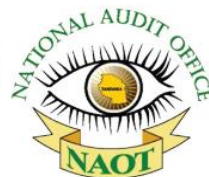# THE UNITED REPUBLIC OF TANZANIA
NATIONAL AUDIT OFFICE

PERFORMANCE AUDIT REPORT ON THE MANAGEMENT OF PLANNING AND ACQUISITION OF ICT SYSTEMS IN THE GOVERNMENT
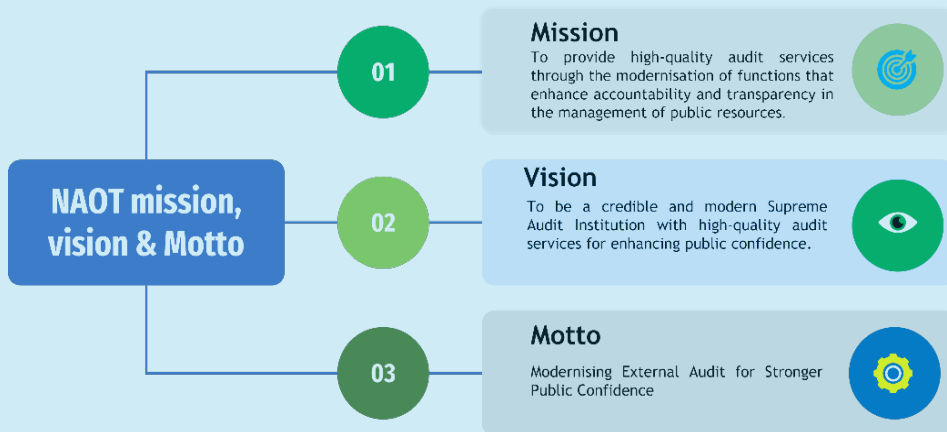

CONTROLLER AND AUDITOR GENERAL

MARCH 2023

About National Audit Office

The statutory mandate and responsibilities of the Controller and Auditor General are provided for under Article 143 of the Constitution of the United Republic of Tanzania, 1977 and in Section 10 (1) of the Public Audit Act, Cap. 418.

NAOT mission, vision & Motto

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Mission
To provide high-quality audit services through the modernisation of functions that enhance accountability and transparency in the management of public resources.

02

Vision
To be a credible and modern Supreme Audit Institution with high-quality audit services for enhancing public confidence.

03

Motto
Modernising External Audit for Stronger Public Confidence

CORE VALUES

Independence and objectivity
We are an impartial public institution, independently offering high-quality audit services to our clients in an unbiased manner.

Teamwork Spirit
We value and work together with internal and external stakeholders.

Results-Oriented
We focus on achievements of reliable, timely, accurate, useful, and clear performance targets.

Professional competence
We deliver high-quality audit services based on appropriate professional knowledge, skills, and best practices

Integrity
We observe and maintain high ethical standards and rules of law in the delivery of audit services.

Creativity and Innovation
We encourage, create, and innovate value-adding ideas for the improvement of audit services.

PREFACE

Section 28 of the Public Audit Act, CAP 418 [R.E. 2021] gives mandate to the Controller and Auditor General to carry out Performance Audit (Value-for-Money Audit) to establish the economy, efficiency and effectiveness of any expenditure or use of resources in the Ministries, Departments and Agencies (MDAs), Local Government Authorities (LGAs) and Public Authorities and Other Bodies which involves enquiring, examining, investigating and reporting, as deemed necessary under the circumstances.

I have the honour to submit to Her Excellency, the President of the United Republic of Tanzania, Hon. Dr. Samia Suluhu Hassan, and through her to the Parliament of the United Republic of Tanzania, the Performance Audit Report on the Management of Planning and Acquisition of ICT Systems in the Government.

The report contains findings, conclusions, and recommendations that are directed to the President's Office - Public Service Management and Good Governance (PO-PSMGG) and e-Government Authority (eGA).

The President's Office - Public Service Management and Good Governance and e-Government Authority had the opportunity to scrutinize the factual contents of the report and comment on it. I wish to acknowledge that discussions with the President's Office - Public Service Management and Good Governance and e-Government Authority have been useful and constructive.

My Office will carry out a follow-up audit at an appropriate time regarding actions taken by the President's Office - Public Service Management and Good Governance and e-Government Authority in implementing the recommendations given in this report.

Controller and Auditor General

In completing the audit assignment, I subjected the draft report to a critical review of subject matter experts, namely Prof. Shubi Kaijage from Nelson Mandela - African Institution of Science and Technology and Dr. John Msumba from Dar es Salaam Institute of Technology who came up with useful inputs for the improvement of this report.

The report was prepared by Mr. Frank V. Nyoni (Team Leader) and Mr. Cosmo Munuo (Team Member) under the supervision and guidance of Ms. Mariam F. Chikwindo (Chief External Auditor), Mr. James G. Pilly (Assistant Auditor General) and Mr. George C. Haule (Deputy Auditor General).

I would like to thank my staff for their commitment in preparing this report. I also acknowledge the audited entities for their cooperation with my Office, which facilitated the timely completion of the audit.

Charles E. Kichere
Controller and Auditor General
United Republic of Tanzania
March, 2023

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LIST OF ABBREVIATIONS AND ACRONYMS

CERT	Computer Emergency Response Team
DUWASA	Dodoma Urban Water Supply and Sanitation Authority
eGA	e-Government Authority
EPOCA	Electronic and Postal Communication Act
ERB	Engineer Registration Board
EWURA	Energy and Water Utilities Regulatory Authority
GDC	Government Data Centre
GISP	Government ICT Services Portal
GPSA	Government Procurement Services Agency
ICT	Information and Communication Technology
INTOSAI	International Organisation of Supreme Audit Institution
ISSAI	International Standards of Supreme Audit Institutions
LGA	Local Government Authority
MDA	Ministries, Departments' and Agencies
MoA	Ministry of Agriculture
MoCLA	Ministry of Constitution and Legal Affairs
MoH	Ministry of Health
MOI	Muhimbili Orthopaedic Institute
MICIT	Ministry of Information, Communication and Information Technology
NCA	Ngorongoro Conservation Authority
NFRA	National Food Reserve Agency
NIDC	National Internet Data Centre
PO-PSMGG	President's Office - Public Service Management and Good Governance
PO-RALG	President's Office - Regional Administration and Local Government
PSSSF	Public Services Social Security Fund

SRS	System Requirements Specifications
TANAPA	Tanzania National Parks Authority
TBA	Tanzania Building Agency
TCRA	Tanzania Communication Regulatory Authority
TRA	Tanzania Revenue Authority
UAT	User Acceptance Test

Background

The use of ICT systems within government entities has become increasingly significant in recent decades, particularly following the greater evolution of computers, their accessories, and the use of the internet and organizational intranets.

In 2013, the Government of Tanzania developed an e-Government Strategy which aimed at providing a clear roadmap to accelerate the government efforts toward delivering quality and responsive services to the public. The strategy was again reviewed in years 2017 and 2021 during the development of the Five -Year Development Plans II and III. In addition to that, other efforts included the formation of the Universal Access Communications Fund Act, 2006, the Electronic and Post Communications Act, 2010, the Tanzania Telecommunication Corporation Act, 2017, the Electronic Transaction Act, 2015 and Cybercrime Act, 2015.

The main objective of the audit was to determine whether the President's Office - Public Service Management and Good Governance (PO-PSMGG) and e-Government Authority (eGA) were effectively managing the planning and acquisition of Government ICT systems in Tanzania mainland, in a manner that ensures the anticipated benefits are achieved and risks are minimized.

The audit focused on assessing the effectiveness of the Authority in (i) managing the initiation of ICT systems acquisition, (ii) requirements gathering and specifications development, (iii) execution of system development or configuration of the proposed ICT Systems, (iv) testing and commissioning of the systems and (v) the oversight of planning and acquisition of ICT Systems in the government.

Main Audit Findings

Acquisition of ICT Systems that Did Not Bring the Anticipated Benefits

The audit found that, government institutions were incurring costs to procure systems which were later abandoned after some period of time for different reasons.

In the six visited public institutions, a total of 9 ICT Systems worth TZS 2.87 Billion that were acquired between year 2017 and 2022 were abandoned and were no longer being used. Interviews with officials from both eGA and the visited public institutions pointed out that abandonment of the systems on functionality perspective was caused by the fact that the acquired systems were no longer serving the purposes in a manner that enhanced efficient public service delivery. Therefore, the next best alternative was for the public institutions to acquire the government wide systems catalysed by the e-Government initiatives to ensure a connected Government. This was the case in 7 out of 9 abandoned systems.

Insufficient Ministry's Oversight on the Acquisition of ICT Projects by Public Institutions

The audit found that, the oversight function by PO-PSMGG had a fragmented framework for monitoring e-government initiatives and outdated guiding instruments. The Audit found that, the Ministry did not have an effective system for overseeing the implementation of policies and other high-level strategies which include planning and acquisition of Government ICT Systems. The review of the monitoring functions of the PO-PSMGG through the e-Government Authority found that, there was inadequate tools for monitoring the implementation of e-Government initiatives and inadequate reporting of monitoring activities.

The absence of monitoring tools was a result of lacking internal monitoring guidelines for overseeing the compliance to guidelines and strategies issued by the PO-PSMGG. Consequently, monitoring reports did not contain details of what activities were monitored, what indicators were being monitored, what was the performance targets and what was the actual targets.

Consequently, inadequate monitoring of e-Government Strategies as done by the e-Government Authority prevented the Ministry from identifying the extent to which the public entities were complying with the manuals and guidelines issued to them. Additionally, the PO-PSMGG was not able to ascertain whether the e-Government strategies were being attained or not. On the other hand, inadequate monitoring reports meant that the government was not able to collect enough information to ascertain the extent to which its directives and other key policy issues governing ICT subsector were being adhered to.

Inadequate Management of ICT Projects Initiation

The audit found that 86% of the concept notes from public institutions were rejected because of errors and other mistakes. The audit noted that the concept notes were developed in an ad-hoc way, without considering alignment to e-government guidelines and regulations.

Furthermore, the audit noted that between 2017 and 2022, a total of 645 advisory notes were issued to public institutions for comments on the submitted project proposals. However, only 44 of them, equivalent to 7%, were issued on time while the rest were delayed with different tardiness. The analysis performed indicated that 85% of the advisory notes were issued beyond 60 days. In some cases, it took more than 2 years to issue the advisory notes.

The cause of inadequate preparation of concept notes was a lack of public institutions awareness on e-government regulations and the guidelines on the preparation of concept notes. It was further noted that the e-Government Authority did not take adequate initiatives to raise awareness concerning the importance of following up procedures during the acquisition of new ICT systems to public institutions.

Consequently, inadequate involvement of responsible and accountable institutional staff in all steps of acquiring the system including preparation of concept notes led to the existence of ICT systems that did not deliver the intended benefits and services. For example, the ICT system may be acquired with additional cost, poor quality and its development may not be completed in accordance with the agreed contract time.

The ICT System Requirements were Not Adequately Prepared and Communicated

The audit found that not all stakeholders were engaged in the development of ICT systems. The high level of stakeholder's involvement was noted at EWURA and GPSA followed by TRA with 83%, 80% and 62.5% respectively. The lowest level of involvement was noted at the Ministry of Agriculture and DUWASA with 33% and 37.5% respectively.

The audit revealed that, some of the stakeholders were partially engaged to provide requirements for one business segment or module, while others were fully engaged in providing inputs for all main business processes during requirements gathering. It was revealed that, the inadequate

involvement of stakeholders was caused by insufficient knowledge of the standards, procedures and prevailing guidelines for development of ICT systems among public institutions.

Consequently, the non-involvement of stakeholders resulted to preparations of inadequate system requirement specifications. Inadequate system requirement specifications led to imperfect systems design, which have led to re-designing of ICT systems after acquisition. For instance, 14 ICT systems from the visited public institutions had been redesigned to accommodate new user requirements.

Inadequate Management of Development and Configuration of ICT Systems

The audit found that there was inadequate controls and quality assurance in planning and acquisition of ICT systems, limited integration and interoperability, irregular systems hosting environment, insufficient controls of front-end and back-end technologies, acquisition of systems without approval of eGA, limited in-house capacity to develop systems and inadequate reliability and guarantee of business continuity for the developed or configured ICT systems particularly after granting approval for development of the respective ICT systems.

The audit found a weakness in controls on the acquisition of ICT Systems soon after approving the project initiation stage which is done by eGA. The project correspondence files indicated that there were few controls from public institutions after the first stage of project initiation when the public institution submitted its proposals. Out of the six key phases of project acquisition, five of them were not sufficiently overseen by eGA, even though they were affecting the overall level of compliance with the e-Government Act and its Regulations.

A further review of ICT systems development files from the visited institutions found that there were no quality assurance functions conducted for systems which were developed by the institutions or configured for use in the respective institutions.

As a result, the developed systems were reported to have different categories of issues after the implementation which resulted from weaknesses in controlling the quality of the developed ICT systems. The most reported issues were the system downtime due to bugs and other vulnerabilities whereby 18% systems were reported to have developed

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challenges that affected its operations through faulty system designs. Product downtimes was reported in 32% of the systems which were assessed during the audit. Meanwhile, only 11% of the systems were abandoned by the respective users.

The review of Government ICT systems from the visited government institutions indicated that most of the acquired systems were operating in isolation, and were not capable of communicating with other systems within or outside the entities. According to the review of the ICT systems in the visited public institutions, about 70% of the systems used are non-interoperable.

Ineffective Testing and Commissioning of ICT Systems

The audit found that test results and corresponding reports for the acquired ICT systems pointed out weaknesses that rendered the testing activities non-effective. The review of the test results and the corresponding reports indicated that, the public institutions conducted the most common user acceptance testing (UAT) only. Very few public institutions have been conducting integration testing.

The audit team visited 13 public institutions and assessed a total of 64 ICT systems whereby, 13 of them were internally acquired by government institutions while four were government-wide shared systems and the other 47 systems were outsourced. The assessment of all 13 internally acquired systems showed that integration testing was conducted to only two of the systems while the rest conducted the normal User Acceptance Tests (UAT). The UAT were not capable of identifying the extent to which the acquired systems were interoperable.

Inadequate Customer Support to Public Institutions

The audit found that the e-Government Authority was not providing sufficient support to public institutions during incidences and requests for services for all events in their information systems. A review of eGA help desk statistics noted the presence of service requests from public institutions that needed attention from eGA, however, the service requests were not addressed on time.

From the information that was collected at e-Government Authority, only 12% of the high risks and extremely high risks service requests and incidences from public institutions were attended on time, while the rest (88%) of the requests were not attended on time. Specifically, 33% of the high risk tickets were closed between 1 and 3 days, 30% were closed between 4 and 14 days while 18% were closed at a period of more than 30 days.

Furthermore, the review of the performance reports from the financial years 2017/18 to 2021/22 indicated that, eGA did not conduct customer satisfaction surveys. The surveys were intended to indicate the extent to which customers were satisfied with their services by a score of either high or low service quality. As a result, the absence of customer satisfaction surveys impaired the capacity of the organization to evaluate the quality of its services and be able to undertake necessary measures to improve the services.

Audit Conclusion

The audit concludes that the management of planning and acquisition of ICT systems in public institutions has not been efficient and requires effective measures to increase controls for public institutions acquiring ICT systems. PO-PSMGG has not been able to fully exercise its oversight function in the planning and acquisition of ICT systems, which is an important stage in acquiring total oversight function on the developed ICT Systems.

On the other hand, PO-PSMGG has not sufficiently executed its oversight function on public institutions and eGA's performance because of lacking effective oversight instruments in managing planning and acquisition of ICT systems. As a result, the extent of compliance to the e-Government laws, regulations and other general guidelines is still low.

Additionally, the e-Government Authority has not been able to effectively oversee the planning and acquisition of ICT systems, in particular, the project's initiation and planning. At this juncture, the public institutions are not providing sufficient justifications acceptable to the e-Government Authority for acquiring the planned ICT systems. Furthermore, the e-Government Authority has not been able to effectively enhance

compliance with public institutions concerning preparations of systems user requirements and developing the respective systems requirements.

The system's development activities are not sufficiently overseen by the Authority in a way that ensures the key requirements and compliance levels are attained by the public institutions, which are automating their business processes. On the other hand, public institutions have not been conducting a sufficient number of required tests to be able to ascertain whether the acquired systems are meeting the defined user requirements and that they are of the desired quality to achieve the required objectives.

Public institutions have been increasingly automating their business processes which are not sufficiently correlated with controls from the responsible regulatory authorities during planning, development and operationalization of the acquired systems. The e-Government Authority has been able to develop sufficient number of technical guidelines and standards. However, the rate of compliance and extent of adherence in planning and acquisition of ICT systems has not been sufficient.

Audit Recommendations

Recommendations to the President's Office - Public Service Management and Good Governance

The Management of the President's Office – Public Service Management and Good Governance is urged to:

a) Review the functions and organization structure of the Directorate of Government ICT Services at the Ministry in order to enhance the effectiveness of development and monitoring of policy and standards for the Government ICT sector;

b) Review the monitoring and evaluation framework for planning and acquisition of e-Government initiatives including the development of ICT systems so as to enhance the effectiveness of e-government standards and guidelines; and

c) Complete and monitor the implementation of the e-Government strategies which shall provide the roadmap for achieving coordinated, connected and secured e-Government.

Recommendations to the e-Government Authority

The Management of the e-Government Authority is urged to:

a) Strengthen the feedback mechanism from eGA that will ensure that requests for developing ICT Systems are responded to in a timely manner to allow government institutions to undertake the proposed projects on timely basis;

b) Enhance the functionality of GISP in a manner that will allow public institutions to provide progress reports in a format that can automate data analytics and progress monitoring in order to strengthen its oversight in planning and acquisition process;

c) To ensure that public institutions provide all progress reports and milestones during development of ICT systems even after providing advisory notes to proceed with the development of ICT systems in the Government Institutions;

d) To ensure that the ICT Systems acquired by public institutions are interoperable and allows integration with other ICT Systems within the government;

e) To ensure that all ICT Systems developed or configured in the public institutions undergo the security assessment prior to its deployment in order to safeguard the government information assets from compromise and breaches;

f) To develop effective controls for ICT Systems acquired by public institutions which are donated by development partners;

g) To ensure that public institutions strengthen quality control for the systems which are developed or acquired by public institutions in order to enhance the quality of acquired systems;

h) Develop an objective decision-making mechanism that will be used for approving or disapproving the submitted proposals for developing ICT systems for public institutions; and

i) Revise the allocation of staff for provision of customer support to public institutions so as to ensure that there is a dedicated and skilled set of resources for providing on-demand customer support to public institutions.

CHAPTER ONE

INTRODUCTION

1.1   Background

The use of ICT system within government entities has become increasingly significant in recent decades, particularly following greater evolution of computer, accessories, the use of internet and organizational intranets.

The management of ICT systems and e-government initiatives in the government started in 1980's while responding to economic reform crisis. The government had realized that, policies and strategies were not in consonance with the principles of market led economics and technological developments occurring in the world. Therefore, in addition to the short-term plan of three years and mid-term vision of 15 years; in 1995 the Government decided to develop a vision 2025 as a long-term vision for the country on development including the development of the ICT environment. This has made ICT to be among the key component of any government entity's business strategies and core business processing activities. Because of its importance, the management of ICT systems has therefore been elevated within entities and now forms a key part of corporate governance.

Tanzania is currently in the development stage of advancing towards automation of business activities from the public and private sector. There has been an increase in the deployment and utilization of ICT systems within the economy and society. The majority of the ICT systems that are currently being implemented in the country include three major categories of systems: information systems, control systems and communication systems. Some of the public institutions with high ICT maturity levels have all three major categories of ICT systems while some may contain one or two with different levels of advancement.

To achieve vision 2025, and to respond to massive development of ICT the Government realized the importance of formulating its own policies. As a result of this, a National ICT Policy was developed in 2003, and reviewed in 2016, to enable Tanzania to succeed in the area of telecommunication, infrastructure, development of human capital and use of ICT in public service delivery. Other initiatives included establishment of an e-

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Government Agency in 2012 which was later (in 2019) changed to an e-Government Authority for overseeing, coordinating and promoting operation of e-government services, management of electronics data and for other related ICT matters in the government entities; and the Tanzania Communications Regulatory Authority Act, 2003 to regulate ICT's applications and related matters.

Since its establishment, the e-Government Authority has been deploying measures that are aimed at ensuring that there is an effective oversight on the planning and acquisition of ICT systems in the country. Planning and Acquisition of ICT systems is the key step in ensuring that there is a strongly regulated and managed ICT sub-sector because it sets the foundation at which all other downstream interventions can be undertaken. Planning and Acquisition entail the identification of the need to automate business processes, defining the requirements, and developing the required solutions deploying them in the business environment for utilization.

Despite the efforts that have been exerted by eGA, the e-government initiatives have continued to face challenges that have demanded immediate and long-term solutions to enable smooth and secure e-government operations.

1.2 The Motivation for the Audit

The audit was motivated by the following factors:

(i) Duplication of Efforts in Implementing ICT Systems

According to eGA Performance Report of 2012 to 2017, there is an existence of recently developed Silo[1] based e-government ICT systems within public entities ever since the start of transformation to government-wide shared systems.

As an impact of this, the government has been incurring additional costs by engaging in development or acquisition of ICT systems that serve the same functions in different government institutions instead of sharing ICT infrastructure procured from one government institution to another.

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[1] Silo based ICT systems are those which are operating independently with no interconnection or integration with other systems

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(ii)   Inadequate Management of ICT Security Threats

Section 3 of the e-Government Strategy 2022 requires consideration to be given on using security and privacy mechanism to ensure the proper use and handling of personal information and transactions. This is expected to go parallel with assuring security, legality, protection of privacy, prevention of intrusion and detection of attempts at un-authorized access.

However, the increased use of the ICT equipment has brought other challenges related with exposure to government ICT infrastructures and security threats and attacks that risks and causes loss to government financial and information assets. According to Tanzania Cyber Security Report 2017, Tanzania is estimated to lose USD 99.5 million annually due to cyber-attacks.

