractor’s adherence to the Environmental Management Policy (RFB, 2015). The impacts of this situation were the increase of accidents during construction process, death of workers, injuries as well as eruption of diseases.

There are several policies that influence environmental management as well as several legal and regulatory instruments which are relevant to the environmental management in Tanzania (NEAP, 2012). On the other hand, there are several construction industry businesses in Tanzania like in other countries which cannot be tackled effectively without employing Occupational Health and Safety (OHS) to safeguard the health of the workers and the entire community. Unfortunately, in this industry, assessment on the impacts of such developments to the workers, surrounding environment and the community are rarely considered (Mwombeki, 2005). Thus the Government and other environmental pioneers should put more efforts on the adherence of the policy.
3.5.8 Overall performance

This part examines the overall performance of LGAs’ executed works for FYs 2013/14 and 2014/15. Table 3.5 shows that there is a decrease of overall performance of all stages at about 15.4 percent from 51 percent in FY 2013/14 to 44.2 percent in FY 2014/15. This overall trend is the output of decreasing condition from all parameters under this stage. Also, late release of project fund which hinders the completion of many projects in a sense that most of them end up on the construction stage (RFB, 2015).

The economic costs of poor road construction are borne primarily by road users. Increase of road maintenance attracts the increase cost of road transport and raises the net cost to the economy as a whole. Furthermore, when traffic levels rise, as they have been in most countries, the proportion of total road transport costs attributable to vehicle operation will also increase sharply, while those attributable to road expenditures will decline ((IRF et al, 2004).

Furthermore, when traffic levels rise, as they have been in most countries, the proportion of total road transport costs attributable to vehicle operation will also increase sharply, while those attributable to road expenditures will decline. It is estimated that the extra costs of insufficient maintenance in Africa amounts to about $1.2 billion per year or 0.85 percent of regional GDP (Heggie, 1998).

3.6 LGAs Overall Weighted Average performance

This part presents the LGA’s overall and weighted average performance for the FY’s 2013/14 and 2014/15.

Table 3.6: LGAs’ overall and weighted average performance

<table>
<thead>
<tr>
<th>Stage</th>
<th>2013/14</th>
<th>2014/15</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>[1] Planning and Designing</td>
<td>49.6</td>
<td>49.8</td>
<td>49.7</td>
</tr>
<tr>
<td>[2] Procurement Stage;</td>
<td>73.0</td>
<td>68.0</td>
<td>70.5</td>
</tr>
<tr>
<td>[3] Construction Stage;</td>
<td>47.7</td>
<td>45.6</td>
<td>46.65</td>
</tr>
<tr>
<td>[4] Project Completion Stage</td>
<td>33.8</td>
<td>21.1</td>
<td>27.45</td>
</tr>
<tr>
<td>[5] Executed Works</td>
<td>51.1</td>
<td>36.5</td>
<td>43.8</td>
</tr>
<tr>
<td>Weighted Average</td>
<td>51.0</td>
<td>44.2</td>
<td>47.6</td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

According to table 3.6 and graph 2 A and B show that, the trend of constructed projects in financial years 2013/14 and 2014/15 has been decreasing from 51.0 percent in FY 2013/14 to 44.2 percent in YF 2014/15. This drop is equivalent to 15.4 percentage rate. Except procurement stage which score good performance of about 70.5 percent, all other stages performed poorly with performance below 50 percent and lead to low general weighted average of all stages at about 47.6 percent.

LGAs have been underperformed in all stages of project, and this is due to fact that, there is late release of fund which hinder timely completion of many projects; violation of engineering principals and guidelines such as drawings and pictures; absence of concrete structures and roads signs in some projects; lack of Environment Management Plan guidelines to LGAs engineers. Other factors affected LGAs performance includes weak workmanship and site supervision; change of procurement Act which have brought long bureaucracy of procurement processes; presence of only one unity which handle tender issues; and broken of software. Also LGA’s decision making systems often are being interfered by political leaders particularly during making project priorities in their respective areas (RFB, 2015).

On the other hand; in LGAs there is limited capacity of local contractors and engineers; ineffective contract administration; climate influence such as heavy rainfall and shortage of staff which deteriorate its performance in roads projects. Also LGAs are dealing with all sectors found
in the country, roads projects is the part of them, so there is little efforts invested to manage those projects hence underperformance in roads maintenance and development (Consultation with RFB staffs, 2015).

