

[Final Report]
By WeGO, Seoul Metropolitan Government
For Overseas city e-Government Application Feasibility Study Project

Feasibility Study for Public Administration Information System Infrastructure Implementation

In terms of Digitalization of Administrative Tasks (Paperless Office)

January, 2012

Dar es Salaam City Council
Seoul Metropolitan Government
WeGO (World e-Government Organization of Cities and Local Governments)

Preface

The “Feasibility Study for Public Administration Information System Infrastructure Implementation” has been produced by the Feasibility Study Consulting Team under the supervision of Dar es Salaam City Council and Seoul Metropolitan Government. Seoul Metropolitan Government, Dar es Salaam and the Feasibility Study Consulting Team have the ownership on the modification and revision on this report.

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Abbreviations

ACP	African, Caribbean, and Pacific Group of States
AfDB	African Development Bank
AFRS	Alexander Forbes Risk Services
API	Application Program Interface
AU	African Union
BCR	Benefit-Cost Ratio
BPR	Business Process Reengineering
C/S	Client / Server
CCM	Chama Cha Mapinduzi
CEO	Chief Executive Officer
CHADEMA	Chama Cha Demokrasia na Maendeleo
CIA	Central Intelligence Agency
CO ₂	Carbon diOxide
COSTECH	The Tanzania Commission for Science and Technology
CPU	Central Processing Unit
CSF	Critical Success Factors
CUF	Civic United Front
DB	Database
DBMS	Database Management System
DCC	Dar es Salaam City Council
DIT	Dar es Salaam Institute of Technology
DMDP	Dar es Salaam Metropolitan Development Project
DRC	Democratic Republic of the Congo
EA	Environmental Analysis
EAC	East African Community
EADB	East African Development Bank
ECT	Environment Control Table
EDCF	Economic Development Cooperation Fund
e-Gov	Electronic-Government
e-LAW	Electronic LAW
ERP	Enterprise resource planning
e-SeoulNet	Electronic SeoulNet
e-Signature	Electronic Signature
F/S	Feasibility Study
FA	Feasibility Assessment

FAO	Food and Agriculture Organization
FSCT	Feasibility Study Consulting Team
G2B	Government-to-Business
G2C	Government-to-Citizen
G2G	Government to Government
G-77	The Group of 77 at the United Nation
GDP	Gross Domestic Product
GIS	Geographic Information System
H/W	Hardware
HDD	Hard Disk Drive
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
HR	Human Resources
HRIS	Human Resources Information System
HRM	Human Resource Management
IAEA	International Atomic Energy Agency
IBRD	International Bank for Reconstruction and Development
ICAO	International Civil Aviation Organization
ICRM	Institute of Certified Records Managers
ICT	Information and Communication Technology
ID	Identification
IDA	International Development Association
IDC	International Data Corporation
IFAD	International Fund for Agricultural Development
IFC	International Finance Corporation
ILO	International Labour Organization
IMC	Ilala Municipal Council
IMD	International Institute for Management Development
IMF	International Monetary Fund
IMO	International Maritime Organization
IMSO	International Mobile Satellite Organization
IOC	International Olympic Committee
IOM	International Organization for Migration
IPU	Inter-Parliamentary Union
IS	Information System
ISO	International Organization for Standardization
ISP	Information Systems Planning
IT	Information Technology
ITA	Information Technology Architecture

ITSO	International Telecommunications Satellite Organization.
ITU	International Telecommunication Union
ITUC	International Trade Union Confederation
JDBC	Java Database Connectivity
KIPA	Korea IT Industry Promotion Agency
KMC	Kinondoni Municipal Council
KOICA	Korea International Cooperation Agency
LA	Legislation & Regulation Analysis
LAN	Local Area Network
LGAs	Local Government Authorities
LGMD	Local Government Monitoring Database
LOI	Letter of Intent
M&E	Monitoring and Evaluation
MIGA	Multilateral Investment Guarantee Agency
MM	Meeting Minutes
MOLIS	Minority On-Line Information Service (Company)
MOM	Minutes of Meeting
MONUSCO	The United Nations Organization Stabilization Mission in the Democratic Republic of the Congo
MRECOM	Municipal Revenue Collection Manager
MS	Microsoft
N/A	Not Applicable
N/W	Network
NAM	National Association of Manufacturers (The top manufacturing association in the United States.)
NPV	Net Present Value
OGP	Open Government Partnership
OPCW	Organization for the Prohibition of Chemical Weapons
OPRAS	Open Performance Review and Appraisal System (Tanzania)
OS	Operating System
PC	Personal Computer
PKI	Public-Key Infrastructure
PLAN REP	The Local Government Planning and Reporting Database
PO-PSM	The President's Office, Public Service Management
PR	Public Relations
Q&A	Question and Answer
RC	Recommendations
ROI	Rate of Return Of Investment
RS	Regional Secretariat