The main causes of weaknesses of the government in managing security concerns are mentioned by the ICT Policy (2016) being unsafe and unsecure use of ICT infrastructure and absence of cybersecurity awareness trainings. A research conducted in 2018[2] using a sample of 75 government employees using ICT equipment indicated that, 86.7% of them were not able to identify and manage internet safety issues. Furthermore, according to e-Government Strategy 2013, the lack of a secured and shared infrastructure to integrate and run common e-Government applications and services is likely to put additional financial burden and greater security risks to the Government in the long run.

(iii)   System Underutilization

Baseline Study on e-Government conducted in 2018 by the Ministry of Communication, Science and Technology indicated that there is a low level application of ICT services in the public sector in Tanzania. The National ICT policy 2016, pointed that one of the challenges that leads to underutilization of the ICT services is the predominance of English language in the internet contents which are accessible to citizens.

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[2] Kweka, H.K, (2018), *Constraints Hindering Adoption of ICT in Government Secondary Schools in Tanzania: The Case of Hanang District*, Tanzania.

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Furthermore, the Baseline Study also found that, other factors (apart from language barrier) that contribute to system underutilization are non-integration of the systems, lack of training, connectivity and absence of automated processes which downgrades the rationale for acquisition of developed or procured ICT systems.

(iv)   Insufficient Local Content and Hosting of ICT Infrastructures

Policy objective 3.8.1.1 of the National ICT Policy requires the encouragement of local ICT development by supporting and providing incentives for innovation in software and hardware. However, a study conducted by the Ministry of Communication, Science and Technology in 2016 indicated that, there was little progress in the last 15 years of the implementation of National Information and Communication Technology Policy (2003), with regard to the development of local content and hosting of ICT infrastructure locally. This is because, the public institutions were using imported information and communication technologies and have been engaging foreign vendors in acquisition of ICT systems that are being used in the government.

Furthermore, the Ministry of Communication, Science and Technology through its study conducted in 2015 pointed that, the country is still dependent on foreign importation of ICT contents, software and hardware. The technical expertise in ICT development comes from foreign countries with little engagement of local experts and infrastructures.

Therefore, based on the factors mentioned above, the Controller and Auditor General decided to conduct Performance Audit on the Planning and Acquisition of ICT systems in order to establish the factors underlying the weaknesses noted in the e-Government subsector in the country, and provide recommendations that will improve the provision of e-Government services to public institutions.

1.3 Audit Design

1.3.1 Audit Objective

The objective of the audit was to determine whether the President's Office - Public Service Management and Good Governance (PO-PSMGG) and e-Government Authority (eGA) were effectively managing the planning and acquisition of Government ICT systems in Tanzania mainland, in a manner that ensures the anticipated benefits are achieved and risks were minimized.

Specific objectives of the audit were to assess whether:

    (a) Public institutions acquire ICT systems in a manner that enhance the achievement of anticipated benefits;

    (b) eGA ensures that acquisition of ICT Systems in the government is properly planned and initiated;

    (c) eGA has a proper mechanism to ensure that ICT systems requirements are sufficiently prepared and communicated to all relevant stakeholders prior to acquisition of ICT systems in the government;

    (d) eGA ensures that government institutions develop or configure ICT systems that effectively supports their business processes;

    (e) eGA ensures that testing and commissioning of the acquired ICT systems is effectively done; and

    (f) eGA received effective oversight by the Ministry (PO-PSMGG) to ensure that planning and acquisition of ICT systems in the government is effectively done.

In order to address the audit general and specific objectives, the audit questions and sub-questions were developed as detailed in *Appendix 2*.

1.3.2 Scope of the Audit

The main audited entities were the President's Office - Public Service Management and Good Governance (PO-PSMGG) and the e-Government Authority (eGA). This is because the President's Office - Public Service Management and Good Governance is mandated to oversee the management of the e-government subsector in the country. This covers the provision of electronic government services in the country including the development of policies and other guiding instruments for

administering government ICT systems and in particular e-government services.

The e-Government Authority, on the other hand, is responsible for managing the planning and acquisition of ICT systems within the government for the whole country[3]. The e-Government Authority undertakes all functions that regards to overseeing the management and acquisition of ICT systems by all government institutions in the country.

The audit focused on assessing the effectiveness of the Authority in managing the initiation of ICT system acquisition, requirements gathering and specifications development, execution of system development or configuration of the proposed ICT Systems, testing and commissioning of the systems and the oversight of planning and acquisition of ICT Systems in the government.

With respect to ICT project initiation, the audit focused on assessing the extent to which concept notes are prepared, reviewed and approved by the e-Government Authority (eGA) as well as the development of business cases. The audit also assessed the extent to which the initiation stage clearly defines the need and justifies the reasons for acquiring the prospective ICT systems. Regarding requirements gathering, the audit assessed the extent at which systems and user requirements are effectively gathered in a manner that adequately addresses the user business processes, and that correct system specifications are prepared prior to the acquisition of ICT systems. The audit also checked the adequacy of the system requirements document before adopting it in the development or configuration process.

With regard to the development or configuration, the audit focused on assessing the acquisition activities including the supervision of development or configuration activities before the acquisition of ICT systems.

Regarding the testing and commissioning, the audit mainly focused on assessing the effectiveness of system and integration tests, as well as the user acceptance testing to ascertain the adequacy of systems to meet user's requirements.

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[3] The e-Government Act 2019.

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Regarding the oversight role, the audit focused on assessing the effectiveness of the PO-PSMGG in monitoring the performance of eGA in overseeing the planning and acquisition of government ICT systems.

The audit covered the entire range of business application systems acquired within all government institutions in the mainland Tanzania.

The audit covered a period of five financial years from 2017/18 to 2021/22. The selected span of years enabled the Audit Team to analyse the performance of eGA before and after changing the mandate from being and Agency to becoming an Authority.

1.4 Assessment Criteria

The assessment criteria for main audit questions and sub-questions were drawn from the laws, regulations, guidelines, manuals, plans, reports and best practices acceptable in the management of ICT Systems in the Government. In general, the following assessment criteria were used to assess the performance of both PO-PSMGG and eGA in planning, requirements gathering, development or configuration, testing and commissioning of ICT Systems in the Government.

The following are some of the key assessment criteria for each specific audit objective.

(a)   The ICT Project Initiation and/or Planning

Section 3.1.2 of ICT Project Management Guideline requires eGA to ensure that government institutions develop business cases or project charter documents which provide conceptual understanding of the projects which would also help to accomplish the mapping of the business processes.

Section 24(2a&b) of eGA, 2019 requires eGA to advice the public institutions to formulate competent teams that will ensure compliance with technical standards and guidelines and avoid duplications for effective implementations of ICT projects as recommended by e-Government. Also, Section 24(2a) of the same document requires eGA during the planning stage to provide permission for solicitation of the fund for submitted ICT project plan before acquiring or developing a new system.

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Section 5.1.2 of ICT Project Management Guideline requires the Authority to have the plan, review the project POS, scope and major stakeholders' expectation. Take note of the key assumptions and constraints as defined in the scope.

Regulation 28 of the e-Government General Regulation, 2020 requires the Authority to approve the concept note and communicate its written feedback to the respective public institution within fourteen working days.

(b) Systems Requirements Definition and Specifications Development

Government Strategic Plan 2021/2022 – 2025/2026 requires the Authority to implement strategies that ensure the e-Government initiatives are implemented in an integrated manner to meet the requirements of different Stakeholders, thereby enabling them to contribute to the national development.

Section 2.3.3 of the e-Government Guideline requires eGA to ensure that all planning for ICT development and use is being aligned with and serves the Institution's strategic goals and directions.

The e-Government Strategic Plan 2021/2022 – 2025/2026 require eGA to ensure that the plan responds to the different stakeholders' needs and expectations based on the experience of the former e-Government Agency, and puts forward the mission and vision of the newly established e-Government Authority.

Section 20 of eGA, 2019 requires the Authority to ensure that data, information exchange and internet connectivity between public institutions were done through a secured Government network or infrastructure approved by the Authority.

(c) Development or Configuration of ICT Systems

Section 2.3.3 of the Standards and Guidelines for Government ICT Project Implementation requires public institutions to perform quality assurance checks to measure the quality of the output of the ICT systems developed.

Section 2.3 of the ICT Project Implementation Guideline requires public institutions to develop and implement a high-quality, customer service support system. Furthermore, Strategic Plan 2021/22 – 2025/26 require

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eGA to strengthen the capacity of Public Institutions on provision quality and effective e-Services to the Citizens. Also, Section 2.1.3.2 of the National ICT Policy 2016 address the issue of strengthening quality control and standardization in the ICT industry within the government.

Section 6.9 of ICT Project Review Checklist by eGA highlights that any ICT systems developed by government institutions are required to address the issue of integration and interoperability to other systems. It also has to consider system reliability and availability including Business Continuity/Disaster Recovery for effective service delivery.

Section 6.4 of the ICT Project Review Checklist by eGA requires systems that are developed by public institutions to use open-source software.

Section 1.6.3 of the ICT Project Review Checklist by eGA requires the source codes for the developed or configured ICT systems to be owned by the government, in case they are not owned by the government then an escrow agreement should be in place.

(d)   Testing and Commissioning

Section 1(a) of the e-Government Act, 2019 requires eGA to ensure that public institutions attain organisation interoperability and ensure that they collaborate with eGA in the development, deployment, and delivery of e-government services; define its shared services; consider interoperability during business process re-engineering

Section 6.1.1 of e-Government Guidelines requires for the purpose of compliance the public institutions shall opt to use open-source software over proprietary software whenever possible given the fact that open-source software is flexible, easily customizable and interoperable".

Section 35(1) of the e-Government Act, 2019 requires, for the purposes of efficiency, government service providers are required to deliver services that will integrate with the government systems to maintain and upgrade the computerised facilities and perform such services as it may be specified, by order published in the gazette".

Section 1.9.4 e-Government ICT Project Review Criteria requires the maintenance and operations costs after implementation, including running costs, upgrade costs, operation costs, and license costs shall be optimised and the sources of these funds shall be sustainable".

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(e)   Oversight of the Acquisition of ICT Systems

Section 2.2.2 of PO-PSMGG Strategic Plan 2021/22-2025/26 highlights that President's Office – Public Service Management and Good Governance is responsible to enhance capacities of Public Institutions on implementing ICT Policies and Strategies. (Section 4.1 National e-Government Strategy 2013) highlight that the Ministry is required to strengthen monitoring and evaluations (M&E) systems which help to measure and track the impact of various measures on e-government;

Furthermore, Section 3.2 of e-Government Strategy 2013 indicates that PO-PSMGG is responsible to strengthen oversight and coordination of e-government initiatives across the Government and its partners in order to enhance productivity and knowledge sharing. Section 5.2 of the National ICT Policy 2016 requires PO-PSMGG to develop e-government policy and facilitate its implementation in Government institutions;

1.5   Sampling, Methods for Data Collection and Analysis

The audit team used various methods for sampling, data collection and analysis.

1.5.1   Sampling

Based on the audit design, two levels of sampling were considered. A sampling at the level of institutions visited, and sampling at the level of ICT systems studied. At the level of institutions that were visited, the audit considered five main categories of institutions under the Government of Tanzania mainland which includes Ministries, Departments, Agencies, Public Authorities and Local Government Authorities.

To determine the sample size for the number of institutions visited, the audit considered the total number of institutions in the prospective population of 83 institutions registered in the GISP system. Yamane's formula was applied to obtain the sample size using a 90% confidence interval and 10% precision level. The sample size was found to be 44 institutions. Applying the optimisation proportion of 30%, the sample size of institutions to be visited was determined to be 13 institutions. Based on the weights of the total number of ICT systems registered in GISP, the sample of 13 institutions was distributed into 5 categories of institutions

and the number of institutions per each category was identified as presented in **Table 1.1** below.

Table 1.1: The Number of Institutions Visited on Each Category

Ministries	Independent Departments	Executive Agencies	Public Corporations	LGAs	Total
3	2	2	4	2	**13**

Source: Auditors' Analysis on the Number of Institutions Visited (2022)

The selection of the respective institutions that were visited was based on the database of the Government ICT systems currently owned by eGA. The selection of institutions visited was based on four main factors with justifications provided in the sections below:

- The sector under which the core function of the respective ICT system was categorised;
- The count (number) of ICT systems owned by specific institutions under a specific sector;
- Assessment of the number of ICT systems currently owned by a public institution out of the total number of ICT systems; and
- ICT systems load among other systems.

To obtain representative ownership of the systems sector-wise, the systems were first categorised into the country's administrative sectors based on the categorisation of the Five-Year Development Plan III (2021/22-2025/26). The matching of the core function of the ICT System within a sector generated a list of 377 systems under 18 different sectors which constituted a sampling frame where samples were ultimately drawn. Before selecting the government institutions, the prospective list of ICT systems was clustered into 18 sectors where the institution with the highest number of ICT systems owned and the one with the lowest number of ICT systems were identified and marked.

Thereafter, institutions with the highest number of ICT systems were ranked to obtain the first up to the last among those with the high number of ICT systems within a specific sector. The same was done for those institutions with a low number of ICT systems within a sector.

In order to capture the effect of the weight of the number of systems owned by a respective institution and obtain a more representative ranking score, the institutions were again ranked based on the total number of ICT systems owned out of the total number of 377 systems

registered in the GISP. The rankings were combined with the sector ranking to obtain one composite rank which was used to perform a final ranking and select the respective sample. The final ranking is presented in *Appendix 3*.

The final list of institutions which were selected is included in **Table 1.2** below. The final selection of institutions in each category was done on series by including the first appearing institution in each category until the number of items in each category were fully completed. The PO-RALG was included in addition to form one government category of LGA's which was not exclusively captured in the GISP Data.

Table 1.2: List of Institutions Selected

Category	List of Institutions
Ministries	• Ministry of Health • Ministry of Agriculture • PO-RALG
Independent Departments	• National Land Use Planning Commission • Teachers Service Commission
Executive Agencies	• NFRA • GPSA
Public Corporations	• TRA • EWURA • Ngorongoro Conservation Authority(NCA) • DUWASA
LGAs	• Mwanza City Council • Mbeya Municipal Council

Source: Auditors' Analysis on the Selected Institutions (2022)

At the level of ICT Systems, the audit conducted a sampling of systems to be studied while visiting the specific institutions during the execution of the audit. The audit considered all three major categories of ICT systems including information systems, control systems and communications systems. The selection of ICT systems to be studied was based on the following three factors:

- Cost of acquiring the system;
- Number of users of the ICT system; and
- The time when it was acquired (i.e. Before and after the establishment of eGA)[4]

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[4] Both time categories will be considered with equal weight (Before and After eGA)

The sample of the ICT systems selected were communicated to PO-PSMGG and eGA while conducting the audit.

1.5.2 Methods for Data Collection

During data collection, both qualitative and quantitative data were collected so as to provide a strong and convincing evidence on the performance of eGA in the management of Planning and Acquisition of ICT Systems in the government. The Audit used different methods to collect information from the audited entities and other stakeholders. These methods include interviews, document reviews and system walkthroughs as detailed below.

(a)   Interviews

During the execution of the audit, interviews were held with officials from the President's Office Public Service Management and Good Governance and e-Government Authority. Additionally, interviews were made with selected officials from Ministries, Departments, Agencies, Public and Local Government Authorities which constitute a sample of institutions visited.

Interviews were held with Directors of Compliance and Security Management and Corporate Services as well as Managers responsible for Initiatives and Project Management as well as Planning, Monitoring and Evaluation. These officials were interviewed because they were responsible for executing eGA's regulatory function on planning and acquisition of ICT systems within the government.

From the public institutions which were visited, the Audit Team interviewed the heads of ICT Departments and Officers responsible for managing the planning, acquisition and development of ICT systems. These Officials were interviewed because they were responsible for ensuring that Public Institutions acquire ICT systems in a manner that will ensure that the acquired systems serve the intended purposes.

Interviews were used to validate the information from the documents reviewed. A list of officials interviewed is presented in *Appendix 4*.

(b)   Documents Review

The Audit reviewed various documents from PO-PSMGG, eGA, as well as the Ministries, Departments, Agencies, Public and Local Government Authorities visited so as to get comprehensive, relevant and reliable information about the performance of eGA in managing the planning and acquisition of government ICT systems.

Reviewed documents from the above-mentioned entities were those filed within the period under the audit, i.e. from July, 2017 to June, 2022. These documents include reports on; Annual Plans, Performance, Compliance Assessment, Security Assessment, Concepts Notes Review, GISP Database and ICT Quality Control.

The detailed list of documents which were reviewed and the reasons for review are indicated in *Appendix 5*.

(c)   System Walkthrough

A system walkthrough was conducted on ICT Systems operated by the public institutions which were visited. The walkthrough was expected to assess the functionality of the systems, the indications of errors or bugs from the systems and the effectiveness of the controls and security features embedded with the acquired ICT systems. The walkthrough was also expected to determine whether the developed ICT systems increased operational efficiency and smoothed the operational bottlenecks.

Systems walkthrough were done through discussions with ICT Officers and business process owners from respective public institutions through as well as accessing the respective systems. In general, the following actions were undertaken:

- Obtaining overview of the system design and data structure
- Functionality of the systems
- Testing the functionality of the systems
- Understanding observed challenges and troubleshooting processes.

1.5.3 Data Analysis Methods

The audit team used different techniques to analyse both qualitative and quantitative data that was collected during the execution of the audit.

a) Analysis of Qualitative Data

- Content analysis techniques were used to analyse qualitative data by identifying different concepts and facts originating from interviews or document reviews and categorise them based on its assertion;
- The extracted concepts or facts were either tabulated or presented as it is to explain or establish a relationship between different variables originating from the audit questions;
- The recurring concepts or facts were quantified depending on the nature of the data it portrays; and
- The quantified information (concepts/facts) was summed or averaged in spreadsheets to explain or establish the relationship between different variables.

b) Analysis of Quantitative Data

- Quantitative information with multiple occurrences were tabulated in spreadsheets to develop point data or time series data and relevant facts extracted from the figures obtained;
- The tabulated data were summed, averaged or proportionate to extract relevant information and relationships from the figures;
- The sums, averages or percentages are portrayed using different types of graphs and charts depending on the nature of data to explain facts for point data or establish trends for time series data; and
- Other quantitative information/data with single occurrence are presented as they were in the reports by explaining the facts it asserts.

1.6 Data Validation Process during the Audit

The President's Office- Public Service Management and Good Government (PO-PSMGG) and e-Government Authority (eGA) were given the opportunity to go through the draft performance audit report and comment on the figures and information presented. The PO-PSMGG and

eGA confirmed the accuracy of the information and figures presented in the report as shown in *Appendix 1* of this report.

The information was also cross-checked and discussed with experts in the field of ICT Systems Management to obtain their opinions and confirm the validity of the information and facts presented.

1.7   Standards Used for the Audit

The Audit was done in accordance with the International Standards of Supreme Audit Institutions (ISSAIs) on performance audit issued by the International Organization of Supreme Audit Institutions (INTOSAI). These standards require that the Audit is planned and performed in order to obtain sufficient and appropriate audit evidence to provide a reasonable basis for the audit findings and conclusions.

1.8   Structure of the Audit Report

The remaining parts of the audit report cover the following chapters as indicated below;

CHAPTER TWO
- System for Planning and Acquisition of ICT Systems in the Government

CHAPTER THREE
- Audit Findings

CHAPTER FOUR
- Conclusion

CHAPTER FIVE
- Recommendations

APPENDICES
- APPENDIX 1 Responses from Auditees
- APPENDIX 2 Audit Questions and Subquestions
- APPENDIX 3 Ranking and Selection of Institutions
- APPENDIX 4 List of Persons Interviewed
- APPENDIX 5 List of Documents Reviewed
- APPENDIX 6 Organisation Structure of e-Government Authority
- APPENDIX 7 List of ICT Systems which were Assessed

CHAPTER TWO

SYSTEM FOR PLANNING AND ACQUISITION OF ICT SYSTEMS IN THE GOVERNMENT

2.1 Introduction

This chapter describes the planning and acquisition of ICT Systems in the Government. It covers policies and the legal framework that governs the ICT systems for e-government services delivery, roles and responsibilities of key actors involved in the whole processes for coordinating, overseeing and promoting e-Government initiatives.

2.2 Policies and Legal Framework

The ICT Sector is governed by policies and other legal instruments in different levels of government operations. The following sub-sections provide details of the e-Government and other related frameworks required to execute e-government duties.

2.2.1 The Policy Governing ICT Systems in the Government

The Government ICT sub-sector is governed by various policies which provide for different functions in the ICT sector in the government and related duties.

a) The National ICT Policy of 2016

The Management of ICT Systems in the government is governed by the National ICT Policy of 2016. This Policy reckons that, the objective of ICT services in the country is to accelerate socio-economic development in order to transform Tanzania into a middle-income economy and information knowledge society. Among other things, the Policy aims to address the issue of using ICT in public institutions to enhance service delivery.

b) The National Telecommunications Policy of 1997

The National Telecommunications Policy (NTP) of 1997 underlines the direction of policy and procedures for the period of 1997 through 2020. The strategies were geared to invest in telecommunications services to ensure the efficient development of an ICT infrastructure that will provide

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universal access of e-services to all sectors of the population including public services.

The NTP also addresses the issue of development to all stakeholders in line with national micro-economic, legal and regulatory frameworks. Therefore, objectives of the telecommunications policy are to pursue strategies geared towards encouraging investments in the sector, enhancement of quality and reliability of telecoms services and networks.

All these above mention policies were formulated to address the issue of accelerating socio-economic development and transformation, ICT security and infrastructure, and financial transaction services.

2.2.2 Laws Governing the Planning and Acquisition of ICT Systems

The Government ICT sub-sector is governed by diverse laws and regulations which provides for different functions and legal framework in the ICT sector. The available laws for executing e-government services delivery include the following:-

a) The e-Government Act, 2019

The e-Government Act was enacted in 2019 to make provisions for e-Government services; the establishment of the e-Government Authority and its administrations; the management of electronic data and other related matters. The act requires the Authority to coordinate, oversee and promote e-Government initiatives and enforce e-Government in related policies, laws, regulations, standards and guidelines in public institutions.

b) The Electronics and Postal Communications Acts (EPOCA) of 2010

The Electronic and Postal Communications Act (EPOCA) of 2010 governs all electronic and postal communications and telecommunications in Tanzania. The Act is administered by the Tanzania Communications and Regulatory Authority (TCRA). Various supporting regulations have been made, including the Electronic and Postal Communication (Consumer Protection) Regulations, GN. No. 427 of 2018, the Electronic and Postal Communications (Investigation) Regulations, 2017 and the Electronic and Postal Communications (Computer Emergency Response Team) Regulations, 2018.