**Graph2a: LGAs’ Overall average and weighted performance line graph**

![Graph2a](source)

**Source:** Roads Fund Board, 2015

**Graph2b: LGAs’ Overall average and weighted performance bar graph**

![Graph2b](source)

**Source:** Roads Fund Board, 2015
On top of that, poor project estimates; inconsistence of project design and calculations as well as the application of low technology which influences most of IAs engineers tend to ignore the use of software like DROMAS also contributed to the drop of performance (RFB and consultation with RFB staffs, 2015).

Not only those factors hinder road construction at LGAs level but also presence of unregistered Engineers in some council; absence of quality assurance program; absence of Quality of Environmental Management Plan (EMP); absence of measurement sheets; absence of site possession evidence and records as well as poor financial management by councils likewise hinder LGA’s performance.

Other factors for the observed low average performance of LGAs roads projects are: poor riding quality; poor quality of the materials used such as rocks; unclear address of Environmental matters in contracts led to construction materials to be left on the road and sites partially cleaned and Poor human resource management as the result of contractors workers working without safety gear (RFB, 2015).

The impacts of low LGAs’ performance are increased accidents, traffic delays, vehicles wear and tear; stagnation of the economy due to limited mobility of people with their goods; stagnation of productivity of investment and increased cost of road maintenance (NAO et al, 2010 & NEAP, 2012).

Graph 2C presents the LGAs’ overall average performance of the combined five stages of road project construction for 2013/14 and 2014/15. The graph revealed that, the performance has been dropped at about 15.4 percent from 51.0 percent in FY 2013/14 to 44.2 percent in FY 2014/15.
Generally, the trend performance has been decreasing and average performance is low at about 47.2 percent due to utilization of low quality tools; the use of low quality materials like rocks in some council; inadequate management of contractors; improper contractors’ organization of quality chart and works programs; inadequate plans and programs towards environmental management as well as climatic barriers in terms of heavy rainfall in some council (RFB, 2015).

Poor riding quality; unclear address of Environmental matters in contracts led to construction materials to be left on the road and sites partially cleaned and Poor human resource management as the result of contractor’s workers working without safety gear (RFB, 2015).

Roads are clearly a critical enabling condition for improving living conditions in rural areas. However, the distribution of socioeconomic benefits resulting from a rural road is a separate issue, and there are no guarantees or inherent mechanisms to ensure that these benefits will be distributed equitably between the poor and the non-poor in communities (ASB, 2006).

On top of that, transport sector has a long tradition of justifying its projects on the basis of efficiency considerations, evaluating alternative investments on the basis of cost-benefit in the rural areas. For road transport investments, the main economic benefits consist of: saving in
vehicle operating cost (such as fuel cost, vehicle maintenance); time savings and a reduced risk of accidents (Gracie, 2001).

In order for all those benefits to be earned the Government and other stakeholders under its department should work out on solving all the hindrance factors like utilization of low quality tools; the use of low quality materials like rocks in some council; inadequate management of contractors; improper contractors’ organization of quality chart and works programs; inadequate plans and programs towards environmental management of the road projects in the agency. Also presence of unregistered Engineers in some council; absence of quality assurance program; absence of Quality of Environmental Management Plan (EMP); absence of measurement sheets; absence of site possession evidence and records as well as poor financial management by councils should be handled.
Chapter Four

Conclusion

4.0. Introduction

The report targeted to reveal the status of the Implementing Agencies in handling road projects and finally provide recommendations for further use in policy decisions making. Chapter four has got three (3) main sections. Section 4.1 gives a concise introduction to the chapter. Section 4.2 presents’ conclusions constituting of the main findings and section 4.3 presents general recommendations.

4.1. Main Findings and Recommendations

4.1.1. Planning, Design and Tender Documentation

Project planning is a procedural step in project management, whereby the required documentation is created to ensure successful project completion. Documentation includes all actions required to define, prepare, integrate and coordinate additional plans. Project design methods, generally, involves the use of project logic to link the resources and actions required to implement project activities to their direct outputs, their flow-on effects and their eventual contribution to the overall project goal. The project plan clearly defines how the project is executed, monitored, controlled and closed.

Table 4.1 shows the performance trend of road agencies in planning, design and tender documentation during handling roads construction projects in their mandated areas.