S/W	Software
SADC	Southern African Development Community
SAN	Storage Area Network
SMG	Seoul Metropolitan Government
SNS	Social Networking Service
SO	Strength Opportunity
ST	Strength Threat
SWOT	Strength, Weakness, Opportunity, Threat
TA	Technical Analysis
TA	Technical analysis
TBC	Tanzania Broadcasting Commission
TCRA	Tanzania Communications Regulatory Act
TFT	Task Force Team
TIC	Treasury International Capital System
TLP	Tanzania Labor Party
TMC	Temeke Municipal Council
TPC	Tanzania Postal Commission
TTC	Tanzania Telecommunication and Communication
TZ	Time-Zone
TZP	Tanzania Shilling (Monetary Unit of Tanzania)
UCC	University Computer Center
UDP	United Democratic Party
UK	United Kingdom
UMM	User Modified Contents
UN	United Nations
UNAMID	United Nations-African Union Mission in Darfur
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNHCR	United Nations High Commissioner for Refugees
UNIDO	United Nations Industrial Development Organization
UNIFIL	United Nations Interim Force in Lebanon
UNMISS	United Nations Missions in Sudan
UNOCI	United Nations Operation in Côte d'Ivoire
UNPSA	United nations Public Service Awards
UNWTO	United Nations World Tourism Organization
UPS	Uninterrupted Power Supply
UPU	Universal Postal Union
USA	United States of America

USD	United States dollar
VAT	Value - Added Tax
VSAT	Very-Small-Aperture Terminal
WAN	Wide Area Network
WAS	Web Application Server
WB	World Bank
WCO	World Customs Organization
WEF	World Economic Forum
WeGO	World e-Governments Organization of Cities and Local Governments
WFTU	World Federation of Trade Unions
WHO	World Health Organization
WIPO	World Intellectual Property Organization
WLAN	Wireless Local Area Network
WMO	World Meteorological Organization
WO	Weakness, Opportunity
WT	Weakness, Threat
WTO	World Trade Organization
XML	eXtensible Markup Language

Table of Contents

Executive Summary	1
I. Project Overview	2
1. Introduction	2
2. Project Background	2
3. Project Objectives	3
4. Project Scope.....	3
5. Project Schedule.....	5
6. Project Organization.....	5
II. Environmental Analysis	6
1. Overview of Tanzania	6
1.1 Overview.....	6
1.2 Geography.....	7
1.3 Society and Economy	7
2. Overview of Dar es Salaam.....	9
2.1 Overview.....	9
2.2 Geography.....	9
2.3 Society and Economy	10
3. Policies and Strategies.....	11
3.1 Tanzania’s National Policies and Strategies.....	11
3.2 Dar es Salaam Policies and Strategies	12
4. ICT Environmental Analysis related to the Project.....	13
4.1 Dar es Salaam ICT Policies and Strategies.....	13
4.2 Dar es Salaam ICT project plan related to the project	15
4.3 Dar es Salaam ICT Organization and Business Process	16
4.4 Dar es Salaam ICT Infrastructure	16
4.5 Implications	17
5. Stakeholders Analysis	17
5.1 Stakeholders Analysis Overview	17
5.2 Classification of Stakeholders	19
5.3 Stakeholders Assessment	20
5.4 Implications	32
III. Technical Analysis	35
1. Overview	35
2. Requirement Analysis	35
3. Current Status Analysis.....	36
3.1 System Configuration	36
3.2 Business Process.....	41
3.3 H/W, S/W, N/W Analysis.....	43
3.4 Implications	49
4. SWOT Analysis.....	49
4.1 SWOT Analysis Overview.....	49
4.2 Classification of SWOT	50
4.3 Implications	52
5. Constraints and Addressing Issues	53
5.1 Constraints	53
5.2 Addressing Issues	53