The EPOCA of 2010 set rules for interconnection, access, co-locations and infrastructure sharing of ICT systems. TCRA has the mandate to approve or reject communication services providers' infrastructure sharing agreements that do not fit the technical standard as per EPOCA guidelines.

c) The National Cybercrime Act of 2015

The National Cybercrime Act of 2015 is a supplement Act which makes provisions under EPOCA of 2010. This supplement Act criminalise offences related to Computer Systems and Information and Communication Technologies and provide for the investigation, collection and use of electronic evidence. For security purposes, the rules prescribe the guidelines and procedures to protect a computer system as critical information infrastructure for ICT Systems.

The guides and procedures provided in the Act are summarised in the following diagram.

Figure 2.1: The Summarised Thematic Areas for Guides and Procedures
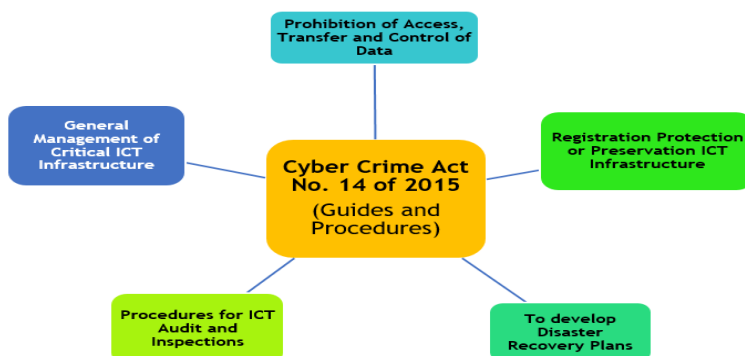
Source: Auditors' Analysis of the Cybercrime Act (2015)

2.2.3 Strategies for the Management of ICT Systems in Tanzania

The implementation of e-Government is backup by several strategies. These strategies provide direction for enhancing the ICT Sector in implementing ICT Policies and other instruments in line with Tanzania Development Vision 2025. These strategies include: -

a) The Tanzania e-Government Strategy 2021

The new Tanzania e-Government Strategy of 2021 was attained by doing a situation analysis and evaluating the performance of the implementations of the 2013 e-Government Strategy. The analysis shows that various steps has been undertaken to facilitate the implementation, including (i)tasking the President's Office, Public Service Management and Good Governance (PO-PSMGG) to oversee e-government implementation; (ii)establishing the e-Government Authority to coordinate, oversee, promote e-Government initiatives and enforce compliance of e-government; (iii)establishing related policies, laws and regulations; (iv)instituting appropriate ICT governance structure; (v)improving government business processes; (vi)acquiring and implementing various application systems to support Government internal operations; and (vii)establishing e-government infrastructure.

b) The National ICT Policy Implementation Strategy 2016/17 – 2020/21

Tanzania National ICT Policy 2016 Implementation Strategy translates the policy statements into actions, covering a five-year period from 2016/17 to 2020/21. The Strategy provide direction for enhancing the ICT Sector that are responsible for implementing ICT Policy in line with Tanzania Development Vision 2025.

NICTP strategy implementation aimed to undertake reforms in the legal framework in ICT System management, by putting in place cyber and other related laws; (i) allow and recognize the admissibility of electronic evidence with Act No. 15 of 2007 as amended on No. 3 of 2011, (ii) Electronic and Postal Communications Act No. 3 of 2010, (iii) Universal Communications Service Access Act. No. 11 of 2006, (iv) the Cybercrime Act No. 14 of 2015 and (v) the Electronic Transactions Act No. 13 of 2015. Various other Regulations were made under these Acts to promote electronic communications, consumer protection, and to address cyber security issues.

2.3 Roles and Responsibilities of Key Stakeholders in Managing ICT Systems

In order to assess the management of the ICT System in the Government the audit team identified two entities as key organisations to coordinate, oversee and promote e-Government initiatives. The key actors identified are: The National e-Government Steering Committee, e-Government Technical Committee, President's Office - Public Service Management and Good Governance (PO-PSMGG) and e-Government Authority (eGA).

2.3.1 National e-Government Steering Committee

The National e-Government Steering Committee was established under section 16(1) of the e-Government Act No. 10 of 2019. The Committee is chaired by the Chief Secretary and has the mandate to oversee the national e-Government matters. The specific functions of the Committee include

- Providing strategic and policy direction required to drive the transformation of the public service delivery and administration of digital age; and

- Advising on key ICT Projects and programmes to ensure synergistic and cost-effective adoption of ICT in the Government.

2.3.2 e-Government Technical Committee

The e-Government Technical Committee is established under section 17 (1) of the e-Government Act No. 10 of 2019. This committee is responsible for providing technical guidance to public institutions on implementation of ICT initiatives. Some of the key functions of the committee on management of planning and acquisition of ICT systems include:

- To review and recommend e-Government policies for adoption by all public institutions;
- To review and recommend on e-Government master plan and strategies for adoption by all public institutions;

- To provide technical guidance on resolving conflicts on implementation of key ICT projects and initiatives in public institutions;
- To review and recommend on key national e-Government projects and programmes; and
- To approve e-Government standards and practises to facilitates data sharing across public institutions.

2.3.3 President's Office - Public Service Management and Good Governance

The President's Office, Public Service Management and Good Governance (PO-PSMGG) is responsible to oversee e-Government and ICT Systems implementation in the public institutions. The Ministry is responsible to establish related policies, laws and regulations; instituting appropriate ICT governance structure to the public institutions; monitoring the improvement of Government Business Processes; acquiring and implementing various application ICT systems to support Government internal operations; and establishing e-Government infrastructure to support ICT services. Furthermore, to link e-Government objectives with National Development Goals.

PO-PSMGG developed the e-Government Strategy of 2021 with a vision to achieve connected, coordinated and secure e-government services. The roles of PO-PSMGG in the management of ICT systems are summarized in **Figure 2.2** below.

Figure 2.2: Summarized roles of PO-PSMGG
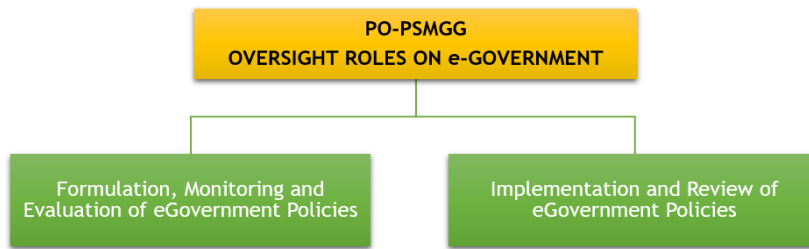
Source: PO-PSMGG Strategic Plan (2020/21- 2025/26)

Organization Structure of the PO-PSMGG

The organization structure for President's Office, Public Service Management and Good Governance was approved by the President as per presidential instruments through GN 385 of May, 7th 2021. The structure has eleven (11) Divisions and five (5) Units. The instrument mandates PO-PSMGG to formulate and oversee the implementation of Policies on Administrative; e-Government; Public Service Housing; Records and Archives Management; and Human Resources Management.

Within PO-PSMGG, the Division of Government Information and Communication Technology Services (DGICTS) is responsible for managing e-Government initiatives. The Division of Government ICT Systems is headed by the Director assisted by Assistant Directors heading the two sections under this directorate; ICT Policy and Standards and the ICT Systems and Services (which is responsible internally within PO-PSMGG).

2.3.4 The e-Government Authority

The e-Government Authority (eGA) is a public institution which is under PO-PSMGG as a Ministry overseeing the public services Sector. The eGA is established by the e-Government Act, 2019 and its general regulations, 2020. The eGA is mandated to coordinate, oversee and promote e-Government initiatives and enforce e-Government in related policies, laws, regulations, standards and guidelines and other related duties in the public institutions as per Section 5 of the e-Government Act.

Organization Structure of e-Government Authority

The e-Government Authority is headed by the Director General who is reporting to the Board of Directors as a governance arm in the institution. The functions of the organisation are delivered through four directorates and seven supporting units. The core functions of the entity are delivered by three directorates including Compliance and Security Management, Service Management and Infrastructure and Operations. The planning and acquisition of ICT Systems is a responsibility of two main directorates; compliance and security management and service management:

Compliance and Security Management: This directorate is responsible for enhancing compliance to policies, laws, regulations, standards, and guidelines related to e-Government; strengthening coordination of cyber security initiatives; and Issuing updates to standards and guidelines periodically for e-government implementation in public institutions.

Service Management: This directorate is responsible for supporting public institutions to apply e-Government standards and guidelines during the planning, acquisition and implementation stages of their respective e-Government initiatives; strengthening the implementation of e-Government Research, Innovation and Development Center; and streamlining consultancy, advisory and technical support service delivering mechanisms.

Infrastructure and Operations: This directorate is responsible for increasing channels to access Government e-services; facilitating public institutions to access reliable and secured shared e-Government infrastructure and system; strengthening e-Government initiatives collaborative framework; and improving e-Government Human Resource capacity in public institutions. The organisational structure of eGA is summarized in a diagram detailed in *Appendix 6*.

2.4 Other Key Stakeholders in the Management of ICT Systems in the Government

2.4.1 Ministry of Information, Communication and Information Technology (MICIT)

The Ministry of Information, Communication and Information Technology (MICIT) is responsible for overseeing the ICT Sector for the whole country. The Ministry is mandated to formulate and monitor the implementation of policies on information and communication technology and postal services for the whole country, including those administered by PO-PSMGG.

The Ministry is responsible for developing standards and policies in the country which oversees the planning and acquisition of ICT systems in the public and private sectors. One of the outputs of the Ministry includes the National ICT Policy and its Implementation Strategy which is supposed to be adhered by all ICT initiatives within the country including the acquired ICT systems in the public sector. The Ministry is also responsible for managing the ICT broadband backbone infrastructure which is the cornerstone of ICT infrastructure in the country.

2.4.2 The Tanzania Communications Regulatory Authority (TCRA)

The Tanzania Communications Regulatory Authority was established in 2003 to regulate telecommunications, broadcasting, and postal services; to provide for the allocation and management of radio spectrum, covering electronic technologies and other information and communication technologies applications.

Specifically, the Authority is responsible for establishing standards for regulated information and communication services, regulating rates and charges, availability, quality and standards of the information and communication technologies in the country. In addition, TCRA is mandated by the Electronic and Postal Act of 2010 to establish Computer Emergency Response Team (CERT) to coordinate cyber security incidents at the national level and cooperate with regional and international entities involved with the management of cyber security incidents.

2.4.3 Tanzania Telecommunications Corporation (TTCL)

The Tanzania Telecommunications Corporation is a public corporation established to plan, build, operate and maintain strategic

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telecommunications infrastructure proclaimed by the government and to provide commercial and economic viability of telecommunications services.

TTCL is mandated to operate and maintain all types of telecommunication networks, including Information and Communications Technology systems and services within and outside the United Republic of Tanzania. TTCL is the key provider of the internet broadband services to public institutions which is the main driver of information communication technologies among them.

2.4.4 Ministries, Departments and Agencies (MDAs) and Local Government Authorities (LGAs)

The e-governance initiatives are to embrace ICT in executing daily operations and services by use of the networked computer with internet access. Therefore, public institutions are required to set ICT Administration Units in their MDA's and LGA's offices. This is a potential section to improve the coordination of ICT activities, to capacitate staff with enough ICT skills and equip the ICT Division to accommodate challenges that come with ICT applications.

In collaboration with PO-PSMGG, eGA is required to enforce ICT policy and security framework to accommodate government initiatives and challenges associated with the implementation of ICT Systems as applied in service delivery. The relationship between different stakeholders in the management of ICT systems in the government is shown in **Figure 2.3** below

Controller and Auditor General

Figure 2.3: Relationship between Different Stakeholders in the Management of ICT Systems in the Government
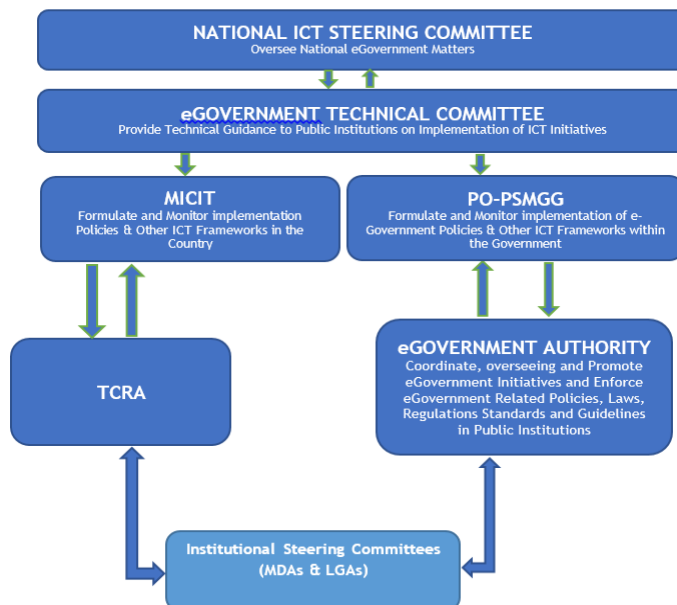
Source: Auditors' Analysis from reviewed Policies, Laws, Regulations and Guidelines (2022)

2.5 Resources for Managing Planning and Acquisition of ICT Systems

2.5.1 Human Resources

The human resources at eGA constitute various professions relevant to undertaking operational roles in the management of planning and acquisition of ICT Systems in public institutions. The staffing portfolio also includes other relevant professions in support sections responsible for supporting the operations of eGA in undertaking its core functions.

The operations of eGA are undertaken on two levels of operations, at the Headquarters and Zonal Offices. As of June 2022, the total number of staff at eGA was 221 distributed in three operational locations including Headquarters and Dar es Salaam and Iringa operational zones. The percentage and category of major professions are provided in **Figure 2.4** below.

Figure 2.4: Staff Category by Profession at eGA as of June 2022
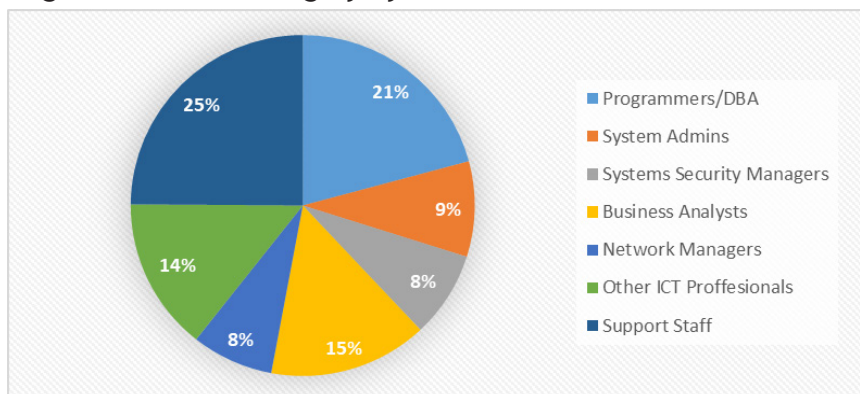
Source: eGA (2023)

As indicated in **Figure 2.4**, the staffing profile at eGA consists of different professions, the majority of them being Computer Programmers and Business Analysts constituting 21% and 15% of the total staffing level respectively. Other majority professions are Systems Administrators who constitute 9% of the total staff and Network Managers and Systems Security Managers who constitute and equal proportion of 8% each. The supporting staff (collectively) accounts for 25% of the total number of staff at eGA. Supporting staff include accountants, human resource officers, legal officers etc.

2.5.2 Financial Resources

The e-Government Authority is required to secure financial resources with the objective of ensuring that planned interventions on managing planning and acquisition of government ICT systems are undertaken. The annual budget of eGA is financed by two main sources of funds which are; government subventions and own sources of funds from internal sources. The details of the annual sum of the budget are provided in **Table 2.1** below.

Table 2.1: Comparisons of Approved Budget vs Actual Funds for Managing Planning and Acquisition of ICT Systems in the Government (2016/17-2020/21)

Financial Year	Approved Budget (Billion TZS)	Actual funds Received (Bill TZS)	% Received
2021/22	24.9	15.6	63
2020/21	25.5	21.0	82
2019/20	20.2	18.7	93
2018/19	15.3	11.6	76
2017/18	14.5	11.3	78
Grand Total	100.4	78.2	78

Source: eGA Summary of Annual Performance Reports (2017/18 – 2021/22)

Table 2.1 indicates that eGA received an average of 78% of the total funds that were budgeted in the past 5 years. A total of TZS 100.4 Billion were approved as the institutional budget and a total of TZS 78.2 Billion was actual funds received.

2.6 Processes in Planning and Acquisition of ICT Systems in the Government

The management of ICT Systems in the government involves various stakeholders who undertake roles at different levels within the subsector of ICT Systems in the government. The planning and acquisition of ICT systems in the government involves five main stages described below;

2.6.1 Initiation and Planning for Acquiring ICT Systems

Project Initiation

The initiation stages are the very beginning of all stages of acquiring ICT Systems in the government. At this stage, the ICT project is evaluated to see if the proposed project will be beneficial to the organisation and will enhance the achievement of the strategic objectives. This stage will also involve defining if the implementation of the proposed project is aligning with the institutional strategic objectives. Furthermore, the project initiation phase will also involve defining project vision, purposes and mission alignment, development of a business case, identification of key stakeholders and documenting their roles and defining risk assessment and mitigation measures. The project initiation phase will also involve the development of key documents based on the following guidelines.

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Table 2.2: Required Documents during Project Initiation

Project Cost	Required Document
Project Cost > TZS 200,000,000	Feasibility Study
50m< Project Cost<200m	Project Proposal
Project Cost < 50m	Project Concept Note

Source: Standards and Guidelines for Government ICT Projects

Project Planning

This is the second stage for project acquisition in the government which follows soon after the project initiation phase. At this stage, the public institution has to define the project direction, (where the project is going) and project processes (how to get there in order to meet project objectives). The project planning phase is required to ensure that the acquired project is comprehensive, cost-effective and timely. At this stage, a public institution shall describe the scope of the project, project budget, milestones, human resources and risk management plan.

Furthermore, at this stage, the public institution has to define the plans on communication, stakeholders' management, change management, and project procurement management. The institution has to submit all of the plans in GISP.

2.6.2 Development of System Requirements and Specifications

This process is used to identify the business requirements that the Public Institution wants to implement for the product which shall be used to evaluate the success of the project at the end. Various techniques are developed including brainstorming and focus groups to come up with requirements which shall form the basis of the functional requirements.

At this stage, the Software Requirements Specifications (SRS) shall be developed containing details of functional and non-functional requirements, behavioural models, user interfaces etc. Based on the commonly acquired systems in the government, the systems commonly developed are functional and non-functional (user) requirements.

2.6.3 Development and Configuration of ICT Systems

This is the execution phase of the development stage whereby the government institution engages in the actual process of developing the planned ICT Systems. This is the most demanding phase of the project management. The acquisition of ICT system is done in two ways either through in-house development or outsourcing the development works externally. The public institutions are expected to define the implementation approach whether outsourced or in-house or both depending on their capacity and resources at their disposal.

In-house development involves internal resources within a public institution to engage in the actual development work involving programming or other development activities. The development of the ICT systems may also be outsourced by engaging external developers through engaging vendors either within the government or outside the government.

When vendors are engaged in the development process; the activities are done independently by particular vendors after receiving the systems requirements specifications from the public institution. The vendor undertakes all development activities and finally delivers the developed product to the public institution for configuration, commissioning and testing.

When vendors are not engaged such that development activities are to be done entirely by the public institution; the public institutions prepare the team responsible for undertaking the development of activities including business systems analysts and developers. At this stage, the public institution is expected to perform all activities needed to meet the defined project objectives and requirements as defined in the systems requirements specifications (SRS).

The public institution is also expected to acquire, develop and manage the team which shall work on the project and communicate information related to the progress of the project to all key stakeholders, sponsors and team members. Furthermore, at this stage, the public institution is also expected to conduct change management, and perform quality assurance checks. Finally, the public institution is supposed to submit the project progress report to the e-Government Authority.

2.6.4 Testing and Commissioning of ICT Systems

The testing and commissioning of ICT systems is done after the development process is completed. The testing process involves confirming whether the developed systems meet the required specifications and fulfil the strategic objectives of the organisations. The testing of the government ICT systems is done in order to ascertain whether the acquired system is functioning perfectly and that the objectives of the project are met.

Testing of the ICT systems is done for two main types of tests; functional testing and integration testing. Functional testing is done in order to check whether the functional requirements of the systems were addressed fully as per the requirements defined in the system requirements documents. The integration testing is done in order to check if the different modules of the systems are integrating with other modules within the system in order to function perfectly without hindrance.

The commissioning stage involves the final handing over of the project whereby all stakeholders of the project are involved including the technical, administrative and system business owners.

2.6.5 Oversight of Planning and Acquisition of ICT Systems

The oversight role of ICT Systems and e-Government within the government is performed by the President's Office – Public Service Management and Good Governance. The PO-PSMGG oversees the planning and acquisition of ICT systems in the government through developing required Acts, Policies, Guidelines and Standards to enable the efficient and cost-effective acquisition of ICT Systems in public institutions. The following are the key government oversight instruments.

Table 2.3: Oversight Instrument in Planning and Acquisition of ICT Systems

Instrument	Purpose
e-Government Act	Provide legal framework on e-Government Services for all Public Institutions
e-Government Policies	Comprehensive Framework for Guiding the Development and Growth of e-Government Services
e-Government Strategies	Create a conducive environment for the increased and sustained use of ICT in the Government
e-Government Guidelines	Provide overall guidance for the implementation of e-Government services in the government
e-Government Manuals	Provide technical guidance on the Planning and Development of ICT Systems in the Government

Source: Auditors' Analysis from reviewed Acts, Policies, Strategies, Guidelines and Manuals (2022)

The following diagram presents and summarised the visualisation of the processes in the management of planning and acquisition of ICT Systems in the Government.