Table 4.1: Project, Design and Tender Documentation

<table>
<thead>
<tr>
<th>S/N</th>
<th>Roads Agency</th>
<th>2013/14</th>
<th>2014/15</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TANROADS</td>
<td>72.4</td>
<td>71.76</td>
<td>72.1</td>
</tr>
<tr>
<td>2</td>
<td>LGAs</td>
<td>49.6</td>
<td>49.8</td>
<td>49.7</td>
</tr>
<tr>
<td></td>
<td>Average</td>
<td>61</td>
<td>60.8</td>
<td>61</td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015
On one hand, Table 4.1 shows that TANROADS performance in planning, design and tender documentation has dropped by about 0.9 percent from 72.4 percent in FY 2013/14 to 71.76 percent in FY 2014/15. However, on average, performance in planning, design and tender documentation has been high at about 72.1 percent for the observed years. On the other hand, LGAs’ performance in planning, designing and tender documentation has dropped by about 0.4 percent from 49.6 percent in the 2013/14 to 49.8 percent in the year 2014/15. And on average, LGAs’ performance in this stage had been very low at about 49.7 percent during these financial years under investigation.

Furthermore, on average, both TANROADS and LGA performance in planning, design and tender documentation dropped by 0.4 percent from 61 percent in FY 2013/14 to 60.8 percent in the year 2014/15. On average, their performance in this stage had been high at about 61 percent for the observed years. However, TANROADS had been performing much better by 24.1 percent as compared to LGAs which had been performing at a low level.

It is evident that roads agencies had been performing better in planning, designing and tender documentation stage although its performance had been dropping over time. It has been observed that the performance had been dropping due to failure of management in undertaking planning and design processes. Management had been underperforming in areas such as incompliance between project planning with requirements of agreement and inappropriate technical specifications. Other areas include inaccurate BOQ; engineers’ estimates as well as design calculation and technical drawings. Also there was lack of maintenance software, survey of road inventory and roads’ condition survey.

4.1.2. Procurement stage

Procurement is defined as the process which creates, manages and fulfills construction contracts. It is further described as a succession of logically related actions occurring or performed in a definite manner, and which culminate in the completion of a major deliverable or the attainment of a milestone.
Table 4.2 shows the performance trend of road agencies at the procurement stage during handling roads construction projects in their mandated areas.

**Table 4.2: Procurement Stage**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Roads Agency</th>
<th>2013/14</th>
<th>2014/15</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TANROADS</td>
<td>86.3</td>
<td>83.6</td>
<td>85</td>
</tr>
<tr>
<td>2</td>
<td>LGAs</td>
<td>73.3</td>
<td>68</td>
<td>70.7</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td></td>
<td><strong>79.2</strong></td>
<td><strong>75.8</strong></td>
<td><strong>78</strong></td>
</tr>
</tbody>
</table>

*Source: Roads Fund Board, 2015*

Table 4.2 shows that TANROADS performance in procurement stage has dropped by about 3.1 percent from 86.3 in 2013/14 to 83.6 in 2014/15. However, on average, performance in procurement has been high at about 85 percent for the observed years. For the case of LGA, the performance in the procurement stage has dropped by about 7.2 percent from 73.3 percent in FY 2013/14 to 68 percent in FY 2014/15. On average, LGAs’ performance at the procurement stage had been high at about 70.7 percent for the observed years.

Moreover, on average both TANROADS and LGAs’ performance has dropped by about 5 percent from 79.8 in FY 2013/14 to 75.8 in FY 2014/15. On average, their performance at this stage has been high at about 78 percent for the observed years. However, TANROADS’ performance is much better by 14.3 percent compared to LGAs’ performance.

Road agencies performance at the procurement stage has dropped compared to previous trends. Road agencies have dropped in performance due to non-compliance with PPA 2011 and Regulations 2013. Most of the procurement procedures were not observed during the process of hiring contractors. It has been observed that in most of the projects there was no publication of awards, unsuccessful bidders were not informed, advertisement was done only once and corrections of errors was not communicated to bidders. Also procurement process takes too long due to passing through the vetting processes which takes too much time which results the delay of securing a contractor. In most of the LGAs negotiation meetings were not held and hence led
to hiring the lowest bidder which were not competent enough to handle big in size and complex projects.

Although, Road Agencies performance in procurement stage has dropped compared to the previous year but on average they are still performing better. These agencies have been using improved procurement methods according to PPA; presence of good policies; sound management and good marketing conditions. There was good evaluation process and award of contract along with compliance of procurement processes in respect of PPA and its regulations.