IV. Legislation and Regulation Analysis	54
1. Legal/Regulatory Analysis.....	54
1.1 Overview.....	54
1.2 Legal/Regulatory Context.....	54
2. Institutional Analysis.....	58
2.1 Institutional Structure	58
2.2 Core Activities	60
2.3 Communication.....	62
2.4 Challenges.....	68
2.5 Implications	68
3. Constraints and Addressing Issues	68
3.1 Constraints	68
3.2 Addressing Issues	68
V. Benchmarking	69
1. Overview	69
2. Best Practice 1.....	69
2.1 SMG's organization of an Administration Information System.....	69
2.2 Process of promoting the administration Information System in SMG.....	69
3. Best Practice 2.....	72
3.1 Overview.....	72
3.2 National policy of UK.....	73
3.3 Information policy of Birmingham City Council	74
3.4 Current status of public administration information system of Birmingham City Council ...	74
3.5 Implication	75
VI. Recommendation	76
1. Strategy and Direction.....	76
1.1 Strategy for establishing the to-be model	76
1.2 Direction of establishing the to-be model.....	76
2. To-be model	79
2.1 Service Image of to-be model.....	79
2.2 System architecture of to-be model	79
2.3 Block diagram of S/W, H/W in to-be model.....	80
3. Stage based Development Plan	81
3.1 Development Framework	81
3.2 Definition of improvement issues.....	81
3.3 Improvement issue evaluation of priority	83
3.4 Priority decision of improvement issues.....	86
4. Project Components	87
4.1 Tasks portal of e-office & Development of standard documents.....	87
4.2 Strengthening of city hall's telecommunication network and implementation of three municipalities telecommunication	89
4.3 Implementation of UPS equipment.....	90
4.4 Implementation of system for public administration management, such as Accounting, HR, Taxes, etc	91
4.5 Implementation of e-document.....	92
4.6 Organizing TFT in charge of operation and management of the information system and reinforcement of human resources.....	93
4.7 Education and training of informatization on sections	93
4.8 Change of regulations governing efficient management of administrative affairs	94
4.9 Foundation of operating procedure for e-document	95
4.10 Development of network with international organizations for cooperation	95

5. Project Budget.....	96
6. Schedule of the project.....	98
VII. Feasibility Analysis.....	101
1. Feasibility Assessment	101
1.1 Overview.....	101
1.2 Political feasibility assessment	101
1.3 Technical feasibility assessment	102
2. Economic Analysis.....	102
2.1 Overview.....	102
2.2 Cost-Benefit Analysis of Dar es Salaam’s public administration informatization.....	102
3. Final proposal.....	105

List of Tables

Table I-1	Main competitiveness evaluation of SMG – e-government.....	2
Table I-2	The current status of overseas delegation for SMG e-government visit.....	3
Table II-1	Overview of Tanzania	6
Table II-2	Annual scale of export-import	8
Table II-3	Scale of direct investment between Korea and Tanzania.....	9
Table II-4	Overview of Dar es Salaam	9
Table II-5	Objectives and Targets of strategic plan for 2010-2013	12
Table II-6	Status of ICT policies and related provisions enacted	14
Table II-7	Objectives and Issues of ICT Policy	14
Table II-8	Dar es Salaam ICT project plan related to the project	15
Table II-9	Comparison of Stakeholder Analysis.....	19
Table II-10	Considerations for stakeholder identification, as per the World Bank.....	19
Table II-11	Assessment resources and materials for stakeholder analysis	20
Table II-12	Evaluating indicators and detailed matters for the first stage	21
Table II-13	Stakeholder Roles and Interests	21
Table II-14	Influence of the project on interests of the stakeholders.....	23
Table II-15	Evaluation of influence and importance of each stakeholder toward the project	24
Table II-16	Analysis of influence and importance of each stakeholder to the project.....	26
Table II-17	Evaluation basis for the second stage of Stakeholder assessment	27
Table II-18	Evaluation for Possibility of project realization	28
Table II-19	Evaluation for Intent of Project promotion	29
Table II-20	Result of the second stakeholder assessment.....	30
Table II-21	Identification Result of the first and second assessment.....	32
Table II-22	Common key stakeholders from the first and second stakeholder assessment	33
Table III-1	Major issues and requirements of Key institutions.....	35
Table III-2	Current status of EPICOR.....	37
Table III-3	The current status of MOLIS	37
Table III-4	The current status of HRIS	38
Table III-5	The current status of MRECOM.....	38
Table III-6	Current status of LAWSON.....	39
Table III-7	The current status of Plan Rep.....	40
Table III-8	Current status of operating ICT organization.....	46
Table III-9	Strengths and weaknesses of ERP system and Cloud computing-based system	48
Table III-10	Establishment plan for strategic marketing - SWOT analysis	50
Table III-11	Critical Success Factors and Weighting	50
Table III-12	Score of CSF and Total Score.....	51
Table III-13	SWOT classification	51
Table IV-1	The enactment of laws related to ICT in Tanzania	54
Table IV-2	The role of each department	56
Table IV-3	Introduction of Major law related to e-government.....	57
Table IV-4	Function of the departments in IMC, TMC, KMC	61
Table IV-5	Communication of departments in DCC.....	63
Table V-1	Status of operation of SMG integrated websites.....	71
Table V-2	Status of operation of SMG civil service.....	71
Table V-3	Current status of the systems in SMG.....	72
Table V-4	Current status of the system servers in SMG.....	72
Table V-5	Current status of communications equipment in SMG.....	72
Table V-6	Current status of data circuits in SMG.....	72
Table V-7	Current status of public administration information system of Birmingham city council	75
Table VI-1	Issues and problems of the administrative document management	77
Table VI-2	Derivation of improvement issues	79