Figure 2.5: Processes in the Management of Planning and Acquisition of ICT Systems in the Government
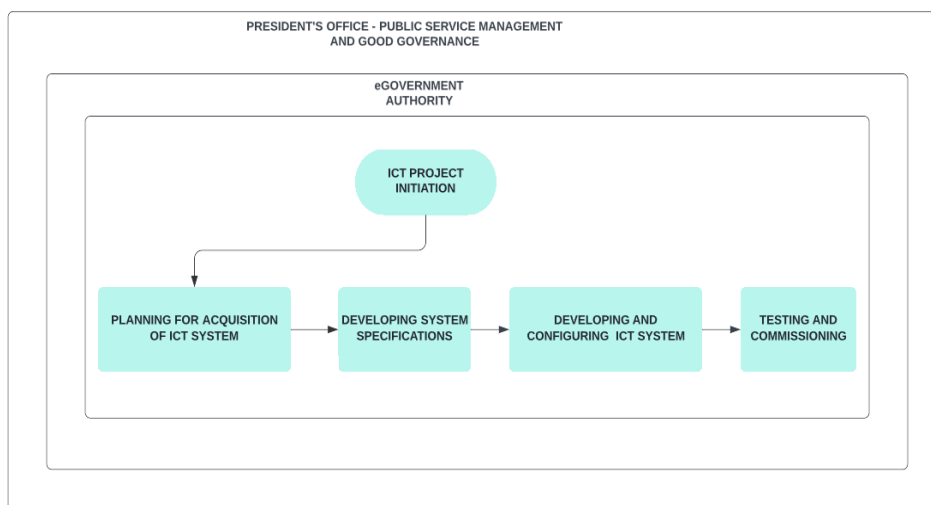
Source: Auditors Analysis from Guidelines and Manuals on ICT Project Management (2022)

CHAPTER THREE

AUDIT FINDINGS

3.1   Introduction

This chapter presents audit findings on the assessment of the planning and acquisition of ICT systems as managed by the e-Government Authority (eGA) for the period under review. The findings cover the extent to which the acquired systems brought the anticipated benefits; ICT Systems project initiation; preparation of ICT Systems requirements; development or configuration of ICT Systems; testing and commissioning of ICT Systems; and overall oversight function for planning and acquisition of ICT Systems among public institutions.

The findings address the extent of the problem by assessing the six (6) specific audit objectives described in Section 1.3.1 of this report. Below are the detailed audit findings:

3.2   Acquisition of ICT Systems that Did Not Bring the Anticipated benefits

3.2.1   Presence of Abandoned ICT Systems

Section 26 (1) (a) of the e-Government Act 2019 requires Public Institutions to acquire ICT systems in a manner that observes value for money for the purposes of proper utilization and management of Government owned ICT resources.

Furthermore, item 5.1 of the Government ICT Projects Review Checklists (2014) requires the public institutions to provide an assurance of the availability of any other similar e-Government Initiatives before embarking on developing a new system. Item 5.2 of the same document requires public institutions to consider possibility of having duplicate projects in the government before deploying a new ICT system.

Additionally, Section 3.2.3 of the Guidebook for Managing ICT Projects and Risks (2010) requires the public institutions to ensure that the Project Trade-off Triangle is discussed earlier in the project in order to properly handle any of the project sponsors' expectations in the scope changes that may affect the project existence.

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Also, Section 1.2 of the Standards and Guidelines for Government ICT Project Implementation (2020) requires public institutions to manage projects and ensure successful implementation such that benefits are realized and resources are optimized.

However, the review of the ICT systems that were acquired by public institutions covered in this audit between financial years 2017/18 to 2021/22 indicated that, government institutions were incurring costs to procure or develop ICT systems which were later abandoned after a while for different reasons. **Table 3.1** indicates the number of abandoned ICT systems and the cost incurred by various public institutions.

Table 3.1: The Overview of Abandoned ICT Systems in the Government Entities

Institution	No. of Abandoned ICT System	Total Purchase Value (Mill TZS)	Year Abandoned	Reason for Abandoning Them
Ministry of Health	2	224	2018	Introduction of Similar Government-Wide System
			2017	Introduction of Similar Government-Wide System
DUWASA	3	372	2019	Introduction of Similar Government-Wide System
			2018	Introduction of Similar Government-Wide System
			2018	Expired License
TRA	2	1,250	2018	Introduction of Similar Government-Wide System
			2019	Introduction of Similar Government-Wide System
GPSA	1	773	2019	Introduction of Similar Government-Wide System
Ministry of Agriculture	1	251	2006	End of donor sponsorship
TOTAL	9	2,870	-	-

Source: ICT Systems register from Public Institutions

Table 3.1 shows that the visited public institutions acquired ICT systems using public funds. However, the acquired systems were abandoned and replaced by other systems. In the six visited public institutions, a total of 9 ICT Systems worth TZS 2.87 Billion had been abandoned and were no longer being used.

Interviews with officials from both eGA and the visited public institutions pointed out that abandonment of the systems on functionality perspective was caused by the fact that the acquired systems were no longer serving the purposes in a manner that enhanced efficient public service delivery.

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Therefore, the next best alternative was for the public institutions to acquire the government wide systems driven by the e-Government initiatives to ensure a connected government. This was the case in 7 out of 9 abandoned systems.

On operational perspectives, the acquisition of ICT systems which did not serve the purposes for which they were procured was attributed to the following:

(a) Insufficient oversight on the acquisition of ICT projects;
(b) Inadequate testing and commissioning of ICT systems;
(c) Failure to adequately prepare and communicate ICT systems requirements to all relevant stakeholders prior to acquisition of ICT systems in the government; and
(d) Failure to properly initiate the need to acquire ICT Systems.

The audit findings above are further detailed below:

3.3 Insufficient Oversight on the Acquisition of ICT Projects done by Public Institutions

Section 2.3 of the Strategic Plan of PO-PSMGG (2016/17 – 2020/21) requires the Ministry to formulate, monitor and evaluate e-Government Policies and promote the use of ICT to facilitate public service delivery.

Additionally, Section 4.1 of the National e-Government Strategy, 2013 highlights that, the Ministry is required to strengthen monitoring and evaluation (M&E) system which help to measure and track the impact of various measures on e-government.

However, the review of the oversight function found PO-PSMGG have a fragmented framework for monitoring and outdated guiding instruments as explained below.

3.3.1 Fragmented Framework for Monitoring of Planning and Acquisition of Government ICT Systems

Section 1.3 of the Strategic Plan of the PO-PSMGG requires the Ministry to monitor the implementation of e-Government initiatives within the government. The Ministry was therefore, expected to establish and implement effective systems for undertaking monitoring functions at the level of the Ministry and its associated agencies in order to guarantee the

achievement of its strategic goals. Further, discussions with officials from PO-PSMGG pointed out that, the monitoring function of the PO-PSMGG on e-Government initiatives is being done by the e-Government Authority through its activities to public institutions.

However, the review of the monitoring functions at PO-PSMGG found that, the Ministry did not have an effective system for monitoring the implementation of policies and other high-level strategies which include planning and acquisition of Government ICT Systems. The review of monitoring activities of the PO-PSMGG which are executed by e-Government Authority found that, there was a lack of tools for monitoring public institutions on compliance with the strategies, manuals and guidelines developed by PO-PSMGG. There was also unsatisfactory implementation of monitoring activities and inadequate reporting of monitoring activities. These are further elaborated below.

(a) Inadequate Tools for Conducting Monitoring

The PO-PSMGG develops monitoring tools and embed them in the e-Government Strategies in order to monitor the implementation of e-Government Strategies as a means of executing its monitoring function to public institutions.

However, the implementation of e-Government Strategy 2013 – 2018 was not sufficiently monitored as it lacked a clear monitoring plan. There was no monitoring tool used to collect and report on the performance implementation of e-Government Strategies from financial years 2013/14 to 2017/18 and from 2018/19 to 2021/22, the period which was considered by the audit. The e-Government strategy 2013 - 2018 did not have key elements necessary to monitor the implementation of the strategies. The key elements missing from the strategies are summarized in **Table 3.2** below.

Table 3.2: The Overview of Missing Elements for Monitoring e-Government Initiatives in Public Institutions

Monitoring Elements	Essence of Element
Key Performance Indicators	Establish the extent of performance of institutions against the agreed targets from the e-Government Strategies and the level of compliance
Baseline Values	Establish realistic performance indicators
Data Collection and Methods of Analysis	Establish Performance level of indicators in order to decide on the achievement of the strategies
Monitoring Plan	Identify the time at which the public institutions will be visited and the frequency of visits to the public institutions.
M&E Checklists	Identify key areas to be checked to determine the performance of public institutions

Source: Auditor's Analysis from the Reviewed e-Government Strategies

The review of developed e-Government strategies found that, monitoring and evaluation plan was not considered at the time when the e-Government Strategy 2013-2018 was being developed. The specific tools for monitoring of e-Government such as M&E Plans and Manuals were supposed to be developed by the Directorate of Government Information Communication Technology Services. This directorate was responsible (Through e-Government Authority) for overseeing the public institutions' compliance with policies, manuals, guidelines and standards on e-government.

Our review of the new developments (in 2022) at the Directorate Government Information Communication Technology Services found that, the new e-Government Strategy contains the monitoring plan.

Consequently, the absence of monitoring tools has resulted into having monitoring reports that did not contain adequate details of what activities were monitored, what indicators were being monitored, what were the performance targets and what were the actual targets. Also, they were reported in a different format depending on the activities of the PO-PSMGG and eGA.

As a result, inadequate monitoring reports prevented the Ministry from identifying the extent to which the public entities were complying with the manuals and guidelines issued to them. Additionally, the PO-PSMGG was not able to ascertain whether the e-Government strategies were being

attained or not. On the other hand, inadequate monitoring reports meant that the government was not able to collect enough information to ascertain the extent to which its directives and other key policy issues governing ICT Subsector were being adhered to.

(b) Inadequate Implementation of Monitoring Activities

The review of annual performance reports for the Directorate of Government ICT Services at the Ministry found that, the Ministry was not effectively performing its monitoring functions for public institutions and other entities. The interview with officials from PO-PSMGG pointed out that, as per its strategic plan, the e-Government Authority executes the monitoring function on behalf of the Ministry. The Authority monitors the implementation of requirements as per the guidelines and other directives issued by the Ministry.

However, the review of Performance Reports by the e-Government Authority from 2017/18 to 2021/22 did not indicate that the Authority was undertaking monitoring activities. It was only dealing with the compliance assessment of the public institutions with regard to ICT manuals and other technical ICT standards issued by the Authority. Based on the current implementation framework the annual monitoring activities were noted to be done through the monitoring plans embedded in the e-Government Strategy (which was developed without monitoring plan). The recent e-Government Strategy 2022 which was on draft stage was developed but not yet executed because it was still on approval stages.

Consequently, the low level of monitoring activities by the Ministry has resulted in little compliance by the public institutions on ICT guidelines, policies and standards. Many institutions were not complying with the key guidelines on ICT. The Audit Team analysis based on data obtained from GISP found that, on average only 4.25% of the public institutions complied with the requirement to develop key institutional guidelines on the management of ICT. Specifically, only 1% had developed ICT Enterprise Architecture, 9% had developed ICT Policy, 4% had developed ICT Strategy, 6% had developed ICT Security Policy, 4% had Disaster Recovery Plans, 5% had Acceptable ICT Use Policy and 4% had developed Organizational Strategic Plans.

(c) Inadequate Reporting of the Monitoring Activities

In order to complete the monitoring activities and generate data that would inform citizens about the performance of the public institutions with regard to compliance with e-Government initiatives, eGA was supposed to undertake monitoring activities and report them to visited public institutions and to PO-PSMGG for actions and follow up.

Based on the Strategic Plan of eGA for the period of 2016/2017 to 2010/2021, the Ministry was supposed to monitor the implementation of e-Government initiatives by monitoring the activities of eGA. However, the review of the availed reports from PO-PSMGG noted that there was no report that provided details about the monitoring of the activities of eGA. It was revealed that the PO-PSMGG did not produce any report that was reporting the performance of public institutions on complying with the policies and manuals that were issued by both PO-PSMGG and eGA. Instead, PO-PSMGG relied on the performance reports which were submitted by eGA quarterly as a monitoring tool for its performance. However, the performance report submitted by eGA provided only the narratives of the activities implemented by eGA on quarterly or annual basis, but did not report on the e-Government Strategy or its key performance indicators.

The absence of reporting on monitoring activities means that PO-PSMGG lacked records of the noted gaps in the agreed operational issues which would facilitate further follow-up to improve the performance of eGA.

3.3.2 Outdated Guiding Instruments for Government ICT systems

Section 3.8 of the PO-PSMGG functions requires the Ministry to conduct a review of the government ICT policy and standards which are guiding the use of the ICT systems and other e-government initiatives within the government. The review of guiding instruments for government ICT guidelines aimed at providing more effective guidelines for public institutions with the most up-to-date guides that are effective.

However, through interviews with the officials from PO-PSMGG, it was found that, the PO-PSMGG was currently administering outdated policy and guidelines. The review of the Ministry's Performance Reports from the years 2017 to 2022 has indicated that, the Ministry is currently relying on

some outdated guiding documents which have been prevailing for more than 6 years without being reviewed as shown in **Table 3.3** below.

Table 3.3: Assessment on the Status of Government- ICT Guiding Instruments

SN	Name of Guiding Instrument	Last Time Developed/ Reviewed	Required Review Date	Period in Operation (Years)	Remarks
1	e-Government Strategy	2021	2026	1	Current
2	Mwongozo wa Matumizi Bora ya TEHAMA Serikalini	2012	2017	10	Outdated
3	Cyber Security Strategy	2016	2021	6	Outdated
4	Government ICT Policy	Not Available	N/A	N/A	Non-existent
5	Government ICT Standards	Not Available	N/A	N/A	Non-existent

Source: PO-PSMGG Strategic Plan

Table 3.3 shows outdated government instruments which are guiding government ICT initiatives for public institutions, in particular, the acquisition of ICT systems in the government. The review of the six guiding instruments at PO-PSMGG indicated that, three of them were outdated and could not guarantee that public institutions are acquiring ICT Systems that conform to current standards requirements.

From **Table 3.4** above it can be seen that, the outdated guiding instruments include: Mwongozo wa Matumizi Bora ya TEHAMA Serikalini and Cyber Security Strategy. The instrument with longest period of use was Mwongozo wa Matumizi Bora ya TEHAMA Serikalini which had been in use for 10 years although it expired in 2017, followed by Cyber Security Strategy which had been in use for nine years and it also expired in 2021. The table further indicated that, two guiding instruments namely Government ICT Policy and Government ICT Standards had not been developed.

Further audit assessment to identify the issues that were outdated and their effect are detailed in **Table 3.4** below.

Table 3.4: Assessment of Outdated Guiding Instruments

SN	Name of a Guiding Instrument	Issues that are Outdated	Their Effects to the Operations of ICT Systems
1	Mwongozo wa Matumizi Bora ya TEHAMA Serikalini	Procedures, Guidelines and Practices on the better use of ICT Infrastructure in the Government	Mismanagement of Government ICT Infrastructure. Physical and non-physical damage to Government ICT assets and infrastructure.
2	Cyber Security Strategy	Strategies, Goals, Targets and Performance Indicators on Combating Cyber threats and Attacks	Exploitation of Government ICT Systems from external attacks and information breach. Increased extent of vulnerabilities to Government ICT Infrastructure and exposure of sensitive data Financial Losses as a result of cybercrimes

Source: Auditors Analysis of Guiding Instruments

According to Performance Reports of the Ministry during financial years 2017/18 to 2021/22, the main reason for having outdated guiding instruments was lack of effective action plans to review the outdated guiding instruments. Presence of action plans would provide proper time and procedure to review outdated guidelines as required by key performance indicators in order to achieve the benefits of e-government initiatives. Despite having indicated in the strategic plans that the Ministry will review the specific guiding instruments, this activity was not performed as per plan.

Due to this, the Ministry lacked an up-to-date guidance for public institutions regarding the planning and acquisition of ICT systems. This is because all of the guiding instruments did not contain current changes occurring in the ICT industry locally or internationally.

Furthermore, a review of the e-Government Strategy, found that the strategy in use was not adequately developed and did not guarantee the achievement of its targets and goals. This is due to incomplete and missing

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elements of the Strategy, incorrect performance indicators, absence of risks considerations, absence of monitoring data and ineffective evaluation plan as detailed below.

(a)   Incomplete Elements of the e-Government Strategy

A review of the current e-Government Strategy found that, the strategy had incomplete and missing elements. The strategy was missing some of the baseline data and performance indicators. The Strategy had unclear responsibilities and incorrect baseline data. These missing and incomplete items affected the level at which the public institutions were monitored as a means of assurance to the government on the achievement of its established goals. **Table 3.5** provides a summary of other missing and incomplete elements from the e-Government Strategy.

Table 3.5: Incomplete Elements of the e-Government Strategy

Item	Incidence	Impact
Missing Baseline Data	2/29	Unrealistic Performance Targets
Missing Performance Indicators	8/29	Immeasurability of the performance
Unclear Responsibility for Data Collection	21/29	Non-reporting of indicators Duplication of efforts Immeasurability of the performance
Incorrect Baseline Data	7/29	Unrealistic performance targets

Source: e-Government Strategy (2021)

Table 3.5 shows four key items of the e-Government Strategy that makes it incomplete and, therefore, not sufficient to address the outlined targets and goals. For baseline data two items out of 29 performance indicators for e-Government Strategy were missing, therefore, making unrealistic targets for comparison.

Furthermore, eight performance indicators were missing, thus making its performance immeasurable for comparison. Additionally, the strategy had unclear responsibilities for data collection whereby 21 items did not indicate who would collect data between PO-PSMGG and eGA.

The main reason for the incomplete element of the e-Government Strategy was non-execution of other activities which were necessary for completion of e-Government Strategy. For instance, the baseline surveys

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were not conducted. The surveys were necessary to establish baseline values for performance indicators and be able to set realistic targets.

Consequently, presence of incomplete elements of the e-Government will result into government entities failing to implement e-Government Strategies and other initiatives.

(b) *Incorrect Performance Indicators*

The review of the baseline data for the e-Government Strategy (2022) indicated that some of the information that was presented in the e-Government Strategy was not correct, and did not represent the true information gathered from the public institutions. **Table 3.6** shows some of the performance indicators with incorrect baseline values.

Table 3.6: Incorrect Performance Indicators

Performance Indicator	Indicated Baseline Value	Interpretation (Literal Meaning)
Level of users of e-Services	0	There is no public institution which was using e-government service by the year 2020
Level of satisfaction of end user on e-Government services	0	Public institutions were not satisfied by e-Government services by the year 2020
Percent of Government ICT Committees Operationalized	0	There was no Government ICT Committee which was operational by the year 2020
Percent of Government Institutions Complying with ICT Standards and Guidelines	0	None of the public institutions complied with government ICT standards and guidelines by the year 2020
Percentage reduction in waiting time to complete a particular e-Government service	0	e-Government services acquired had contributed nothing in reducing the waiting time to complete a task in e-Government services by the year 2020.
Percentage availability of e-Government services	0	All e-Government services including ICT systems were not available/accessible by users by year 2020
Percentage of government	0	There was no public institution

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Performance Indicator	Indicated Baseline Value	Interpretation (Literal Meaning)
institutions hosted at Data Centre		which was hosting its systems at the NIDC by the year 2020

Source: The e-Government Strategy (2021)

The reason for having an incorrect performance indicator was due to a lack of awareness at the Ministry level and inadequate efforts for providing information to public entities on e-Government initiatives.

The audit also noted that the Ministry did not provide adequate guidance in coordination, harmonization and ensuring e-Government initiatives were instituted by taking into consideration set standards and guidelines. As a result, Public Entities did not apply key performance indicators during the planning, acquisition, implementation and operation stages of ICT Systems.

In response, PO-PSMGG pointed out that the baseline values were indicated as zeros (0) because the baseline survey had not been undertaken to establish the actual values for each of the indicator.

(c) Ineffective Evaluation for e-Government Strategies

The PO-PSMGG developed an e-Government Strategy (2013) through its Directorate of Government ICT systems which were establishing the direction for the government on e-Government for the period from 2013/14 to 2018/19. The e-Government Strategy was supposed to consist of an evaluation plan forming the basis for evaluating whether the government will achieve its intended goals. Additionally, the strategy was supposed to ascertain whether the interventions and outputs achieved have led to the achievement of the outcomes envisioned in the outputs.

However, the review of the e-Government Strategy 2013 showed that the government did not develop an evaluation plan. As a result, no evaluation of the e-Government was done for the respective years of implementing the e-Government Strategies. Additionally from the financial year 2018/19, there was no e-Government Strategy and therefore no evaluation of any e-Government initiatives.

Table 3.7: The Status of Evaluation Plans for the e-Government Strategies

Financial Year	e-Government Strategies	Evaluation	Reason(s)
2017/18	Present	Not Done	No Evaluation Plan
2018/19	Present	Not Done	No Evaluation Plan
2019/20	Not Available	Not Done	No e-Government Strategy
2020/21	Not Available	Not Done	No e-Government Strategy
2021/22	Draft Available	Not Done	No Approved Strategy

Source: The e-Government Strategy (2013-2015)

Table 3.7 indicate that there has been no evaluation of e-Government Strategies for the whole period for which the audit was conducted. The absence of evaluations was a result of absence of evaluation plans as well as the e-Government strategies. As a result, there was no assurance on whether the government has achieved or will achieve its intended output.

Consequently, the absence of the evaluation plan presents the risks that the government might not be able to achieve the benefits of e-Government initiatives and eventually develop appropriate control measures during the implementation of the e-Government Strategy (2022-2027). Additionally, the government will not be able to identify whether the outputs to be achieved have enhanced the achievement of the outcomes that were intended by the e-Government Strategy.

3.4 Inadequate Management of ICT Project Initiation

Section 24(2a) of the e-Government Act, 2019 requires public institutions that intends to implement ICT Projects to submit project details to the Authority for advice during planning stage. Likewise, they should receive clearance from e-Government Authority before solicitation of the funds. During the same stage, public institutions are also required to ensure that, competent projects teams are formulated to undertake development or configuration of new ICT system. These requirements are means to ensure that projects that are being developed adheres to the requirements of the e-Government Authority, and that all key requirements are considered before deployment of the system.