4.1.3. Construction Stage

Construction is the process of preparing for and forming buildings/structures and building systems. Construction starts with planning, designing, and financing and continues until the structure is ready for occupancy. Far from being a single activity, a large scale construction is a feat of human multitasking. Normally, the job is managed by a project manager, and supervised by a construction manager, design engineer, construction engineer or project architect.

Table 4.3 shows the performance trend of roads agencies at the stage of construction during handling roads construction projects in their mandated areas.

Table 4.3: Construction Stage

<table>
<thead>
<tr>
<th>S/N</th>
<th>Roads Agency</th>
<th>2013/14</th>
<th>2014/15</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TANROADS</td>
<td>66.6</td>
<td>62</td>
<td>64.3</td>
</tr>
<tr>
<td>2</td>
<td>LGAs</td>
<td>47.7</td>
<td>45.6</td>
<td>46.7</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td><strong>57.2</strong></td>
<td><strong>53.8</strong></td>
<td><strong>55.5</strong></td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

Table 4.3 shows that TANROADS’ performance at the construction stage has dropped by about 6.9 percent from 66.6 percent in FY 2013/14 to 62 percent in FY 2014/15. On average, TANROADS’ performance at the construction stage was moderate at about 64.3 percent for the observed years. Meanwhile, LGAs’ performance at the construction stage has dropped by about
4.4 percent from 47.7 percent FY 2013/14 to 45.6 in FY 2014/15. On average, LGAs’ performance at the construction stage was low at about 46.7 percent for the observed years.

Also, the performance of both TANROADS and LGAs at the construction stage has dropped by about 5.9 percent from 57.2 in FY 2013/14 to 53.8 percent in FY 2014/15. And, their average performance at this stage was satisfactory at about 55.5 percent for the observed years. Therefore, TANROADS performance was relatively better by about 17.7 percent than LGAs performance.

Roads Agencies performance have dropped in area of timeliness of site possession; quality project programs and adherence to quality assurance program as well as quality of site organization, staffs and supervising staffs. Also there were unsatisfactory in areas including quality of quality assurance program and adherence to quality assurance program. Furthermore, the Environmental Management Plan (EMP) were not prepared and/not implemented where the reasons behind are Implementing Agency’s (IA) lack knowledge, policies and guidelines. Moreover, they have been performing poorly in areas such as project documentations; claims and costs overruns as well as project delays and extension of time.

There was satisfactory performance in areas such as supervising engineer’s staff where contractors were capable enough as they have been able to recruit experienced professional engineers purposely to supervise the implementation of project at the site. It has been observed that most of projects were supervised by professional engineers, site meetings were conducted and the progress reports were prepared on time.

4.1.4. Project Completion and Closure Stage

Project activities are planned to be implemented over a specific period of time. Therefore, each project requires a formal closure upon completion of project activities. Formal closure requires a decision jointly made by the implementing parts to close a project. Project closure includes completion of all operational activities and financial accounts of the project.
Table 4.4 shows the performance trend of road agencies in the stage of project completion and closure during handling roads construction projects in their mandated areas.

Table 4.4: Project Completion and Closure Stage

<table>
<thead>
<tr>
<th>S/N</th>
<th>Road Agency</th>
<th>2013/14</th>
<th>2014/15</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TANROADS</td>
<td>44</td>
<td>21.8</td>
<td>32.9</td>
</tr>
<tr>
<td>2</td>
<td>LGAs</td>
<td>33.8</td>
<td>20.1</td>
<td>27</td>
</tr>
<tr>
<td></td>
<td><strong>Average</strong></td>
<td><strong>38.9</strong></td>
<td><strong>21</strong></td>
<td><strong>29.9</strong></td>
</tr>
</tbody>
</table>

*Source: Roads Fund Board, 2015*

Table 4.4 shows that TANROADS’ performance was dropped by about 50.5 percent in the aspect of project completion and closure whereby in FY 2013/14 the performance was 44 percent and in FY 2014/15 it was 21.8 percent. However, on average the performance at the stage of project completion and closure was low at about 32.9 percent for the sampled years. On the part of LGAs, the performance at the stage of project completion and closure has dropped by about 40.5 percent from 38.9 percent in FY 2013/14 to 21 percent in FY 2014/15. On average, for LGAs, the performance at the stage of project completion and closure was low at about 29.9 percent for the observed years.