Table VI-3	Evaluation criteria of improvement issues.....	84
Table VI-4	Evaluation of priority for improvement issues	84
Table VI-5	Selection of top priority issues group	86
Table VI-6	Total cost of implementing the e-office system	96
Table VI-7	The necessary budget for Labor.....	96
Table VI-8	The necessary budget for H/W	96
Table VI-9	The necessary budget for S/W	97
Table VI-10	The necessary budget for N/W	97
Table VI-11	Information monitored for evaluation divided into 4 areas	99
Table VI-12	Countermeasure against low productivity	99
Table VI-13	Countermeasure if there is a preference for paper documents.....	100
Table VI-14	Countermeasure against system failure	100
Table VII-1	Criteria of assessment	101
Table VII-2	Effect of annual paper savings	102
Table VII-3	Effect of DCC internal work efficiency	103
Table VII-4	Effect of work efficiency between DCC and three municipalities.....	103
Table VII-5	Economical benefits.....	104
Table VII-6	Annual investment costs	104
Table VII-7	Annual economic benefits and present value.....	105
Table VII-8	Result of benefit-cost analysis	105

List of Figures

Figure I-1	Organization of WeGO	2
Figure I-2	Project schedule	5
Figure I-3	Project Organization	5
Figure II-1	Map of Tanzania	7
Figure II-2	GDP growth rate of Tanzania.....	8
Figure II-3	Map of Dar es Salaam.....	9
Figure II-4	A growth rate of Dar es Salaam GDP	10
Figure II-5	Identification of key stakeholders.....	31
Figure III-1	PLAN REP.....	39
Figure III-2	LGMD system.....	41
Figure III-3	Current status of record center	42
Figure III-4	Server of DCC	43
Figure III-5	Current status of Network in DCC.....	44
Figure III-6	Current status of Network in KMC.....	44
Figure III-7	Current status of Network in IMC	45
Figure III-8	Current status of Network in TMC	45
Figure III-9	Organization chart of ICT team in KMC	47
Figure IV-1	legislative process of the operational regulation.....	55
Figure IV-2	Organizational chart of local government in DCC	58
Figure IV-3	Location of LGAs in Dar es Salaam.....	58
Figure IV-4	Organization chart of DCC	59
Figure IV-5	Organization chart of the other municipalities.....	60
Figure IV-6	Communication system for decision making in DCC	63
Figure IV-7	Quarterly and monthly report	63
Figure V-1	Reason for selecting Birmingham as a best practice.....	73
Figure VI-1	Framework of establishing the to-be model.....	76
Figure VI-2	Elicitation of opportunities of improvement.....	78
Figure VI-3	e-office system structure	80
Figure VI-4	S/W, H/W Structure of e-office system.....	80
Figure VI-5	Method of establishing development plan by phase	81
Figure VI-6	Evaluation result of improvement issues	87
Figure VI-7	Step by step procedure of the project.....	98
Figure VI-8	Framework of M&E.....	98

Executive Summary

As the final report of the feasibility study for public administration information system infrastructure implementation of Dar es Salaam city council, this project has been supervised by WeGO and involved the collaboration of the World Bank. This informatization feasibility study is focused on the “paperless” office and the administrative efficiency of Dar es Salaam city council. In addition, it is promoting a change from the manual performance of public administrative tasks to the execution of public administrative tasks in the digital domain.

The final report examines the issues & problems inherent to Dar es Salaam’s informatization environment, the current status of IT and public administration management, defines the informatization directive, derives issues for improvement and finally determines an implementation plan for the next three years to establish Dar es Salaam’s public administration information system.

The e-government implementation of Dar es Salaam is the introductory phases. For many years, Dar es Salaam city council has used systems such as finance, tax, and land from the central government and has tried to implement e-government through international collaborations.

Since 2009, the Dar es Salaam city council has implemented ICT infra through various channels. For instance, the internal communication network, internet network, and the introduction of PC equipment has been promoted. As a result, a basic ICT infra environment is currently available. But the budget for informatization is highly dependent on funds from international organizations. This means that Dar es Salaam frequently experiences problems due to a lack of funds for informatization maintenance. Dar es Salaam has three municipalities. To achieve an integrated public administration information system, it is urgent to implement a network for communication among the three municipalities.

It is urgently necessary to reduce the inefficiencies of document delivery and cut down on the tremendous paper usage due to traditional methods of public management. In the first phase of introducing e-government, approximately \$200 million will be invested to introduce a public administration management system as a top priority. In addition it is recommended that education & training be conducted simultaneously in order to focus on building the informatization capacity of Dar es Salaam city council.

At the level of expansion of e-government, Dar es Salaam will concentrate on automating public administration management by introducing e-documents. By developing & operating a system for internal human resources, accounting, etc. the public administration information system will be completed. Based on this system, the implementation of a civil service system will be promoted.