A review of the GISP database for submitted Concept Notes found that, the Concept Notes were not properly developed and submitted to eGA by

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the public institutions. The audit noted the following weakness regarding the submitted concept notes:

3.4.1 Inadequate Preparation of Concept Notes by Public Institutions

The second schedule of e-Government regulation of 2020, Form Number 007 highlighted how government ICT project concept notes should be prepared. Generally, the concept note is required to state how the project is linked with institutional strategies, and problem to be solved or opportunity of the project. The concept note is also required to outline benefits of the project to the institution, individual or stakeholders in the delivery of the project; project general and specific objectives, scopes that stipulate on what to be included and what not, success criteria and constrain key assumptions.

However, the review of the GISP database for the submitted concept notes showed that 86% of the concept notes were returned back to public institutions because of errors and other mistakes as indicated in **Figure 3.1** below.

Figure 3.1: Extent of return of concept notes by eGA
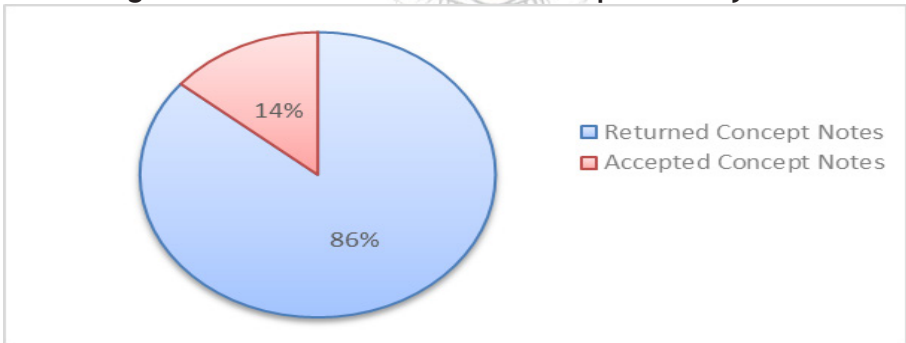
Source: Analysis of GISP by eGA

The audit noted that inadequate preparation of concept notes was caused by insufficient knowledge and understanding on the concept note checklists by the personnel involved in the preparation of concept note. The audit also revealed that, most of the public entities prepare concept notes in an ad-hoc way without considering alignment in e-government guideline and regulations. Also, it was noted that, lack of awareness of the personnel involved in concept note preparation was due to the fact that, the e-Government Authority did not take adequate initiatives to raise

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awareness regarding the importance of following up procedures during the acquisition of new ICT systems.

In response, the e-Government Authority pointed out that, it developed a template concept note to assist public institutions to develop concept notes in a manner required by the Authority. Additionally, the Authority has continued to remind public institutions on the preparation of concept notes through awareness sessions coordinated by the Authority and technical meetings between the Authority and public institutions.

Consequently, inadequate involvement of responsible and accountable institutional staff in all steps of acquiring the system including preparation of concept notes may lead to the existence of ICT systems that do not bring the aimed benefit and service delivery. The inadequate involvement of responsible business process owners and other technical staff at institutional levels was attributed to lack of appropriate system for requirements gathering and preparation of technical specifications. For example, the ICT system may be acquired with additional cost, poor quality and its development may not be completed according to contract time. More or less the developed systems may not be scalable to accommodate any future design changes for more user requirements.

3.4.2 Delay to Provide Feedback on Reviewed Concept Notes to Public Entities

Regulation 28 of the e-Government General Regulation, 2020 requires the Authority to approve the concept note and communicate in written feedback to the respective public institution within 14 working days. Additionally, Section 5.4 of the Client's Service Charter of e-Government Authority requires eGA to assess the submitted ICT Project Proposal and issue the advisory notes within a period not exceeding 14 days from the day it was received.

The advisory note is aimed at ensuring that the public institutions are acquiring ICT systems in a manner that enhances value for money to the government and that there is no duplication of systems within and among the public institutions.

However, the review of the timelines at which the project proposals were submitted and the times at which the advisory notes were released indicates that, eGA did not issue them at the times prescribed in the client's service charter as per performance agreement with their

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customers. The review of issued advisory notes indicated that most of them were delayed. The audit team assessed the timelines at which the advisory notes were issued and the results are presented in **Table 3.8.**

Table 3.8: The Assessment of Time Lapses between Proposal Submission and Advisory Note Issuance Dates between Financial Years 2017/18 and 2021/22

Time Lapse (Days)	No. of Advisory Notes	Percentage (Out of Total)	Remarks
Between 0 and 14 days	44	7	On-Time
Between 15 and 30 days	26	4	Delayed
Between 31 and 60 days	26	4	Delayed
Beyond 60 days	549	85	Delayed
TOTAL	**645**	**100**	**-**

Source: GISP Advisory Notes Data (2017/18-2021/22)

Table 3.8 shows that a significant number of advisory notes were issued beyond the time indicated in the client's service charter. In the period between 2017 and 2022, a total of 645 advisory notes were issued to public institutions for comments on the submitted project proposals. However, only 44 of them equivalent to 7% were issued on time while the rest were delayed with different delay times. The analysis indicated that 85% of the advisory notes were issued beyond 60 days. In some cases it took more than 2 years to issue the advisory notes. For instance, information captured by the GISP shows that the advisory note for approval of electronic documentation systems for Tanzania Shipping Agencies Corporation (TASAC) which was submitted on 22nd May 2020 was issued on 8th September 2022 which is more than 2 years from the date of submission.

The discussions with officials from eGA pointed out that, the main reason for delayed issuance of the advisory notes was the complexity of the project being reviewed and response received from the public institutions when comments are raised. The Authority pointed out that there are many processes that transpires between eGA and public entities during the review of the concept notes and before reaching common understanding. The same process also occurs between submission of concept notes and issuance of the advisory notes.

Consequently, the delays in the issuance of advisory notes delayed the implementation time of the submitted project proposals, and therefore affecting the intended project objectives. Most of the projects were approved beyond the reasonable time and some of the projects turned out to be irrelevant by the time the approvals were granted.

3.5 ICT System Requirements were not Adequately Prepared and Communicated

Section 2.3.3 of the e-Government Strategy requires public institutions to ensure that all planning for ICT development and use is aligned with and serves the institutional strategic goals and directions. Furthermore, the e-Government Authority Strategy 2021/22 requires eGA to ensure that plans respond to different stakeholders' needs and expectations.

However, the review of ICT Projects Reports and other initiatives has found weaknesses related to the preparation of system requirements. The noted weaknesses include insufficient involvement of stakeholders in requirement gathering and inadequate gathering of user requirements to ensure that, ICT Systems requirements are well captured and defined in the systems requirement documents. These are detailed below.

3.5.1 Inadequate Involvement of Stakeholders in Requirements Gathering.

The e-Government Strategic Plan 2021/2022 – 2025/26 requires public institutions to ensure that, the plan to acquire ICT system responds to stakeholders' needs and expectations. Addressing these needs and expectations may result in achieving the intended objectives of acquiring the respective systems.

However, the discussion with the e-government staff showed that public institutions did not engage all key stakeholders in the business process when gathering user requirements. The stakeholders that were required to be engaged in business process reengineering include the user department to identify user requirements of the business processes; technical ICT personnel for preparations of technical specification and supporting of the system; and citizens and taxpayers that may benefit from service delivered and other public entities that may need to share information from particular entities. The stakeholders were supposed to be involved in the gathering of user and functional requirements before the systems

requirements specifications (SRS) are developed. The interviews with officials from the public institution found that, inadequate engagement of stakeholders was caused by insufficient knowledge of the standards and procedures for the development of systems and guidelines to the public institutions.

The inadequate involvement of stakeholders led to system redesigns and the introduction of new modules after the launching of systems in order to meet user requirements, which ultimately addressed the intended objective and benefits of acquiring systems. For instance, 14 ICT systems from the visited public institutions had been redesigned to accommodate new user requirements. The review of ICT System initiation documents indicated inadequate involvement of stakeholders as shown in **Table 3.9** below.

Table 3.9: Assessment of Key Stakeholders Involvement in Requirements Gathering for Visited Public Institutions

SN	Institution	No of Systems Developed/Acquired	No of Key Stakeholders	No. of Key Stakeholders Involved	Percentage of Involvement (%)
1	Ministry of Health	8	42	24	57
2	DUWASA	2	8	3	37.5
3	EWURA	4	30	25	83
4	TRA	8	40	25	62.5
5	GPSA	5	25	20	80
6	Ministry of Agriculture	8	36	12	33

Source: Project Files for Visited Public Institutions

Table 3.9 shows that not all stakeholders were engaged in the development of ICT systems for all six visited institutions. The high level of stakeholder involvement was noted at EWURA and GIPSA followed by TRA with 83%, 80% and 62.5%, respectively. The lowest level of involvement was noted at the Ministry of Agriculture and DUWASA with 33% and 37.5% respectively.

Further review of the project files of the visited public institutions indicated that internal stakeholders such as user and technical support departments, shared service entities, and citizens who receive services or those involved in a particular business process were partially engaged. Some were engaged to provide requirements for one business segment or module, while others were fully engaged providing inputs for all main business processes during requirements gathering.

According to interviews with officials from the visited public institutions the inadequate involvement of stakeholders was caused by lack of awareness by most public institutions on stakeholders' involvement in business process re-engineering.

In response, the e-Government Authority pointed out that it has taken various initiatives to enhance stakeholders' engagement. One of the initiatives included the requirement to provide statement on project sustainability and stakeholder's engagement during issuance of advisory notes. Additionally, public institutions are reminded on inclusion of stakeholders through awareness sessions and technical meetings with ICT officials from public institutions.

Consequently, the inadequate involvement of stakeholders resulted in scanty user requirement gathering. Adequate gathering of user requirements would provide a clear definition of the business processes required during reengineering processes for proper operations or function of the ICT system. Furthermore, the audit noted that inadequate user requirements did not provide clear system specifications that were required for proper operations of the pre-defined system.

Inadequate user requirements and system specifications led to inacceptable systems designs which have led to systems re-designs after the acquisition of ICT systems. **Table 3.10** shows the assessment of the systems and redesigns which were done to the respective systems.

Table 3.10: Assessment of Systems Redesigns from Visited Public Institutions

Name of Institution	No. of Systems	No. of Systems Redesigns
EWURA	3	3
TRA	3	5
Ministry of Agriculture	1	1
Ministry of Health	4	5
GPSA	1	2
DUWASA	2	2
TOTAL	14	18

Source: ICT Steering Committee Minutes from visited institutions

Table 3.10 indicates that some of the ICT systems had undergone redesigns as a result of not being able to sufficiently accommodate all stakeholders' requirements during the development phase. In six institutions which were visited, a total of 14 systems were redesigned 18 times in order to accommodate new requirement changes and other business process updates.

3.6 Inadequate Management of Development and Configuration of ICT Systems

Section 2.3 of the ICT Project Implementation Guideline requires public institutions to develop and implement a high-quality, customer service support system. Through the e-Government Act, eGA has the mandate of ensuring that the systems that are acquired or developed are of high quality and meet the requirements of the institutions.

However, the review of the documents noted the following weaknesses in the acquisition and development of ICT systems in the government; (i) inadequate controls; (ii) inadequate quality assurance;(iii) limited integration and interoperability; (iv) irregular systems hosting environment; (v) inadequate controls of front-end and back-end technologies; (vi) acquisition of systems without approval of eGA; (vii) inadequate in-house capacity to develop systems (viii) lack of reliability and (ix) inadequate guarantee of business continuity for the developed or configured ICT systems, particularly after granting the approval for development of the respective ICT systems. The weaknesses observed in

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the development and configuration of ICT systems are presented hereunder.

3.6.1 Inadequate Controls during the Acquisition of ICT Systems

Section 2.3.3 (vii) of the Standards and Guidelines for Government ICT Project Implementation requires the government institutions to submit to eGA all project deliverables and milestones through the e-Government ICT portal at each stage. This control has been established in order to ensure that eGA has sufficient knowledge and understanding on the systems which are developed by government institutions to avoid acquiring systems that do not serve the functions of the respective institutions.

However, the review of the correspondences between the visited public institutions and eGA indicated that, there was non-submission of project deliverables and milestones during the process of acquiring ICT systems soon after approval from eGA to proceed with the procurement of the requested ICT system. The deliverable and milestones, if submitted, would have served as a means of exercising controls over the whole acquisition process.

According to reviewed projects status in GISP and the reviewed project files from the visited public institutions it was noted that, eGA had limited control in almost all key phases of project acquisition. The only exception is on the project initiation phase, where the controls established by eGA were stronger as compared to other stages as presented in **Table 3.11** below.

Table 3.11: Assessment of Strength of eGA in controlling the Planning and Acquisition of ICT Systems

Acquisition Stage	Strength of eGA's Controls	Risk for Inadequate Controls
Project Initiation	Strong	Initiating projects that do not address the business requirements of public institutions Initiating systems that duplicate efforts by other institutions.
Procurement	Weak	Procuring Systems that do not conform to value for money.
Contracting	Weak	Contractual provisions that violate eGA's Act, Regulations and guidelines for e-Government.

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Acquisition Stage	Strength of eGA's Controls	Risk for Inadequate Controls
Development/Configuration	Weak	Developing systems that do not meet the required technical standards.
Testing	Weak	Accepting systems that do not meet the required technical standards defined by eGA. Accepting systems that do not meet the technical and user requirements.
Commissioning and Closure	Weak	Accepting systems that do not meet the required technical standards defined by eGA.

Source: Auditors Analysis of ICT Project Implementation Cycle

Table 3.11 above shows that in general there were weak controls on the acquisition of ICT Systems soon after approving the project initiation stage which is done by eGA. The project correspondence files indicated that there were few or no controls from public institutions after the first stage of project initiation when the public institution submitted their proposals. Out of the six key phases of project acquisition, five of them were not sufficiently overseen by the eGA regardless of the fact that they were affecting the overall level of compliance with the e-Government Act and its Regulations.

The review of the performance reports from eGA found that there was ineffective oversight soon after the acceptance and approval through advisory notes by eGA. Reviewed project files from public institutions showed no correspondence or reporting back to eGA until the systems were finally approved for use, when they were registered back to GISP System as software assets. On the other hand, there were no reminders from eGA on the submission of the project deliverables at each stage of acquisition.

According to interviews with officials from visited public institutions, it was found that the main reason for insufficient submission of milestones and deliverables for acquired ICT Projects was lack of awareness of the existence of the requirements. The public institutions were only aware of the requirement to seek approval before the commencement of the acquisition activities. However, they were not aware that submission of deliverables at each stage was also required.

As a response, the Management of eGA pointed out that, the Authority has been reminding public institutions through different mechanisms including awareness sessions and technical meetings coordinated by the Authority. In addition to scheduled technical meetings the e-Government Authority has conducted project inspections and system reviews as a means of ensuring that there was sufficient compliance with the e-Government Act and guidelines during the development of ICT systems. However, this was done on sample basis and did not cover all ICT projects from all public institutions.

3.6.2 Inadequate Quality Assurance for Acquired ICT Systems

Section 2.3.3 of the Standards and Guidelines for Government ICT Project Implementation requires public institutions to perform quality assurance checks to measure the quality of the ICT systems developed. Additionally, the quality assurance process is expected to include error analysis and corrections during the development or configuration stage before the system is finally deployed to the business units.

However, through the review of ICT systems development files from the visited institutions, the audit found that there were no quality assurance functions conducted for systems which were developed by the institutions or configured for use in the respective institutions. The audit found that the only control function which was executed by the visited public institutions was the user acceptance testing (UAT) for the developed ICT systems. There were no quality assurance checks performed before or after the completion of the development or configuration of the ICT system.

The main reason for not having quality assurance for the acquired ICT systems was lack of quality control and quality management instruments for ICT systems in the procuring entities. As a result of lacking effective quality assurance checks, the developed systems encountered frequent bugs and vulnerabilities which slowed down the functionality of the systems and resulted in frequent downtimes. Discussions with responsible officials from the visited institutions found that the bugs and vulnerabilities shown by the systems were the results of unchecked and uncorrected errors during development.

Table 3.12 shows some of the most common post-implementation issues which were reported to affect the functionality of deployed systems during operationalisation.

Table 3.12: Post-Implementation Issues Reported by the Visited Public Institutions

Issue	No. of Systems that Reported the Issue	Total No of Systems Checked	Percentage
Systems Re-Designs	14	79	18
Product Down-time	25	79	32
Negative Feedback	13	79	16
Customer Abandonment	9	79	11

Source: Systems Performance Reports from visited public institutions

Table 3.13 shows that developed systems were reported to have different categories of issues after the implementation which were the results of weaknesses in controlling the quality of the developed ICT systems. The most reported issues were the system downtime due to bugs and other vulnerabilities whereby 32% of the systems were reported to have developed challenges that affected the system operations. Systems redesigns and negative feedbacks were reported in 18% of the systems that were assessed. Meanwhile, only 11% of the systems were abandoned by the respective users.

3.6.3 Inadequate Controls of Front-End and Back-End Technologies during Development

Section 26(1) (a) of the e-Government Act 2019 requires public institutions to observe value for money, flexibility in customization, scalability, integration and interoperability in sourcing or using application software. Additionally, Guideline 6.1 of the e-Government requires public institutions to use open-source solutions over proprietary software whenever possible. The use of open-source solutions is expected to make the developed ICT systems flexible, easily customizable and interoperable.

However, the analysis performed by the audit team found that some of the public institutions have been developing business applications using software technologies which are not open source solutions. The application software was used in developing user interfaces for business applications including websites and other interactive applications while other technologies were used in developing server application frameworks and databases for the developed business applications. **Table 3.13** presents the application software that were observed and the extent to which they have been used.

Table 3.13: The Assessment of Front-End and Back-End Technologies used in the development of Business Applications

Interface	Free and Open Software	Non-Free and Limited Software	TOTAL
Back-end	593	30	623
Front-end	521	27	611

Source: GISP Software Asset Register (2017-2022)

Table 3.13 shows that public institutions have continued to develop business applications using non-open software and limited software. The analysis conducted has indicated that 30 out of 593 ICT systems which were developed in 5 years were not vendor neutral, technology neutral or open-source software. This is contrary to the requirements of the National ICT Policy and e-Government Act 2019. The most common solutions that were used included NET web forms, Oracle DBMS, ABAP, Aheeva and DELPHI.

Discussions with officials from the visited public institutions indicated that, the institutions opted to use the respective technologies because of the capacity to fulfil their business requirements as compared to other systems. For instance, the use of Oracle DBMS was regarded as the most superior database software in the current market and it suffices their business operations demands.

As a result, the use of non-free and open software to develop ICT systems made the systems difficult to integrate with other business applications or micro services within the application framework. The audit team assessed status of integration with key business applications from within or outside the institutions. The results are presented in **Table 3.14** below.

Table 3.14: Assessment of ICT Systems on Integrating with Relevant Business Application Systems

Name of Entity	Name of a System	Relevant Business Institution/Applications Not Capable of Integrating With
Ministry of Agriculture	Farmers Registration System (FRS)	• Agricultural Marketing Cooperative Society (AMCOS)
	Agriculture Trade Management Information Systems	• TANTRADE • Online Business Registration System ORS – BRELA • Agricultural Routine Data System (ARDS)
	Agricultural Routine Data System	• Agricultural Trade Management Information System (ATMIS)

Name of Entity	Name of a System	Relevant Business Institution/Applications Not Capable of Integrating With
Ministry of Health	Afyacare	• Improved Community Health Fund (iCHF) • Electronic Logistic Management Information System (eLMIS) • District Health Information System (DHIS2) • Radiology Picture Achieve Communication Systems (PACS)
	INAYA(Ocean Road cancer institute)	• National Health Insurance Fund (NHIF) • Electronic Logistic Management Information System (eLMIS) • DHIS2 for health information reports • Radiology PAC's
	HoMIS (Zonal and Specialised Hospitals)	• District Health Information System (DHIS2) • Improved Community Health Fund (iCHF) • Electronic Logistic Management Information System (eLMIS) • PACS (Radiology Picture Archive Communication Systems) • Government Electronic Payment Gateway (GePG)
	e-Medical	• Government of Tanzania Hospital Management Information System (GoTHOMIS) • Electronic Logistic Management Information System (eLMIS) • Telemedicine • District Health Information System (DHIS2)
	GoTHOMIS (PO-RALG)	• Improved Community Health Fund (iCHF) • Electronic Logistic Management Information System (eLMIS) • District Health Information System (DHIS2) • Radiology Picture Achieve Communication Systems (PACS)
	eHMS	• Government of Tanzania Hospital Management Information System (GoTHOMIS) • Electronic Logistics Management Information System (eLMIS) • Telemedicine • District Health Information System (DHIS2)
EWURA	Electricity Regulatory Information System (ERIS)	• Tanzania National Electric Supply Company
	License and Order Information Systems (LOIS)	• Tanzania National Electric Supply Company • Petroleum Upstream Regulatory Authority (PURA) • Tanzania Petroleum Development Corporation

Source: Systems Walkthrough from the visited Public Institutions

Table 3.14 above shows some of the systems which were not able to integrate with other key business processes outside the business operations. The systems which were developed from different front end and back-end technologies were posing challenges on integrating one business application with another. The review of 10 Systems which were assessed through walkthrough from the visited public institutions indicated limited interoperability with some key business processes as indicated in Table 3.15.

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3.6.4 Limited Integration and Interoperability of Developed ICT Systems

Section 6.9 of eGA's ICT Project Review Checklist highlights that the ICT systems developed by any government institution have to consider the issues of integration and/or interoperability with other systems. Section 2.1(vii) of the Government Interoperability Framework (2016) requires that government institutions ensure that there is data integration between ICT systems which are developed in the government so as to achieve the purpose of interoperability and hence operating in a manner that facilitates smooth data exchange and sharing.

However, the review of Government ICT systems from the visited government institutions indicated that most of the acquired systems were operating in isolation and were not capable of communicating with other systems within or outside the entities. According to the review of the ICT systems during the visits to public institutions, about 42 out of 79 ICT Systems (47%) that were used by the public institutions were non-interoperable as presented in **Table 3.15** below.

Table 3.15: Category of the ICT Systems and Status of Interoperability

Functional Category of ICT System	Interoperable	Non-interoperable
Legal	0	1
Financial	7	14
Information	3	3
Administration	12	11
Energy	3	1
Logistics	1	4
Agriculture	4	0
Professional	2	0
Health	8	3
Education	2	0
TOTAL	42	37

Source: Interviews and GISP Asset Register

Table 3.15 indicates that only 42 out of 79 equivalent to 53% of the acquired systems were interoperable and able to integrate with other systems without huge reprogramming or the creation of additional layers to exchange data with other systems. The remaining 37 systems equivalent to 47% of the systems were not easily interoperable with other systems and could not be easily integrated with other systems. The detailed list of ICT Systems and the status of interoperability is detailed in *Appendix 7*.