Furthermore, on average, both TANROADS and LGAs’ performance at the stage of project completion and closure slightly improved by about 8.4 percent from 35.9 in FY 2012/13 to 38.9 percent in FY 2013/14. The performance at the Project Completion and Closure Stage was very low. On average, the performance was 34.7 percent for the observed year. However, TANROADS performance was relatively better at 44 percent compared to LGAs’ performance which was low at 30.8 percent.

Road projects IA performance was unsatisfactory for both observed years. IA have failed to manage the projects especially in the area of quality and completeness of as-built drawings; preparation of quality and adequate final project reports; compilation and management of snag lists as well as management of defects liability period. Projects lost their quality and were not fully completed so as to comply with the preset criteria and standards at the stipulated time. Also
there was inadequate supervision and management of contracts led to late issuance of substantial completion and final certificates as well as settlement of final accounts. Moreover, there was additional costs and extension of completion time beyond the accepted tender price and contract project completion period.

4.1.5. Executed Works

Executed works are project works carried out as per the plans. Though project executed works shall as far as possible be done according to the plans originally envisaged, changes/modifications required, if any, are to be incorporated wherever necessary. Since projects are dynamic in nature, flexibility is essential in execution of project works so that the overall objectives of the projects are achieved.

Table 4.5 shows the performance trend of road agencies at the stage of assessment of executed works during handling road construction projects in their mandated areas.

Table 4.5: Executed Works

<table>
<thead>
<tr>
<th>S/N</th>
<th>Roads Agency</th>
<th>2012/13</th>
<th>2013/14</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TANROADS</td>
<td>60.1</td>
<td>46</td>
<td>53.1</td>
</tr>
<tr>
<td>2</td>
<td>LGAs</td>
<td>51.1</td>
<td>36.5</td>
<td>43.8</td>
</tr>
<tr>
<td></td>
<td><strong>Average</strong></td>
<td><strong>55.6</strong></td>
<td><strong>41.3</strong></td>
<td><strong>48.4</strong></td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

Table 4.5 shows that TANROADS’ performance at the stage of assessment of executed works has dramatically dropped by about 23.5 percent from 60.1 percent in FY 2013/14 to 53.1 percent in FY 2014/15. On average, the performance at the stage of assessment of executed works was satisfactory at about 53.1 percent for the observed years. On the other side, LGAs’ performance at the stage of assessment of executed works also dramatically dropped by about 28.6 percent from 51.1 percent in FY 2013/13 to 36.5 percent in FY 2014/15. Even though, on average, the performance at this stage was low at 43.8 percent for the observed years.
Moreover, on average, both TANROADS and LGAs’ performance at the stage of assessment of executed works dramatically dropped by about 28.5 percent from 55.6 in FY 2013/14 to 41.3 percent in FY 2013/15. However, the executed works stage performance was generally very low, on average, at 48.4 percent for the observed financial years. Yet, TANROADS performance at the executed works stage was relatively better at 53.1 percent as compared to LGAs performance which was low at 43.8 percent.

TANROADS performance on the executed works stage dramatically dropped and the overall performance for TANROADS was satisfactory while it was low for the case of LGAs for both observed years. Both TANROADS and LGAs failed to manage most of their projects since there was low satisfaction of the completed works. It has been observed that the dimensions culverts and bridges were not complied with technical drawings and specifications. Also there was non-compliance of quality materials used in pavement structures with technical specifications. And also there was low quality of material used in concrete and masonry works. Moreover, there was non-compliance of site clean-up with restoration of disturbed and/or damaged areas and incompliance of on-going construction activities with EMP requirements.

4.1.6. Overall Performance

Performance refers to the accomplishment of a given task measured against preset known standards of accuracy, completeness, cost and speed. The performance tends to be measured purposely to assess the contribution of established organs toward achieving the desired outcomes in the sector. The performance of roads project implementing agencies is assessed to acknowledge their actual efforts toward implementing road projects and value for money achieved.