The most serious obstacle to Dar es Salaam’s implementation of e-government is a lack of funds. Practically speaking, without collaboration with international organizations, it is impossible to promote e-government. Thus it is necessary to have the financial cooperation of international organizations such as the World Bank and WeGO.

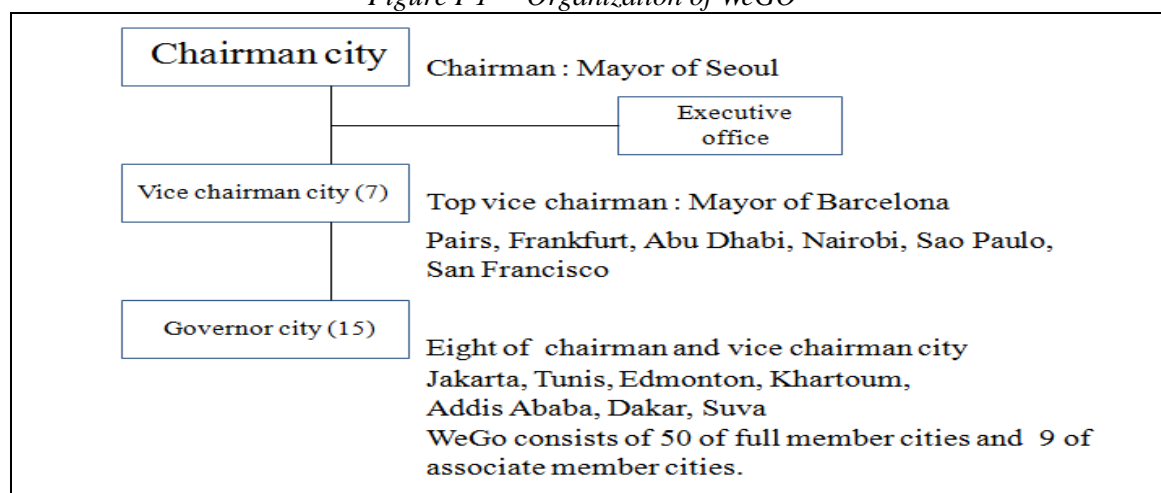
I. Project Overview

1. Introduction

WeGO was officially launched at the Inaugural General Assembly on 6 to 8 September 2010 with 50 member cities. WeGO seeks to share and disseminate knowledge and practices of e-governments around the world to achieve Green Growth utilizing Information and Communication Technologies; to bridge the digital divide by providing IT support to cities in developing countries; and to advance the quality of life for citizens by improving administrative efficiency and transparency.

WeGO is a worldwide association of e-governments that aims to share the practices of world e-governments, develop joint projects on e-governments, and bridge the digital divide between and among cities.

Figure I-1 Organization of WeGO



SMG has provided the technical assistance known as Feasibility Study (hereinafter referred to as “F/S”) as the part of Government-to-Government (G2G) collaboration since 2010 as the chair of WeGO in earnest.

Especially, SMG has supported consulting projects to implement e-government in three cities; Ulaanbaatar, Dar es Salaam, and Buenos Ares. It has worked in collaboration with the World Bank, and various follow-up projects have also been promoted.

2. Project Background

In 2012, the UN named Seoul the leading e-government city. SMG has been awarded 1st place in the ‘e-government evaluation of 100 global cities’ 4 times since 2003.

Table I-1 Main competitiveness evaluation of SMG – e-government

Cities	Global cities competitiveness	Index of global cities	Evaluation of e-government
Seoul	9	10	1
New York	1	1	4
London	2	2	Out of 10th
Tokyo	3	3	
San Francisco	6	12	

SMG hosted Inaugural General Assemble of WeGO2010 and prized ‘Oasis of 100millions imaginations’ in United nations Public Service Awards, UNPSA. In brief, SMG has accomplished remarkable results in field of ICT.

A lot of public officials from other countries have been visiting Seoul in order to learn advanced informatization system of SMG. In addition, the need for e-government is recognized in many countries.

Table I-2 *The current status of overseas delegation for SMG e-government visit*

Year	The number of persons	Visit countries
2010	356 people from 68 countries	Japan, Thailand, El Salvador, Birmingham, etc.
2009	171 people from 42 countries	Peru, France, Guatemala, Bangkok, etc.
2008	357 people from 56 countries	France, England, Congo, etc.

In addition the Republic of Korea was given 1st place in the UN e-government Development Index 2010. In 2012, the Korean government won 1st place in the field of global e-government, e-participation index and local government.

The fact that the e-government level of the Republic of Korea is the world’s highest was re-confirmed by UN when it won 1st place in three fields in a row other than ‘efforts’ since 2010.

3. Project Objectives

By sharing the know-how and recommendations are based on the SMG’s previous experiences of e-government implementation with other cities or countries, SMG would like to reinforce city status.