Through discussions with officials from the different institutions, it was pointed that the main reason for limited interoperability was the software acquisition approach. It was noted that, most of the vendor-based ICT systems were developed without having an Application Programming Interface which is the main window for allowing communication and data exchange between two systems. Additionally, the databases of some of the acquired ICT systems were not scalable and thus not easily allowing the upscaling or downscaling of subscribers or users when a new demand for resources was requested. The developed systems allowed for communication only with those systems with similar language or database language or definition language which was able to exchange data with other systems within the same framework.

The Management of eGA response pointed out that, the Authority established a data exchange and sharing platform known as Government Secure Enterprise Service Bus (GovESB) for exchange of information between institutions and hence integrating the government systems. Furthermore, the Authority pointed out that most of the systems that were developed before the enactment of the e-Government Act may have faced the interoperability challenge. However, systems that were developed after the Act are currently required to comply with standards and guidelines for interoperability framework and integration.

3.6.5 Irregular Hosting Environments for Acquired ICT Systems

Section 25(b) of the e-Government Act 2019 states that all public institutions are supposed to host the systems in the Government approved hosting environment. The public institutions were supposed to ensure that systems are hosted in a secure environment with acceptable conditions and approved by the e-Government Authority. The most acceptable and approved hosting centers included the e-Government Authority Data Center and the National Internet Data Center (NIDC) where ICT systems from public institutions are being hosted.

However, the review of the hosting environment of the developed ICT systems found that, some of the ICT systems acquired by visited public institutions were not being hosted in the government-approved hosting environment. Some of the ICT systems were hosted internally but using host environments which were not approved by the e-Government Authority. Externally, the public institutions were not regularly controlled to host in National Internet Data Centre (NIDC) or e-Government Authority

which is a requirement by the e-Government Act. **Table 3.16** shows the varieties of hosting options that public institutions have taken contrary to the requirement of the e-Government regulations.

Table 3.16: ICT Systems Hosting Environment

Public Institution	ICT Systems Hosting	
	Internal	External
EWURA	✓	NIDC, GDCeGA
DUWASA	✗	GDC
GPSA	✗	GDC
Ministry of Agriculture	✗	NIDC
Ministry of Health	✓	NIDC, GDC
TRA	✓	GDC, TTCL

Source: Reviewed ICT Systems

Table 3.17 shows that there was a variation of host centres for developed ICT systems by the government institutions. From the review of the hosting centers in the six visited government institutions, the audit noted four different host institutions which were GDC, NIDC, TTCL and In-house data centers. Three out of the six visited institutions hosted their systems using in-house centers which were not approved. The other three did not have internal host centers but had rather opted to host externally.

Officials from public institutions indicated that, the main reason for having different host centers was to increase the independence of the hosting environment and increase the reliability factor. On the other hand, those institutions which did not want to host internally, were compelled to do so by the cost factor which was deemed to be expensive.

In response, the Management of eGA pointed out that, the Authority has prepared Data Centre standards for public institutions. The standards are meant to ensure that public institutions meet the minimum requirements for hosting ICT systems amongst them.

Additionally, e-Government Authority pointed out that it was not possible to monitor ICT systems from all public institutions, especially those which are not hosted in the Government Data Centre (GDC), because it was an activity which demands a lot of resources. However, the Authority has been doing data centre assessments in some of the public institutions in order to minimize the risks presented by unmonitored ICT systems to public information and sensitive data. For instance, in recent months, the Authority conducted data center assessments at NIDC, TTCL, NIDA, NECTA,

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UCC and SUA in order to determine the extent to which the data centres were complying with the requirements of Data Centre Standards for public institutions.

Consequently, irregular systems hosting made it difficult for the e-Government Authority to effectively monitor the ICT systems and in particular the network infrastructure from public institutions as per the requirement of the e-Government Act 2019. On the other hand, irregular hosting of ICT systems exposes the government data to a risk of data breaches and collapse when the systems were cyber attacked.

3.6.6 Acquisition of ICT Systems without Approval of e-Government Authority

Section 24(2) of the e-Government Authority requires any public institution that intends to implement ICT project to submit to the Authority for advice and provide details of the projects during the planning stage. They are also required to receive clearance from the Authority before solicitation of the funds. This was aimed at ensuring compliance with technical standards and guidelines and avoiding duplications of efforts.

However, the review of projects which were developed between 2017/18 and 2021/2022 found that some of the ICT projects which were acquired by the public institutions were not approved by eGA as per the requirement of the e-Government Act 2019. The public institutions indicated to have registered software and hardware assets in the government information system portal GISP without receiving an advisory note from the e-Government Authority which approves or disapproves the implementation of ICT Project. **Figure 3.2** below shows the completed ICT Projects between 2017 and 2022 and the status of approval by the e-Government Authority.

Figure 3.2: The Approval Status of Acquired ICT Systems between 2017 and 2022
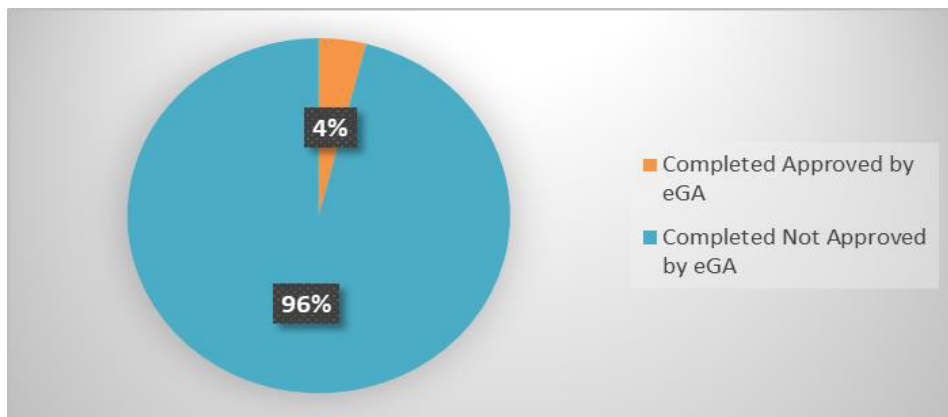
Figure 3.2 indicates that 96% of the ICT Systems which were developed by public institutions from 2017 to 2022 were not approved by the e-Government Authority. From the database of registered ICT assets in the Government ICT services portal, a total of 421 ICT Projects were initiated and completed in the respective period. Out of these, only 17 projects equivalent to 4% were approved by the e-Government Authority while the remaining 404 projects had not been approved.

The main reason public institutions are not complying with the approval requirement was the fact that the then "e-Government Agency" which was responsible for enforcing the approval requirement did not have enough mandate to enforce the registration guidelines to public institutions. Therefore many public institutions did not have enough motive to comply with the requirement of registering their ICT Projects with e-Government Agency by then.

On the other hand, the discussions with officials from eGA pointed that the high rate of systems that were acquired without approval of eGA was due to increased enforcement by eGA to register all government software assets into GISP. This was a result of backlogs of ICT systems which were acquired some years back but were not approved by eGA. The registration procedures involved in assets registration in GISP is similar to that for registration of ICT projects. Therefore, Public Institutions were, within a short while, required to register all of them following the same procedures of registration.

However, this reason did not sufficiently align with the post e-Government Authority rate of compliance with the public institutions on the similar requirement. The analysis conducted by the audit team found that, the compliance rate with regard to seeking approvals from eGA continued to be low despite the enactment of the e-Government Act. The Audit Team assessed the compliance rate of ICT Projects registered after the enactment of the e-Government Act in the year 2019 and the results are presented in **Figure 3.3**.

Figure 3.3: Rate of Compliance to Approval Requirement after Enactment of e-Government Act. 2019
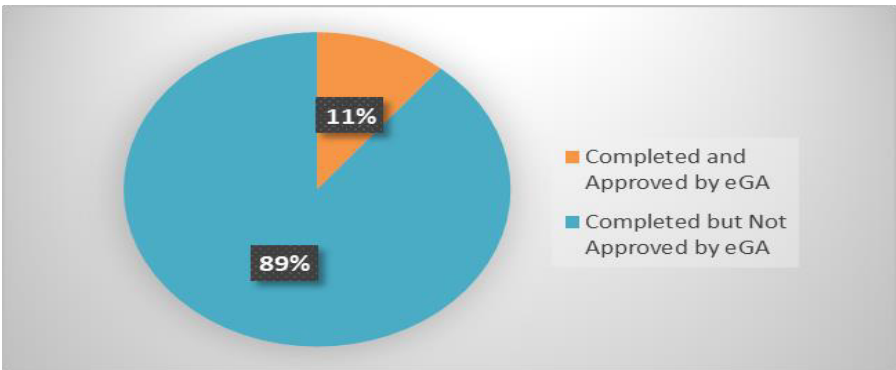
Source: The GISP Data (2017-2022)

Figure 3.3 indicates that the public institutions had continued to initiate ICT Projects without seeking approval from the e-Government Authority even with the enactment of the e-Government Authority Act. The analysis conducted indicated that a total of 75 projects were completed and operational in the public institutions since the September 2019, out of which only 8 projects were approved by eGA. The remaining 68 projects equivalent to 89% had not been registered by e-Government Authority.

3.6.7 Inadequate Guarantee of Business Continuity for Acquired ICT System

Section 39(a) of the e-Government regulations requires the public institutions to implement business continuity management including operationalizing a disaster recovery plan which must be submitted to the Authority. The systems walkthrough to the visited public institutions indicated that, public institutions were acquiring ICT systems that were not supported by reliable business continuity plans.

The review of the functionality of the systems noted that some of the systems which were acquired by the government institutions were not operating with provision for business continuity. Therefore, the services were not guaranteed to continue without prolonged downtimes. **Table 3.17** below shows the systems which were visited and were reported to have downtimes and discontinuity during the operationalization, despite having host environments which were approved by the government including NIDC and eGA Data Centers.

Table 3.17: The Overview of Incidences Affecting Business Continuity for Acquired ICT Systems

Reported Incidence	No of Systems Reported	Total Number of Systems Checked	Percentage
Downtime	35	79	44
Internal Server Problems	16	79	20
Data Loss	2	79	3
Power Loss	12	79	15

Source: System Performance Reports

Table 3.17 indicates that public institutions have been facing challenges that have affected their capacity to provide services at the agreed levels. Acquired systems have been reported to face downtimes for most of the systems, internal server problems and data losses as a result of server errors.

Out of the 79 systems which were assessed during the audit, 35 of them equivalent to 44% reported downtimes as a result of system host centers, internal server errors and data losses as a result of system crashes. On the other hand, 20% of the systems reported internal server problems while 15% of them experienced power loss and thus affecting business continuity.

Further discussions with the official from the visited public institutions noted that, the inadequate guarantee of a business continuity plan was caused by lack of business impact assessment and design of appropriate business continuity handling procedures. Business impact assessments were expected to establish all risks which may affect the business continuity and design appropriate measures to mitigate them, which were included in the business continuity plans.

Inadequate business continuity may lead to financial losses and misuse of resources provided for the acquisition of such systems because these systems incur costs. Additionally, inadequate business continuity may disrupt services and affect government operations in the respective public institutions.

3.6.8 Inadequate Capacity to Develop ICT Systems

Section 1(f) of the e-Government Guidelines requires the public institutions to deploy more efforts on developing ICT systems using the resources within the government. The public institutions are expected to ensure that most of the ICT projects are developed using internal resources in order to ensure that the projects are sustainable..

However, the review of the contracts for developing ICT systems from the visited public institutions has indicated that, public institutions had low internal capacity to develop ICT systems intended to facilitate their business processes. As a result, public institutions were compelled to engage outsourced staff in developing ICT systems that were intended to automate their business processes. **Figure 3.4** indicates the number of projects that were developed and the origin of human resources engaged in the development of the system.

Figure 3 4: The Overview of Implementation Mode for ICT Systems (Software Assets) Acquired Between 2017 and 2022
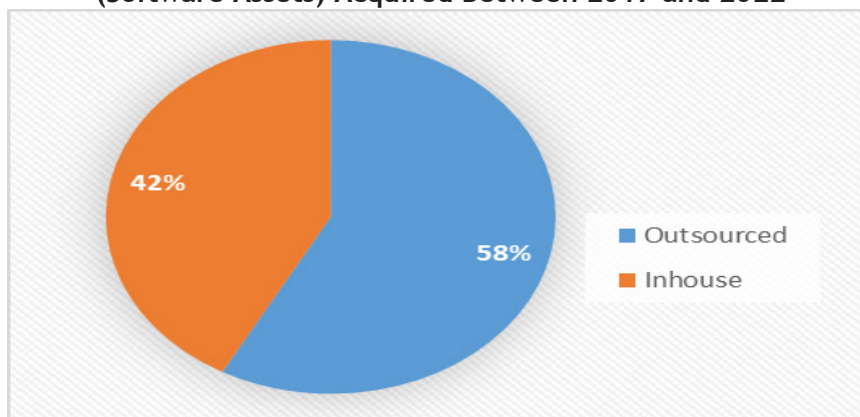
Source: e-Government GISP Asset Register (2017-2022)

Figure 3.4 shows that 58% of the government ICT Projects were acquired by using resources outside the respective public institutions. This percentage represented a total of 539 ICT Projects which were acquired

between 2017 and 2022 from public institutions. On the other hand, a total of 388 projects from public institutions equivalent to 42% were implemented by using the internal ICT Staff.

Through discussions with ICT officers from the visited public institutions, it was noted that public institutions were employing more outsourced ICT staff than internal ICT staff because of lacking relevant professionals including software programmers to execute the demanded ICT solutions.

3.7   Ineffective Testing and Commissioning of ICT Systems

Section 2.3.4 (iv) of the Standards and Guidelines for Government ICT Project Implementation requires public institutions to measure the planned performance against the actual performance of the acquired systems. The measurement is aimed at ensuring that the functional performance of the acquired ICT systems meets the business requirements of the requested solution from the user's side. This objective is achieved through rigorous testing of the acquired solution on-site and off-site.

However, the review of the test results and corresponding reports for the acquired ICT systems pointed out weaknesses that rendered the testing activities ineffective. The following are some of the key observations noted while reviewing the test reports.

3.7.1   Lack of Integration Testing for Acquired Systems

Section 2.1 of the e-Government interoperability framework standards and guidelines require the public institutions to ensure that, the e-Government initiatives that are acquired by public institutions comply with three dimensions of government interoperability framework. These three dimensions include business process or organisational interoperability, information or semantic interoperability and technical interoperability. These dimensions can only be adequately verified through rigorous integration testing for the acquired systems to measure the extent to which the newly acquired ICT systems can integrate with other systems, and therefore meet the nine technical standards for interoperability of the ICT systems.

However, the review of the test results and the corresponding reports indicated that the public institutions conducted the most common user acceptance testing (UAT). Very few public institutions have conducted

integration testing. The audit team visited 13 public institutions and assessed a total of 64 ICT systems whereby 13 of them were internally acquired by government institutions while 4 of them were government-wide shared systems and the rest of 47 systems were outsourced. The assessment of all 13 internally acquired systems indicated that only UAT tests were conducted. Nonetheless only two public institutions conducted integration testing for their acquired systems.

In response the e-Government Authority pointed out that, as a remedial solution the integration aspect among the Government ICT systems were counterchecked by the operationalisation of Government Enterprise Service Bus (GovESB) which is taking care of integrating systems between public institutions. It was further reported that GovESB was testing seamlessly the exchange of data between systems that integrate through it.

As a result, the absence of integration testing brought a challenge for public institutions whenever they want to integrate one business application with another business application within the same entity or with another application outside the institution. The audit noted the existence of challenges with systems during an exchange of data across modules within some systems. This is because reports of frequency of errors were noted whenever there was an exchange of data between one module and another, one micro-service with another or between one application and another.

3.7.2 Limited Transfer of Knowledge to In-house ICT staff

Section 2.3.5 (iii) of the Government ICT Project Implementation Guideline requires public institutions to make sure that capacity building and knowledge transfer is appropriately done to the users and administrators after the completion of projects. The public institutions were expected to have sufficient mechanisms for knowledge transfer and capacity building in order to strengthen their internal team's capacity to provide technical support and maintenance services.

However, the review of operationalization of the developed ICT systems found that, the internal ICT officers who were supposed to provide technical support to business process owners had limited knowledge of the technical functionality of the acquired ICT systems. The in-house ICT Officers were not capable of providing necessary technical support when

business processes were interrupted through system downtimes or unavailability. The discussions with business process owners from the visited public institutions pointed that most of the time, the institutions had to communicate with the vendors/suppliers of the systems to troubleshoot the systems and provide the necessary technical support.

Through discussions with relevant business process owners from the visited public institutions, it was noted that the main reason for the inadequate transfer of knowledge was the limited number of relevant ICT staff who could be engaged during the development and be able to provide necessary technical support and maintenance services after deployment. Among the 13 visited public institutions, only three had system programmers who were technically capable of providing necessary support when required. Additionally, it was pointed out that there was insufficient engagement of ICT Officers during development or deployment of ICT systems.

As a result of the limited knowledge, public institutions were frequently compelled to engage vendors to provide technical support or maintenance services to enable business continuity after the deployment of the systems. **Table 3.18** below provides an overview of post-implementation vendor engagement for providing support and maintenance services.

Table 3.18: Post-Implementation Vendor Engagement for Provision of Support and Maintenance Services

ICT System	Post-Implementation Vendor Engagement (Times) per Annum
Ministry of Health	5
DUWASA	2
GPSA	3
EWURA	3
TRA	4
Ministry of Agriculture	4
AVERAGE	**3**

Source: Auditors' Review of ICT Systems

Table 3.18 shows that there has been frequent provision of support services by the vendors after the deployment of the ICT Systems. The assessment conducted by the audit team found that vendors were engaged by public institutions at an average of three times per year after deploying

the procured systems. The highest engagement of vendors was five times which was observed at the Ministry of Health in support of the Tanzania Health Supply Chain Portal. In other public institutions, the vendors had been engaged at an average of 3 to 4 times per annum.

Consequently, frequent engagement of vendors to provide customer support and maintenance services increased the costs of the public institutions to maintain the procured ICT systems. Additionally, the frequent engagement of the suppliers increased the dependency on vendors and therefore limiting skills growth for internal ICT staff.

3.8 Inadequate Customer Support to Government Institutions

Section 5(m) of e-Government Act of 2019 requires the Authority to facilitate and support the implementation of all sector-specific ICT systems and services. Also, Section 2.1 of e-government helpdesk and ICT support process document requires e-Government Authority to provide an efficient and effective way of handling and resolving the requests within the authority, from public institutions and stakeholders, by having a single point of contact and a proper channel to ensure that internal support services were delivered timely to the respective clients.

However, the audit team noted two main weaknesses associated with the provision of customer service support as described below.

3.8.1 Delays in Attending High Risks Customer Service Requests

The e-Government Client Service Charter requires the Authority to handle customer service requests from public institutions within a period of 24 hours for normal customer service requests, and within a period of not more than 3 days for technical customer service requests. The timelines are established to ensure that eGA effectively support public institutions in utilising e-government services correctly and safely, and that any high-risk incidence or service request is effectively attended to within a reasonable time.

A review of eGA help desk statistics noted the presence of high risks category of service requests from public institutions that needed immediate attention. However, the service requests were not closed on time. Interviews with officials from eGA noted that helpdesk support external clients who are public institutions to solve their issues through making calls and e-mails. **Table 3.19** provides details of the assessment of

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time for supporting high risks services requested by the public institutions and the time at which they were responded to and closed by the e-Government Authority.

Table 3.19: The Assessment of Closure Times for High, Very High and Extremely High Risks Tickets for Customer Support Services

Ticket Closure Time	No of Tickets	Percentage
Within 1 days (24 hours)	16	12
Between 1 and 3 days	44	33
Between 4 and 14 days	40	30
Between 14 and 30 days	11	8
More than 30 days (1 month)	24	18
TOTAL	**135**	**100**

Source: Help Desk Statistics (2017-2022)

Table 3.19 shows that the number of high, very high and extremely high risks tickets that were opened by public institutions were not being closed within the time indicated in the client service charter. Generally, about 88% of all online tickets categorized as high risks and above were not closed at a required time period leaving only 12% of them attended on time prescribed in the client's service charter.

Specifically, 33% of the tickets were closed for a period between one and three days. Furthermore, about 30% of the tickets were closed for a period of between 14 and 30 days. The table indicates generally that high, very high and extremely high risks customer services tickets were not handled on the time indicated in the client service charter.

In response to the matter, the e-Government Authority pointed out that, the delays were caused by the variations in times required to solve each service request due to its complexity. According to eGA, prior to entry of the ticket into the system, there are processes of attending the service requests or incidence reported. These processes vary according to the type of service request/incidents which include but not limited to closure of ticket through email, phone etc.

3.8.2 Non-Execution of Customer Satisfaction Surveys

The e-Government Strategic Plan of 2016/17 – 2020/21 required the Agency to undertake customer and public institutions satisfaction surveys in the period of five years under which the Strategic Plan was being implemented. The surveys were expected to provide the extent to which the services provided by eGA were meeting the expectations of both the customers and public institutions.

However, the review of the performance reports from the financial years 2017/18 to 2021/22 indicated that, eGA did not conduct customer satisfaction surveys. The surveys were intended to indicate the extent to which customers were satisfied with their services by a score of either high or low service quality. **Table 3.20** indicates the targeted customer satisfaction scores as per Strategic Plan 2016/17 – 2020/21 and the status of execution of the respective surveys for the period of 5 years (2017-2022).

Table 3.20: Comparison of Strategic Targets of Customer Satisfaction Results against its Status of Execution (2017-2022)

Financial Year	Strategic Target (%)	Actual Results (%)
2017/18	96	Not Done
2018/19	97	Not Done
2019/20	98	Not Done
2020/21	100	Not Done
2021/22	70	Not Done

Source: e-Government Strategic Plan & Interviews

Table 3.20 shows different percentage targets for the customer satisfaction levels that were to be achieved by e-Government Authority from the financial year 2017-2022. However, the results have indicated that eGA did not conduct the required customer satisfaction surveys for the periods from 2017-2022.