Table 4 shows the overall performance of roads projects Implementing Agencies for the FY 2013/14 to FY 2014/15.
Table 4: Overall Performance of Implementing Agencies

<table>
<thead>
<tr>
<th>S/N</th>
<th>Stages</th>
<th>2013/14</th>
<th>2014/15</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Project, Design and Tender Documentation</td>
<td>61</td>
<td>60.8</td>
<td>61</td>
</tr>
<tr>
<td>2</td>
<td>Procurement Stage</td>
<td>79.8</td>
<td>75.8</td>
<td>78</td>
</tr>
<tr>
<td>3</td>
<td>Construction Stage</td>
<td>57.2</td>
<td>53.8</td>
<td>55.5</td>
</tr>
<tr>
<td>4</td>
<td>Project Completion and Closure Stage</td>
<td>38.9</td>
<td>21</td>
<td>29.9</td>
</tr>
<tr>
<td>5</td>
<td>Executed Works</td>
<td>55.6</td>
<td>41.3</td>
<td>48.4</td>
</tr>
<tr>
<td>A</td>
<td>Overall Performances</td>
<td>58.5</td>
<td>50.5</td>
<td>54.5</td>
</tr>
<tr>
<td>B</td>
<td>Rate of Growth in %</td>
<td></td>
<td></td>
<td>13.7</td>
</tr>
</tbody>
</table>

Source: Roads Fund Board, 2015

Table 4 shows that road projects implementing agency has dramatically dropped from 58.5 percent in FY 2013/14 to 50.5 in FY 2014/15 by about 13.7 percent. However, on average overall performance is satisfactory at about 54.5. The performance still has not been better to the extent of achieving the desired outcomes. Better performance has been observed in project planning, design and tender documentation stage and procurement stage. And under performance has been observed in construction; project completion and closure; and executed works stage.

Moderate performance implies that there is underutilization of resources allocated to the projects. This is influenced by factors including inadequate project management and supervision, late release of funds, limited capacity of contractors, and unethical conducts by staff in handling road projects. Implemented road projects do not reveal value for money as expected by stakeholders. Roads produced tend to be at low quality and fail to fulfill the desired socio-economic benefits to the society.

4.2. Recommendations

Road agencies have been assigned with roles and responsibilities to handle road related projects in the country. TANROADS is an executive road agency responsible for maintenance and development of the trunk and regional road network in Tanzania Mainland. LGAs are road agencies responsible for the maintenance and development of the urban and feeder roads. Technical auditing is conducted to evaluate the performance of road agencies in handling road projects in their mandatory areas. This analysis of technical audit reports has shown the current
status on performance in each stage of a project and has suggested some recommendations for improvement of road agencies performance.

4.2.1. **General Recommendations**

- Ensure timely disbursement of funds to TANROADS, local authorities and other agencies so as to enable improvement of Project Completion and Closure and Executed Works stages by completing projects on time.

- Put in place efficient systems of operations of TANROADS, local authorities, to ensure that they fully comply with the APA.

- Ensure effective monitoring control on the use of the funds disbursed to TANROADS, local government authorities or other agencies for the purposes and objectives of the fund.

4.2.2. **Specific Recommendations**

4.2.2.1. **Planning, designing and tender documentation**

- The emphasis should be invested on the use of software such as DROMAS for LGAs as well as HDM4 and RMMS for TANROADS in planning processes so as to enhance economic viability of the projects.

- The road agencies should maintain survey and inventory all over to gain information for updates in the database to be used in projects planning.

4.2.2.2. **Procurement Stage**

- Road agencies should have to comply with Public Procurement Act and regulations during procurement processes.
● There should be enhancement of record management systems to the road agencies so as to collect and keep records for use.

● Evaluation and award of tender should be done with observance of the compliance against capacity and competence of contractors, as well as the price and complexity of the projects.

4.2.2.3. Construction Stage

● There should be spread of knowledge to IA’s engineers about having EMP in road construction sites.

● There should be continuous capacity building programs to local contractors for the purpose to enhancing their competency and capital capacities.

● The road agencies are advised to put more emphasis on measures that enhance environmental conservation to the sites where projects take place.

● Road agencies are supposed to ensure that project schedules are prepared and revised where necessary.

● There should be improvement of road management systems specifically in aspects of process, human resource, technology and fund.

● RFB and other road project donors have to disburse funds on time to road agencies to facilitate timely implementation of road.

4.2.2.4. Project Completion and Closure

● The managements are supposed to emphasize on submission of up-to-date projects reports and as-built drawings for completed works and ensure snag lists are prepared
during project handover for monitoring defects and defects remedy during defect liability period.

4.2.2.5. **Executed Works**

- Road agencies should closely manage the contractors employed and ensure that major construction items are submitted as specified in contracts based on physical site measurements and technical specifications.

- There should be assessment of construction materials expected to be used in road construction projects so as to enhance use of quality materials for sustainability of roads constructed.

- Road projects should comply with environmental laws and regulations in order to conserve the environment in areas where they are executed.
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