For this reason, SMG would like to conduct feasibility study consulting in order to establish a cooperation system.

In order to introduce e-government to members of WeGO, SMG provides consulting to members of WeGO.

4. Project Scope

To improve the efficiency of business and the operation of paperless offices in Dar es Salaam Council, this project will conduct an e-office system implementation feasibility study.

This project will determine political, technological, and economical feasibility, make a recommendation, and then a roadmap for this project will be established. In addition, the project will link to the World Bank Toolkit Development Project.

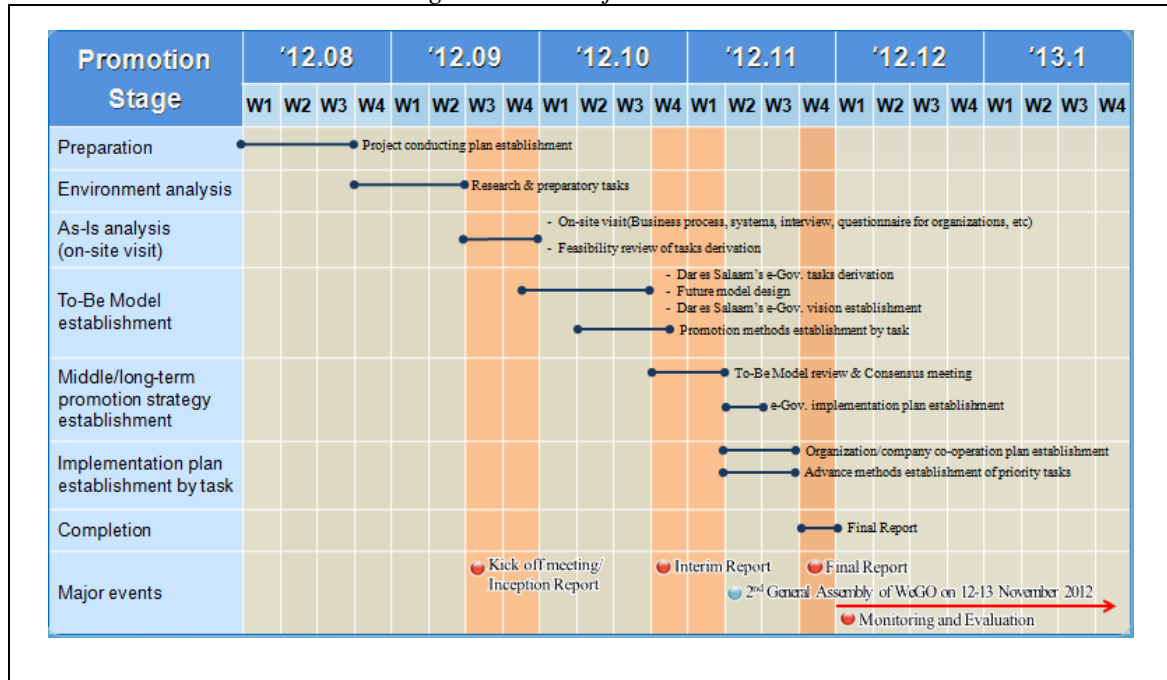
- | |
|---|
| <ul style="list-style-type: none"> • Survey of general current status of city and country • e-government project or plan of city and country • Requirement analysis of city informatization • External environment and current informatization phase of city, derivation of city informatization directivity reflected in the requirements. • Informatization directivity is based on a survey of the current status. Informatization directivity will be derived through a feasibility analysis for each sector. Feasibility analysis will be divided into policy, technology, and economy. • Political feasibility analysis |
|---|

- Technological feasibility analysis
- Economical feasibility analysis
- Overcoming the gap between current informatization status and the informatization required to improve and establish a future model for informatization through analysis of best practices
- Long-term informatization model for city and derivation of implementation roadmap
- Implementation of infrastructure, development of informatization implementation and derivation of focused project
- Estimation of the expected effects of city informatization

5. Project Schedule

This project will have been promoted for four months and will include three field trips. It will take time to analyze the AS_IS for two months and to establish the TO_BE model for two months.