The customer satisfaction surveys were not performed despite the increase in the number of e-government services and the abrupt growth of technologies in the government in the past 10 years. For instance, the number of service requests has grown from 574 in 2016/17 to 3465 in

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2020/21. As a result of the increased automation of government services, the demand and sophistication of government service demand have increased.

Interviews with officials from the e-Government Authority indicated that the Authority did not conduct the required customer satisfaction survey because the Authority wanted to engage an external organization to independently undertake the satisfaction surveys and be able to objectively evaluate the satisfaction.

The e-Government Authority in response pointed out that, recently the Authority engaged an external consultant to undertake the surveys. It was noted that, currently, the consultant was conducting the satisfaction surveys and the outcome will inform the e-Government Authority on its performance with regard to satisfying its customers. Additionally, the Authority has been hosting Customer Service Weeks on annual basis as a means of engaging its customers and assessing the level of satisfaction for its services.

As a result, the absence of customer satisfaction surveys impaired the capacity of the organization to evaluate the quality of its services and be able to undertake necessary measures to improve the services. For instance, the analysis of the customer services request tickets indicates that, public institutions were not requesting customer support from the e-Government Authority for challenges experienced on systems that were not developed by the e-Government Authority.

The analysis indicates that about 93% of the online ticket requests were for services related to systems that were developed by eGA while only 7% of the ticket requests were for systems that were developed by other vendors or suppliers.

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CHAPTER FOUR

AUDIT CONCLUSION

4.1 Introduction

This chapter provides a conclusion of the audit. The basis for concluding is the overall and specific audit objectives as presented in chapter one of this report. The general and specific conclusions are given below.

4.2 General Conclusion

The audit concludes that the management of planning and acquisition of ICT systems in public institutions has not been sufficient and requires effective measures to increase controls for public institutions acquiring ICT systems. PO-PSMGG has not been able to fully exercise its oversight function in the planning and acquisition of ICT systems which is an important stage in acquiring total oversight function on the developed ICT Systems.

On the other hand, PO-PSMGG has not sufficiently executed its oversight function on public institutions and eGA's performance because of lacking effective oversight instruments in managing planning and acquisition of ICT systems such that the extent of compliance to the e-Government laws, regulations and other general guidelines is still low.

Additionally, the e-Government Authority has not been able to effectively oversee the planning and acquisition of ICT systems in particular the projects initiation and planning. Public institutions are not providing sufficient justifications acceptable to e-Government for acquiring the planned ICT systems. Furthermore, the e-Government Authority has not been able to effectively enhance compliance with public institutions with regard to preparations of systems user requirements and the development of the respective systems requirements. The system's development activities are not sufficiently overseen by the Authority in a way that ensures that the key requirements and compliance levels are attained by the public institutions which are automating their business processes. Also, public institutions have not been conducting a sufficient number of required tests to be able to ascertain whether the acquired systems are

meeting the defined user requirements and that they are of the desired quality to achieve the required objectives.

Public institutions have been increasingly automating their business processes which are not sufficiently correlated with controls from the responsible regulatory authorities during the planning, development and operationalization of the acquired systems. Although the e-Government Authority has been able to develop a sufficient number of technical guidelines and standards, the rate of compliance and extent of adherence in the planning and acquisition of ICT systems has been insufficient.

4.3 Specific Audit Conclusions

The following are specific audit conclusions:

4.3.1 PO-PSMGG has not Effectively Exercised its Oversight Function on the Planning and Acquisition of ICT Systems to Public Institutions

The audit concludes that the Ministry has not sufficiently performed its oversight roles in overseeing the Government ICT sub-sector and in particular the planning and acquisition of ICT systems. The PO-PSMGG has not been effective on timely development of its guidelines and manuals that are supposed to be disseminated to the public institutions to guide all activities on planning and acquisition of ICT systems.

There are weaknesses in the timeliness of development of the guides where most of the guidelines and strategies have been rolled out very late from the planned timelines. Furthermore, the developed guidelines and in particular the e-Government strategy have not been completed adequately and will not provide the anticipated guidance to all government institutions on the development of their ICT strategies.

Furthermore, the monitoring and evaluation system at PO-PSMGG is fragmented, with no formal and identifiable system for monitoring its targets, goals and strategies. The PO-PSMGG is not able to effectively determine to what extent it has achieved its strategic targets and goals because of lacking sufficient data collection mechanisms linked with its strategic goals and targets.

4.3.2 Ineffective ICT Projects Initiation and Planning

The audit concludes that the public institutions are not initiating and planning for acquiring their ICT Systems most appropriately. The planning and acquisition of ICT systems has been guided by mostly the guidance developed by eGA which requires the public institutions to comply with standards and guidelines during the initiation and planning phase. Public institutions comply more effectively with the common procedure for approval where the concept note is submitted and advisory note is granted. However, other requirements within the initiation phase are not sufficiently complied including the write-ups of feasibility studies for bigger projects and the contents of concept notes that are submitted to eGA.

Besides, eGA has not been effective on providing timely feedback on the concept and advisory notes to enable further development of the ICT systems or reversal of the projects. There is no proper and objective system for deciding on the concept notes submitted to eGA from public institutions. Public institutions have been judged more depending on the perceptions and relativity concepts of the functionality between one systems and other systems with similar or closely related functionality.

4.3.3 Insufficient Systems for Overseeing Mechanism for Collecting and Managing System Requirements and Specifications Prior to Acquisition of New Systems

The eGA was expected to ensure an effective mechanism for reviewing the system requirement and specifications prior to acquiring new ICT systems. This can be achieved by proper communication between the Government entity and all stakeholders prior to acquiring new ICT systems, especially during the gathering of user requirements and developing system specifications. However, limited interventions during the planning of new ICT project gathering had distorted the whole process of user requirements. This has resulted into developing ICT system that are malfunctioning and therefore not delivering the requirements of business process owners.

Insufficient communication mechanism on developing system requirements and specifications on acquiring ICT project has been contributed to inadequate awareness of user requirements gathering to meet strategic goals. The training requires to provide clear definition of function and

business processes of the given entities prior to development of ICT system, involvement of all stakeholders during the gathering of user requirement stage, and preparation and approval of the specifications by relevant business owners and authorities within the business environment.

4.3.4 The Development or Configuration of ICT Systems that Did Not Adequately Support Business Processes

The audit concludes that the oversight role of eGA on the development and configuration of ICT systems that are acquired by public institutions is not enough to guarantee compliance with the established guidelines and other strategies. The e-Government Authority has not taken sufficient steps in managing the planning and acquisition of ICT systems and in particular the acquisition process where most of the future performance aspects of the systems are established. The development stage of the ICT systems is at most left to be self-controlled by public institutions. These are institutions which have been complying with the most common requirements on public financing including the procurement aspects and financial guidelines, but very few of them have been able to effectively comply with the ICT Project implementation guidelines.

Weaknesses have been noted in the controls of the acquisition of systems after the advisory notes is issued to proceed with the development. Additionally, the capacity of in-house teams to develop ICT systems is not sufficiently matched with the ever-increasing demand to automate business processes. This has resulted to a backlog of requests to develop systems which have not yet been approved while the capacity of the currently available institutions to develop the systems is not sufficient.

4.3.5 Acquisition of ICT Systems that were Not Effectively Tested and Commissioned

The auditors noted weaknesses in testing and commissioning, an exercise that is aimed at ensuring that the acquired ICT systems present the actual demand of the business process owners. The assessment by the audit team discovered that, the testing of the ICT systems was done more on the traditional testing methodologies where unit tests have been tested through user acceptance tests and the corresponding test cases.

There has not been other type of tests that are key in ensuring that the acquired systems perform to the expectation of the users. Other important tests including load tests and integration testing have not been

conducted by the public institutions despite the fact that, systems which are acquired in recent years demand integration with other micro-services within services, or other applications within business process, or other systems outside the institutions. The integration test is therefore key in the recent ICT infrastructures but have not been performed by the acquirers. In addition, eGA has not taken sufficient steps on ensuring that other key tests are also done by the public institutions.

AUDIT RECOMMENDATIONS

5.1 Introduction

The audit findings and conclusions pointed-out weaknesses in the oversight, planning and acquisition of ICT Systems in the government by the President's Office Public Service Management and Good Governance (PO-PSMGG) and e-Government Authority (eGA). Areas for further improvements have been identified in the management of planning and acquisition of ICT systems as well as the oversight role by PO-PSMGG.

In order to improve on the identified weaknesses in oversight, planning and acquisition of ICT systems by PO-PSMGG and eGA, the Audit team generally recommends improvements on the management of planning and acquisition of ICT systems to the public institutions as executed by eGA.

The recommendations are specifically addressed to PO-PSMGG and eGA in order to improve the quality, timeliness and value for money for the acquired ICT systems for public institutions in Tanzania.

5.2 Recommendations to the Audited Entities

5.2.1 Recommendations to the President's Office - Public Service Management and Good Governance

The President's Office Public Service Management and Good Governance is urged to:

a) Review the functions and organizational structure of the Directorate of Government ICT Services at the Ministry in order to enhance the effectiveness of development and monitoring of policy and standards for the Government ICT sector;

b) Review the monitoring and evaluation framework for planning and acquisition of e-Government initiatives including the development

of ICT systems so as to enhance the effectiveness of e-government standards and guidelines; and

c) Complete and monitor the implementation of the e-Government strategies which shall provide the roadmap for achieving coordinated, connected and secure e-Government.

5.2.2 Recommendations to the e-Government Authority (eGA)

The e-Government Authority is urged to:

a) Strengthen the feedback mechanism from eGA that will ensure that requests for developing ICT Systems are responded to in a timely manner to allow government institutions to undertake the proposed projects on a timely basis;

b) Enhance the functionality of GISP in a manner that will allow public institutions to provide progress reports in a format that can automate data analytics and progress monitoring in order to strengthen its oversight in planning and acquisition process.

c) To ensure that public institutions provide all progress reports and milestones during the development of ICT systems even after providing advisory notes to proceed with the development of ICT systems in the Government Institutions;

d) To ensure that the ICT Systems which are acquired by public institutions are interoperable and allow integration with other ICT Systems within the government;

e) To ensure that all ICT Systems developed or configured in public institutions undergo security assessment prior to their deployment in order to safeguard government information assets from compromise and breaches;

f) To develop effective controls for the ICT Systems acquired by public institutions which are donated by development partners;

g) To ensure that public institutions strengthen quality control for the systems which are developed or acquired by public institutions in order to enhance the quality of acquired systems;

h) Enhance decision-making tools that are used in approving or disapproving the submitted proposals for developing ICT systems for public institutions;

i) Strengthen the testing activities by establishing criteria for comprehensive testing of ICT systems before deployment in the production environment; and

j) Revise the allocation of staff for provision of customer support to public institutions so as to ensure that there is a dedicated and skilled set of resources for providing on-demand customer support to public institutions.

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APPENDICES

Appendix 1 (a): Response from the President's Office - Public Service Management and Good Governance (PO-PSMGG)

This part provides responses from the President's Office - Public Service Management and Good Governance (PO-PSMGG) on the recommendations issued by the CAG.

General Comments

Specific Comments

Sn	Auditors Recommendations	Comments of PO-PSMGG	Planned Action	Implementation Timeline
1	Review the functions and organisation structure of the Directorate of Government ICT Services at the Ministry in order to enhance the effectiveness of development and monitoring of policy and standards for the Government ICT Sector	As per e-Government Act No. 10 of 2019, the role for development and monitoring of technical e-Government standards and Guidelines is under the e-Government Authority. PO-PSMGG has the role for development and monitoring of e-Government policies, policy level guidelines and issuing of circulars relating to the e-Government. Since	Review function of DICTS to determine if there are areas of improvement	Upcoming review of PO-PSMGG structure

Sn	Auditors Recommendations	Comments of PO-PSMGG	Planned Action	Implementation Timeline
		2012, the Structure of DICTS has been reviewed three (3) times to accommodate various structural and legal changes that have been taking place on e-Government.

Further review of DICTS structure will be done in the upcoming review of PO-PSMGG structure, in order to determine areas of improvement if there will be any. | | |
| 2 | Review the monitoring and evaluation framework for planning and acquisition of e-Government initiatives including the development of ICT systems so as to enhance the effectiveness of e-Government standards and guidelines | Monitoring and evaluation framework for e-Government has been developed and included in:-

(a) e-Government Strategy 2022 Section 4.5
(b) PO-PSMGG Strategic Plan 2021/22-2025/26 Section 4.5
(c) Digital Tanzania Appraisal Document, | Ensure that all monitoring and evaluations frameworks for e-Government policy related initiatives are consolidated in the e-Government Strategy 2022 | June, 2023 |

Sn	Auditors Recommendations	Comments of PO-PSMGG	Planned Action	Implementation Timeline
		Results Framework and Monitoring Section VII		
3	Complete and monitor the implementation of e-Government Strategies which shall provide the roadmap for achieving coordinated, connected and secure e-Government	The development of e-Government Strategy 2022 and Government Cyber Security Strategy 2022 have been completed and approved. DICTS will continue to monitor implementation of the strategies and other e-Government policy instructions issued by PO-PSMGG	Monitor and Evaluate implementation of eGovernment Strategy 2022 and Government Cyber Security Strategy 2022	Every End of the Financial Year

Appendix 1 (b): Response from the e-Government Authority (eGA)

This part provides responses from the e-Government Authority on the recommendations issued by the CAG.

General Comments

a) The implementation of e-Government Act No. 2019 is the responsibility of all Public Institutions as it is normally done with other Acts for instance Public Procurement Act, Finance Act etc. The e-Government Authority is charged with the mandate to set standards and follow up on compliance of the Act as well as reporting such to the respective government enforcement bodies. Thus non -compliance on aspects of the Act is a direct accountability of the respective Public Institution as it is normally done in other Acts.

b) According to e-Government Act 2019, ICT project means a project for acquiring, sourcing or improving ICT infrastructure or systems for undertaking e-Government initiatives while ICT system means an ICT set up consisting of hardware, software, data, communication technology and people who use them.

Specific Comments

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
1.	Strengthen the feedback mechanism from e-GA that will ensure that requests for developing ICT Systems are responded	e-GA Management has noted the auditor recommendation for implementation. As part of strengthening the feedback mechanism, the	As per Objective D of e-Government Strategic Plan 2021/22 - 2025/26 • The Authority will continue improving the GISP portal as a tool to strengthen feedback	FY 2022/2023 -FY 2024/2025

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S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
	in a timely manner to allow government institutions undertake the proposed projects on timely basis	Authority developed Government ICT Services Portal - GISP accessible through https://gisp.gov.tz which serves as a repository for Government ICT Services, Projects, and Technical Support offered by e-Government Authority (e-GA) to Public Institutions. The GISP ensures better ICT project management, higher quality services and active engagement with Public Institutions in the most efficient way possible. Moreover, the Authority provided awareness and conducted technical trainings to public institution to ensure that the implementation of ICT projects are in line with the e-Government Act 2019, e-Government General Regulations 2020, Standards and	mechanism between e-GA and Public Institutions. • Moreover, the authority will provide awareness and technical training to public institutions to ensure that implementation of ICT projects is in line with e-Government Act 2019, e-Government General Regulations 2020, Standards and Guidelines. • Furthermore, the Authority will conduct ICT project inspection and investigations to ensure the implementation is in line with e-Government related policies, laws, regulations, standards, and guidelines.	

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		Guidelines.		
2.	Enhance the functionality of GISP in a manner that will allow public institutions to provide progress reports in a format that can automate data analytics and progress monitoring in order to strengthen its oversight in planning and acquisition process.	e-GA Management has noted the auditor recommendation for implementation. The Authority started improving the Government ICT Service Portal in which among other things being worked on is enhancement of a feature for automatic notification on due dates for submission of progress reports as well as facilitate progress reports submission, review and feedback through the portal.	In line with Objective D of e-Government Strategic Plan 2021/22 - 2025/26, the Authority will continue with; • Enhancement of GISP to include a feature for automatic notification on due dates for submission of progress reports as well as facilitate progress reports submission, review and feedback through the portal. • Monitoring the implemented progress report functionality once completed, review and adjust it accordingly to meet the intended system requirements. • Additionally, the Authority will continue with conducting awareness sessions, technical trainings and	FY 2022/2023 - FY 2024/2025

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S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
			ICT project inspection and issuance of e-Government Standards and Guidelines to raise compliance level of Public Institution to e-Government related policies, laws, regulations, standards, and guidelines	
3.	To ensure that public institutions provide all progress reports and milestones during development of ICT systems even after providing advisory notes to proceed with the development of ICT systems in the Government Institutions	e-GA Management has noted the auditor recommendation for implementation. So far, the Authority has taken the following initiatives: i. Developed and operationalized Standards and Guidelines for Acquisition, Operations and Maintenance of e-Government applications. The mentioned Standards and Guidelines sets controls in the whole life cycle of ICT	In line with Objective D of e-Government Strategic Plan 2021/22 - 2025/26; The Authority will; • Monitor the implementation progress report and milestones functionality once completed, review and adjust it accordingly to meet the intended system requirements. • Conduct awareness sessions and training, ICT project inspection and issuance of e-Government Standards and Guidelines to raise	FY 2022/2023 - FY 2024/2025

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		systems planning, acquisition, development, maintenance and operations; ii. Collaborated with the Internal Auditor General - IAG to provide awareness and training to Internal Auditors from Public Institutions on e-Government related policies, laws, regulations, standards, and guidelines so that compliance on the same is achieved; iii. Continuing with enhancement Government ICT Service Portal - GISP	compliance level of Public Institution to e-Government related policies, laws, regulations, standards and guidelines	

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
4.	To ensure that the ICT systems which are acquired by Public Institutions are interoperable and allows integration with other ICT systems within the government	e-GA Management has noted the auditor recommendation for implementation. So far, the Authority has taken the following initiatives: i. Establish, Developed and manage Data Sharing and Exchange Platform (i.e., Government Enterprise Service Bus - GovESB) that is being used for systems integration between Public Institutions; ii. Established and operationalized e-Government Interoperability Framework - Standards and Technical Guidelines;	The Authority will continue with • Operationalization and management of Government Enterprise Service Bus - GovESB) • Develop e-Government Interoperability Framework.	FY 2022/2023 - FY 2024/2025

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		iii. Established and operationalized e-Government Integration Architecture - Standards and Technical Guidelines; iv. Established and operationalized Electronic Data Sharing and Exchange Guidelines.		

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
5.	To ensure that all ICT Systems developed or configured in the public institutions undergo the security assessment prior to its deployment in order to safeguard the government information assets from compromise and breaches	e-GA Management has noted the auditor recommendation for implementation. So far, the Authority has taken the following initiatives: i. Established and operationalized e-Government Security Operation Center (eGSOC), that among other things perform scheduled and on-demand security assessments; ii. Conducted awareness and training to Public Institutions' Security Point of Contact (SPOC) personnel towards building capacity in handling cyber security issues;	In line with Government Cybersecurity strategy 2022, the Authority will continue with: - i. Performing scheduled and on-demand security assessments; ii. Provision of ICT security training to public institutions to build capacity in handling Cyber security issues; iii. Ensure all systems to be hosted at Government Data Center undergo Security assessment before being operationalized. iv. Development of ICT security guidelines to guide public institutions in management of ICT security issues.	FY 2022/2023 - FY 2024/2025

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		iii. All systems hosted at Government Data Center undergo Security assessment prior to operationalization.		
		iv. Established and operationalized e-Government Security Standards and Technical Guidelines;		
		v. Established and operationalized e-Government Authority Services – Security Responsibilities Guidelines.		