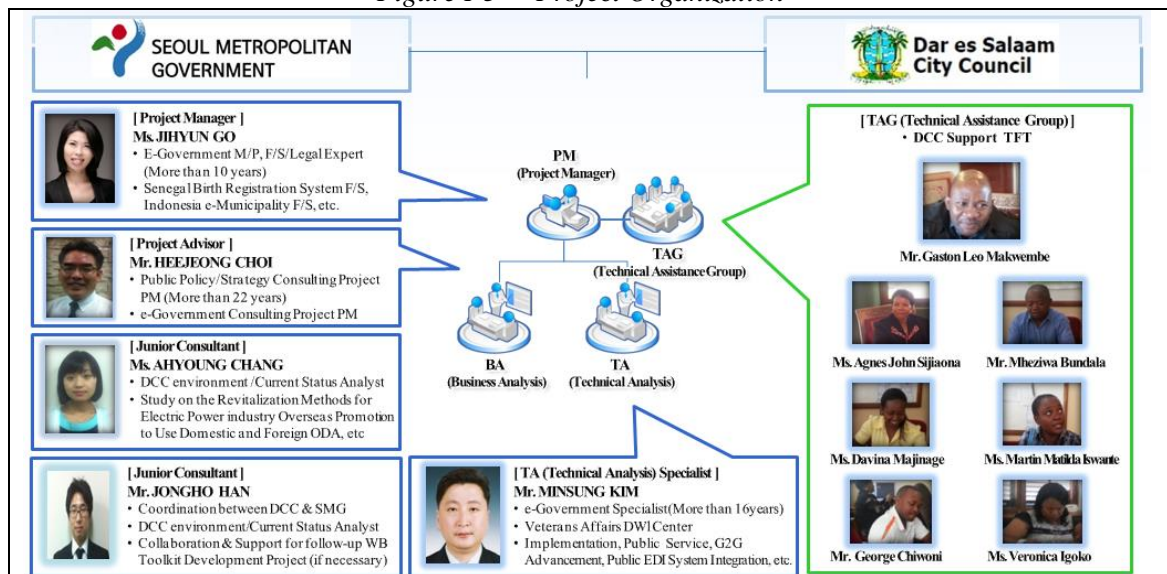
Figure I-2 Project schedule



6. Project Organization

The project team is organized by both SMG information division and Dar es Salaam city council information TFT collaboratively.