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
6.	To develop effective controls ICT systems acquired by Public Institutions which are donated by development partners	e-GA Management has noted the auditor recommendation for implementation. So far, the Authority has taken the following initiatives: i. Established and operationalized Standards and Guidelines for Acquisition, Operations and Maintenance of e-Government applications. The mentioned Standards and Guidelines sets controls in the whole life cycle of ICT systems planning, acquisition, development, maintenance and operations. In which ICT systems donated by development partners must also adhere to those	In line with Objective D of e-Government Strategic Plan 2021/22 - 2025/26, the Authority will continue with; • Conducting compliance audits to ensure all ICT systems are efficiently and effective developed, operationalized, maintained in line with e-Government Act, Regulations, and Standards and Guidelines	FY 2022/2023 – FY 2024/2025

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		guidelines;		
		ii. Established and operationalized Government ICT Project Review Criteria where among other things Project Sustainability and Stakeholder Engagement criteria do take care on the involvement of technical experts for the ICT systems being acquired throughout the project lifecycle as well as capacity building to respective Public Institution ICT Team throughout the project lifecycle to avoid dependency to vendor/contractor;		
		iii. Established and		

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		operationalized Government ICT Services Portal - GISP to facilitate public institutions to register and submit all relevant, correct and updated ICT projects as well as system details as part of controlled approach to ensure that all relevant systems existing in the Government are sustainable, reliable and available even when handed over to the Government by the vendor or donor or development partner.		
7.	To ensure that public Institutions strengthens quality control systems for	e-GA Management has noted the auditor recommendation for implementation.	The Authority will continue with conducting awareness sessions and training, compliance assessments and issuance of e-Government Standards and	FY 2022/2023 - FY 2024/2025

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S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
	the systems which are developed or acquired by public institutions in order to enhance the quality of acquired systems	So far, the Authority has established and operationalized Quality Assurance Compliance Guidelines for e-Government Applications to strengthen quality control systems. The public institutions are supposed to use the guidelines as reference for quality assurance for the systems.	Guidelines to raise compliance level of Public Institution to e-Government related policies, laws, regulations, standards, and guidelines in line with Objective D of e-Government Strategic Plan 2021/22 - 2025/26	
8.	To enhance decision-making tools that are used in approving or disapproving the submitted proposals for acquiring ICT systems among public institutions.	e-GA Management has noted the auditor recommendation for implementation. So far, the Authority has taken the following initiatives: i. Established and operationalized Eleven (11) Government ICT Project Review Criteria which are being used for approving or disapproving the submitted proposals on ICT Project;	The Authority will continue with strengthening and operationalization of e-Government Tools in line with Objective D of e-Government Strategic Plan 2021/22 - 2025/26 • Review the ICT project review criteria • Review the ICT project Implementation Technical Standards and Guidelines	FY 2022/2023 - FY 2024/2025

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S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		ii. Established and operationalized Standards and Guidelines for Government ICT Project Implementation that guides all public institutions during implementation of Government ICT project from initiation to closure; iii. Established and operationalized Standards and Guidelines for Acquisition, Operations and Maintenance of e-Government applications. The mentioned Standards and Guidelines set controls in the whole life cycle of ICT systems planning, acquisition, development, maintenance and		

S. No	Recommendations	Comments of e-Government Authority (e-GA)	Planned Action	Implementation Timeline
		operations.		
9.	Revise the allocation of staff for provision of customer support to public institutions so as to ensure that there is a dedicated and skilled set of resources for providing on-demand customer support to public institutions.	e-GA Management has noted the auditor recommendation for implementation. So far, the Authority has taken the following initiatives: i. Established and operationalized e-Government Helpdesk and ICT Support Process; ii. Established and operationalized shared e-Government Helpdesk System.	In line with Objective F of e-Government Strategic Plan 2021/22 to 2025/26, the Authority will continue with its efforts on: i. Strengthening Authority's adherence to Policies, Laws, Regulations, rules, procedures and guidelines; ii. Authority will deliver its services according to the approved Client Service Charter. iii. Enhancing implementation of the Authority's Human Resources Plan. iv. Provide trainings to e-GA staff providing help desk support as per the Authority Annual Training plan	FY 2022/2023 – FY 2024/2025

Appendix 2: Audit Questions and Sub-Audit Questions

This part provides the list of audit Questions and Sub-Questions which were used during the Audit

Audit Question 1	*Are there public institutions which plans and acquire ICT systems in a manner that do not enhance the achievement of anticipated benefits?*
Sub-Audit Question 1.1	*Are there ICT Systems in the government which were not properly planned and acquired?*
Sub-Audit Question 1.2	*Are there ICT systems acquired in the government that do not achieve the anticipated benefits?*
Audit Question 2	*Does eGA effectively ensure that acquisition of ICT Systems in the government is properly initiated?*
Sub-Audit Question 2.1	*Are the concept notes properly developed and submitted to eGA by the government institutions?*
Sub-Audit Question 2.2	*Are the concept notes effectively reviewed prior to granting permissions to proceed with aquiring ICT systems?*
Sub-Audit Question 2.3	*Are the results of the reviews effectively communicated back to government institutions in a timely manner?*
Sub-Audit Question 2.4	*Does eGA ensure that proper business cases are prepared by the government institutions prior to acquiring ICT systems?*
Sub-Audit Question 2.5	*Does eGA ensure that there is a proper guidance on the choice of the approach for acquiring ICT systems in the government?*
Audit Question 3	*Does eGA have a proper mechanism to ensure that ICT systems requirements are sufficiently prepared and communicated to all relevant stakeholders prior to acquisition of ICT systems in the government?*
Sub-Audit Question 3.1	*Does eGA ensure that user requirements are sufficiently collected and defined prior to development of ICT Systems?*
Sub-Audit Question 3.2	*Does eGA ensure that functional systems requirements are clearly defined by the acquiring institutions prior to development of ICT systems?*

Sub-Audit Question 3.3	Does eGA ensure that requirements gathering involves all relevant stakeholders within a business environment?
Sub-Audit Question 3.4	Are the Systems Requirements Documents (SRD) approved by the relevant business owners and authorities within the business environment?
Audit Question 4	**Does eGA ensure that government institutions develop or configures ICT systems that effectively supports their business processes?**
Sub-Audit Question 4.1	Does eGA ensure that there is an effective administration of procurement of ICT systems in the government?
Sub-Audit Question 4.2	Are there effective supervision of development or configuration of systems during the acquisition of ICT systems?
Sub-Audit Question 4.3	Are there effective quality control systems during the development or configuration of acquired ICT systems?
Sub-Audit Question 4.4	Are there effective quality assurance systems in development or configuration of government ICT systems?
Sub-Audit Question 4.5	Is there effective security assessment of the developed ICT systems prior to their deployment?
Audit Question 5	**Does eGA ensure that testing and commissioning of the acquired ICT systems is effectively conducted?**
Sub-Audit Question 5.1	Are the systems and integration testing effectively done during the development of ICT systems?
Sub-Audit Question 5.2	Are the user acceptance tests effectively conducted to determine whether the systems meet the user requirements?
Sub-Audit Question 5.3	Does eGA ensure that all systems bugs and errors are effectively fixed by the developers or vendors prior to deployment of the systems?
Sub-Audit Question 5.4	Does eGA ensure that there is an effective post-implementation plan for the developed ICT systems to ensure that the solutions acquired meets the objectives and requirements of the business process?
Audit Question 6	**Is there an effective oversight by the Ministry during planning and acquisition of ICT systems in**

	the government?
Sub-Audit Question 6.1	*Does the Ministry effectively develop the required guidelines for guiding the acquisition of ICT systems in the government?*
Sub-Audit Question 6.2	*Is there an effective system for monitoring the planning and acquisition of ICT Systems in the government to ensure that required standards and guidelines are effectively adhered to?*
Sub-Audit Question 6.3	*Is there an effective follow up of the recommendations and directives given to amend weaknesses noted in acquisition of ICT systems in the government?*

Appendix 3: Ranking and Selection of Institutions which were Visited

This part provides the ranking and selection of institutions which were visited during the audit categorized sector-wise

Sector	No Of ICT Systems	Institutional Assessment			Sector Ranking	ICT Systems Load Ranking	Final Rank Min(A+B)/2
		Level	ICT Systems Count	Institution			
PUBLIC SERVICE	85	HIGH	5	PSSF	6.5	10.5	8
		LOW	1	MOI - Muhimbili	1.5	19.5	10
FINANCIAL	80	HIGH	10	TRA	4	3	3
		LOW	1	NFRA	1.5	44.5	15.5
INFORMATION AND COMMUNICATION	74	HIGH	4	TANAPA	9.5	44.5	21
		LOW	1	EWURA	1.5	10.5	6
HEALTH	26	HIGH	18	Ministry of Health	1	1	1
		LOW	1	PO-RALG	1.5	44.5	15.5
EDUCATION	22	HIGH	5	NACTE	6.5	15.5	11
		LOW	1	Teachers Service Commission	1.5	61.5	24.5
TRANSPORT	21	HIGH	5	Ministry of Transport	6.5	61.5	29
		LOW	1	TASAC	1.5	61.5	24.5
LAND	13	HIGH	12	Ministry of Lands	2	7	4
		LOW	1	National Land Use Commission	1.5	61.5	24.5
WATER	13	HIGH	9	Ministry of Water	5	5.5	5
		LOW	1	DUWASA - Dodoma	1.5	44.5	15.5
AGRICULTURAL	12	HIGH	11	Ministry of Agriculture	3	2	2
		LOW	1	Tobacco Board	1.5	61.5	24.5
ENERGY	8	HIGH	4	EWURA	9.5	10.5	6
		LOW	1	GPSA	1.5	44.5	15.5
TOURISM	7	HIGH	3	Ministry of Tourism and Natural Resources	10.5	34.5	14
		LOW	1	Ngorongoro Conservation Authority	1.5	30.5	12
TRADE	7	HIGH	3	Ministry of Finance and Planning	10.5	2	7
		LOW	1	TANTRADE	1.5	61.5	24.5

Sector	No Of ICT Systems	Institutional Assessment			Sector Ranking	ICT Systems	Final Rank
CONSTRUCTION	6	HIGH	2	ERB	12.5	34.5	20
		LOW	1	Wizara ya Ujenzi, Uchukuzi	1.5	44.5	15.5
FOOD	2	HIGH	2	Meat Board	12.5	44.5	22.5
		LOW	-	N/A	-	-	-
LEGAL	2	HIGH	2	MoCAJ	12.5	44.5	22.5
		LOW	-	N/A	-	-	-
MINING	2	HIGH	2	Ministry of Minerals	12.5	27.5	13
		LOW	-	N/A	-	-	-
REAL ESTATE	1	HIGH	1	TBA	16	61.5	30
		LOW	-	N/A	-	-	-

Source: Auditor's Analysis (2022)

This part provides the list of persons who were interviewed from the PO-PSMGG, eGA, and the visited Public Institutions and reasons for being interviewed

Entity	Persons Interviewed	Reason for being interviewed
President's Office - Public Service Management and Good Governance	Director, Government ICT Services Division	• To determine the extent to which the PO-PSMGG oversees the planning and acquisition of Government ICT systems • Provide clarifications on performance issues observed on planning and acquisition of government ICT Systems • Determine the extent to which the guiding instruments are prepared effectively complied upon by the government institutions
	Assistant Director, Government ICT Policy and Standards	• To determine the extent to which the PO-PSMGG oversees the planning and acquisition of Government ICT systems • Provide clarifications on performance issues observed on planning and acquisition of government ICT Systems • Determine the extent to which the guiding instruments are prepared effectively complied upon by the government institutions
	Relevant Managers and Officers on Government ICT Policy and Standards	• To determine the extent to which the PO-PSMGG oversees the planning and acquisition of Government ICT systems • Determine the extent to which the guiding instruments are prepared effectively complied upon by the government institutions • Clarify on matters pertaining to

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Entity	Persons Interviewed	Reason for being interviewed
		planning and acquisition of ICT systems in the government.
e - Government Authority	Director, Compliance and Security Management	• To assess the overall performance of the authority in managing planning and acquisition of government ICT Systems • To provide clarification on performance issues observed during data collection
	Manager, Initiatives and Project Management	• Establish the extent to which eGA enforces compliance to guidelines and standards during planning and acquisition of ICT systems • To assess the overall performance of the authority in managing planning and acquisition of government ICT Systems • To provide clarification on performance issues observed during data collection
	Manager, Consultancy and Advisory	To establish the performance of eGA on executing and managing the acquisition of ICT systems in the government
	Manager, Customer Services, Support and Statistics	• To assess the overall performance of the authority in managing planning and acquisition of government ICT Systems • To provide clarification on performance issues observed during data collection • To obtain statistics that details the performance of eGA on overseeing planning and acquisition of government ICT systems
	Manager, Systems Development	• To establish the extent of performance of eGA in developing systems that are of high quality to government entities

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Entity	Persons Interviewed	Reason for being interviewed
e-Government Authority	ICT Officers in the following sections • Compliance and Security management; • Initiatives and project management; • Consultancy and advisory; • Customer services, support and statistic; and • System development.	• To assess the performance of Authority at different levels of managing ICT Systems in the government entities in the process of initiation, planning and acquisition of the systems. • To provide clarification on performance issues observed in the document reviews during data collection • To obtain clarification on how Authority enforces compliance to guidelines and standards during planning and acquisition of ICT systems to government entities.
Selected Ministries, Independent Department, Executive Agencies, Public Corporations and LGAs	Directors, Information and Communication Technology	• To obtain information on planning and acquisition of ICT Systems in the respective institution • Establish the extent to which the planning and acquisition of government ICT systems was done effectively in a manner that safeguards value for government monies • To obtain clarifications on aspects of non-compliance to guidelines and standards during acquisition of ICT systems
	Managers, Information and Communication Technology	• To obtain information on planning and acquisition of ICT Systems in the respective institution • To establish the extent to which the planning and acquisition of government ICT systems was done effectively in a manner that safeguards value for government monies

Entity	Persons Interviewed	Reason for being interviewed
	Information and Communication Technology Officers including Software Programmers	• To obtain information on planning and acquisition of ICT Systems in the respective institution • To establish the extent to which the planning and acquisition of government ICT systems was done effectively in a manner that safeguards value for government monies

Appendix 5: List of Documents Reviewed During the Audit

This part provides the list of documents which were reviewed during the audit from PO-PSMGG, eGA and the visited Public Institutions.

| Auditee	Category of Documents	Title of Documents to be Reviewed	Reasons for Review
PO-PSMGG	Planning	Annual Budgets	To establish the extent of release and utilisation of budget with respect to development activities on management of ICT Systems in the Government.
	Standards and Guidelines	Government ICT Policies	To establish the extent to which PO-PSMGG develop the ICT Policies, Guidelines and Standards for Public Institutions.
		Government ICT Standards	To assess the extent to which the developed policies, guidelines and standards address the Government ICT Subsector requirements and expectations.
	Performance Reports	Annual Performance Reports	To establish the extent to which PO-PSMGG performs its functions in relation to managing the Planning and Acquisition of ICT Systems in the Government.
	Monitoring and Evaluation Reports	Quarterly and Annual M&E Reports	To establish the extent at which PO-PSMGG monitors eGA on executing its functions and how it monitors other public institutions on the compliance to government ICT Policies, Standards and Guidelines.
eGA	Initiation and Planning of Acquisition of ICT	Annual Strategic and Business Plans	To obtain information about strategies towards management of planning and acquisition of ICT systems
		Compliance Assessment Reports	To assess the extent of compliance with respect to planning and acquisition of ICT systems.

Auditee	Category of Documents	Title of Documents to be Reviewed	Reasons for Review
	Systems	Business Case Documents Review Reports	To examine the effectiveness of review functions by eGA with regard to concept notes and proposals submitted by government institutions.
	System Implementation Reports	Testing Reports Contract Documents Quality Control Reports Customisation Reports	To examine the extent to which developed or configured systems function in relation to the predetermined requirements.
	System Specifications and Requirements Documents	Specification Documents Systems Requirements Documents (SRD)	To examine the extent to which the systems requirements consider all stakeholders prior to the acquisition of ICT systems.
	Compliance Reports	Compliance Assessment Reports	To establish the extent to which acquired systems are compliant with ICT standards and guidelines.
		Security Assessment reports	To establish the extent to which eGA ensures that acquired systems are secure to government information and data.
	GISP Data base reports	Database reports	To establish the extent to which eGA ensures that the planning and acquisition of ICT systems are compliant with standards and guidelines.
	Monitoring Reports/Evaluation	Annual Monitoring/Progress Reports	To understand what issues have been addressed, key findings of such issues and take actions against the issues raised.
		Evaluation Reports	To obtain information gathered during the evaluation activities to identify inefficiencies and bring about more improvements.

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Auditee	Category of Documents	Title of Documents to be Reviewed	Reasons for Review
Ministries, Departments, Agencies Public Authorities LGAs	Planning and Initiation	Annual Strategic and Business Plans	To obtain information about strategies towards the management of planning and acquisition of ICT systems.
		Compliance Assessment Reports	To assess the extent of compliance with respect to the planning and acquisition of ICT systems.
		Business Case Documents	To examine the effectiveness of review functions by eGA with regard to concept notes and proposals submitted by government institutions.
		Review Reports	
	ICT System Implementation Reports	Contract Documents	To examine the extent to which developed or configured systems function in relation to the predetermined requirements.
		Acceptance Reports	
		Quality Control and Assurance Reports	To examine the extent to which the systems requirements consider all stakeholders prior to the acquisition of ICT systems.
		Test Case Reports and Results	
		Systems Development Progress Reports	To establish the extent to which acquired systems are compliant to ICT standards and guidelines.
	Support and Maintenance	Support Services Reports	To establish the extent at which the Public Institutions receive the necessary support while hosting and operating acquired ICT systems.
		Systems Maintenance Reports	To establish the extent at which the public institutions have sufficient capacity in conducting the necessary maintenance activities to enable safe and secure operations of the acquired systems.

Appendix 6: Organization Structure of e-Government Authority

This part provides the Organization Structure of the e-Government Authority indicating all Directorates including those performing key functions assessed by this audit.

Controller and Auditor General
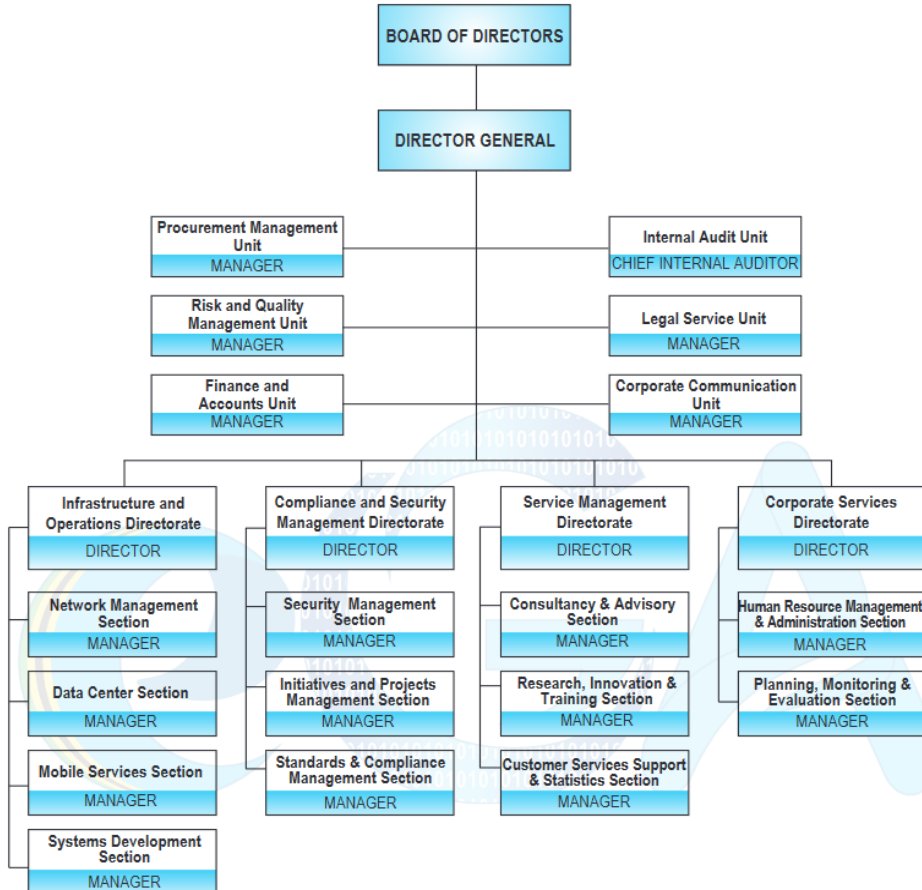
Appendix 7: List of ICT Systems which were assessed

This part provides the list of ICT systems which were assessed from the visited Public Institutions, function category and the Status of Interoperability.

Tanzania Revenue Authority

Name of a System	Function Category	Status
CALL CENTRE CRM	Administration	Non-interoperable
SCCM (System Centre Configuration Manager)	Administration	Non-interoperable
HELP DESK (SYSAID)	Administration	Non-interoperable
e-MIMS(Electronic Meeting Management System)	Administration	Non-interoperable
iTRAMED(TRA Monitoring and Evaluation Database)	Administration	Interoperable
EFDMS (Electronic Fiscal Devices Management System)	Financial	Non-interoperable
CMVRS (Central Motor Vehicle Registration System)	Financial	Non-interoperable
CDLS (Central Driver's License System)	Financial	Non-interoperable
ECTS(Electronic Cargo Transit System)	Financial	Non-interoperable
ARUTI	Administration	Interoperable
EPICOR	Financial	Interoperable
PRMS(Property Rate Management System)	Financial	Non-interoperable
RTMS(Real Time Monitoring System)	Logistic	Non-interoperable
ETS(Electronic Tax Stamp)	Administration	Non-interoperable
ITAX/TIN	Administration	Non-interoperable
RGS(Revenue Gateway System)/TAX BANK	Information	Non-interoperable
CIMIS(Case Investigation Management	Administration	Non-interoperable

Information System)		
E-FILLING	Administration	Non-interoperable
UMVVS(Used Motor Vehicle Valuation System)	Financial	Non-interoperable
CARMS(Case Registration Management System)	Legal	Non-interoperable
NTRS(Non-Tax Revenue Management System)	Financial	Non-interoperable
FTCS(Fund Transfer and Collection System)	Financial	Non-interoperable
AFIS (Automated Finger Print Identification System)	Administration	Non-interoperable
Films & Music Information System (FMIS)	Financial	Non-interoperable
MACHINGA	Financial	Non-interoperable
ICT ASSET MANAGEMENT SYSTEM	Information	Non-interoperable
TANCIS	Logistic	Non-interoperable
IDAMS	Financial	Interoperable
PHYSICAL ACCESS CONTROL (PAC) MANAGEMENT SYSTEM	Administration	Interoperable

Ministry of Health

Name of a System	Function Category	Status
Health facility registry (HFR)	Administration	Interoperable
e-LMIS	Heath	Non interoperable
Human Resource of Health Information System (HRHIS)	Administration	Interoperable
DHIS2-HMIS	Heath	Interoperable
Health Practitioners Registration System (HPRS)	Heath	Interoperable
Afyacare	Heath	Interoperable
Afya Facility Supervision System (AFYASS)	Administration	Interoperable
e-IDSR	Heath	Interoperable

Name of a System	Function Category	Status
PIMACOVID	Administration	Interoperable
Vaccine Information Management System (VIMS)	Heath	Non interoperable
TiMR	Heath	Interoperable
Health Initiatives Inventory and Digital Library (HIDL)	Administration	Interoperable
Technical Working Groups (TWG)	Professional	Interoperable
National sanitation management information system (NSMIS)	Information	Interoperable
eLearning	Education	Interoperable
e-Sponsorship	Education	Interoperable
Malaria Composite Database	Heath	Interoperable
CTC2 Database	Heath	Interoperable
HIV Care and Treatment Macrodatabase 3 (CTC3 Macro)	Heath	Interoperable
HIM	Heath	Non interoperable
Mass Replacement Campaign (MRC)	Information	Non interoperable
Health Promotion Digital Platform (HPDP)	Information	Non interoperable

Ministry of Agriculture

Name of a System	Function Category	Status
Agricultural Trade Management Information System (ATMIS)	Financial	Interoperable
Mobile Agriculture (M-Kilimo)		Interoperable
Agriculture Routine Data System (ARDS)	Agriculture	Interoperable
Farmers Registration System (FRS)	Administration	Interoperable
Ministry of Agriculture Training Institute Management Information System (MATI-MIS)	Administration	Interoperable
Agricultural Sector Stakeholders Database (ASSD)	Administration	Interoperable
Agricultural Information Dashboard (Kilimo Dashboard)	Administration	Interoperable
Crop Stock Dynamics System	Agriculture	Interoperable

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Government Procurement Services Agency

Project Name	Function Category	Status
Bulk Procurement of Government Vehicles, Clearing and Forwarding Information System	Financial	Non interoperable
Billing, Inventory and Warehouse Management System	Financial	Non interoperable
Supplier Performance Evaluation System (Vendor Rating)	Financial	Interoperable
FMIS (Fuel Management Information System)	Energy	Interoperable