Figure I-3 Project Organization



II. Environmental Analysis

1. Overview of Tanzania

1.1 Overview

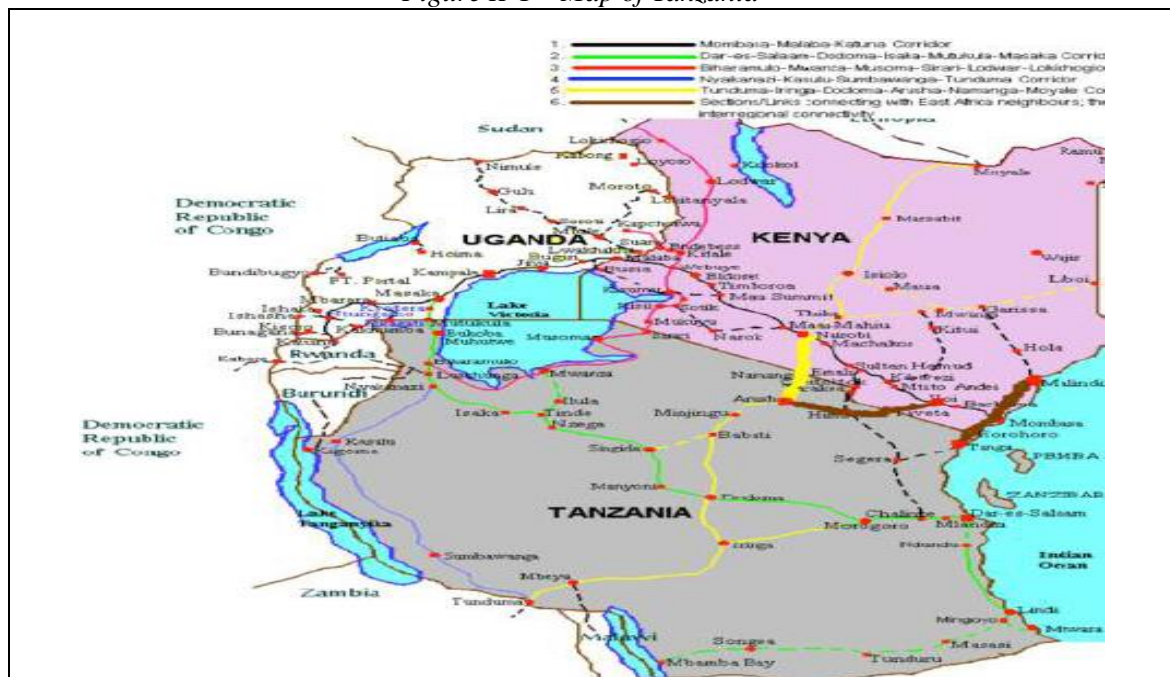
Table II-1 *Overview of Tanzania*

General	Location	Eastern Africa, bordering the Indian Ocean, between Kenya and Mozambique
	Total area	947,300 sq km
	Climate	Varies from tropical along coast to temperate in highlands
	Population	43,601,796(July 2012 est)
	Capital city	Dodoma
	Ethnics	Mainland: African 99% (of which 95% are Bantu consisting of more than 130 tribes), other 1%(consisting of Asian, European, and Arab) Zanzibar: Arab, African, mixed Arab and African
	Languages	Kiswahili or Swahili(Official), English (official primary language of commerce, administration and higher education), Arabic (widely spoken in Zanzibar), many local languages
Religions	Mainland: Christian 30%, Muslim 35%, indigenous beliefs 35% Zanzibar: more than 99% Muslim	
Politics	Independence	26 April 1964: Tanganyika became independent on 9 Dec. 1961(from UK), Zanzibar became independent on 19 Dec 1963(from UK) Tanganyika united with Zanzibar on 26 April 1964
	Government type	Republic
	Executive branch	Chief of state: President Jakaya KIKWETE Head of government: President Jakaya KIKWETE
	Legislative branch	Unicameral national Assembly or Bunge (357 seats)
	Political parties	Chama Cha Demokrasia na Maendeleo (Party of Democracy and Development) or CHADEMA [Willibrod SLAA]; Chama Cha Mapinduzi or CCM (Revolutionary Party) [Jakaya Mrisho KIKWETE]; Civic United Front or CUF [Ibrahim LIPUMBA]; Democratic Party [Christopher MTIKLA] (unregistered); National Convention for Construction and Reform - Mageuzi [Hashim RUNGWE]; Tanzania Labor Party or TLP [Mutamwega MUGAHWYA]; United Democratic Party or UDP [Fahma OVUTWA]
International organization participation	ACP, AfDB, AU, EAC, EADB, FAO, G-77, IAEA, IBRD, ICAO, ICRM, IDA, IFAD, IFC, IFRC, ILO, IMF, IMO, IMSO, Interpol, IOC, IOM, IPU, ISO, ITSO, ITU, ITUC, MIGA, MONUSCO, NAM, OPCW, SADC, UN, UNAMID, UNCTAD, UNESCO, UNHCR, UNIDO, UNIFIL, UNMISS, UNOCI, UNWTO, UPU, WCO, WFTU, WHO, WIPO, WMO, WTO	
Economy	GDP	64.71 USD billion
	GDP per capita	1500 USD
	Monetary Unit	TZS
	Exchange rates	1TZS=1597 USD
	Natural Resources	Hydropower, tin, phosphates, iron ore, coal, diamonds, gemstones, gold, natural gas, nickel

1.2 Geography

Tanzania is a country in central East Africa surrounded by Kenya and Uganda to the northern side, Rwanda, Burundi and the Democratic Republic of the Congo to the western side, and Zambia, Malawi and Mozambique to the southern side. The country's eastern borders lie on the Indian Ocean. Tanzania is the biggest country (land area) among the East African countries (i.e. Kenya, Uganda and Tanzania) and Dar es Salaam is the commercial capital and major sea port for Tanzania's Mainland and it serves neighboring land-locked countries of Malawi, Zambia, Burundi, Rwanda, and Uganda, as well as Eastern DRC. Other sea ports include Zanzibar, Tanga, and Mtwara. Because of its geographical and locational advantage, Dar es Salaam Port presents itself as the gateway into East and Central Africa. This makes Tanzania a logical investment destination.

Figure II-1 Map of Tanzania



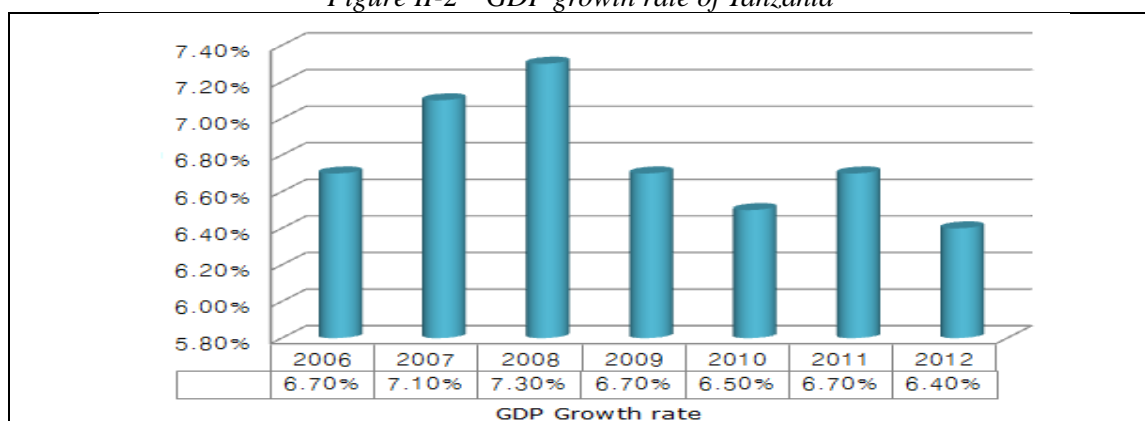
1.3 Society and Economy

Swahili and English are used as official languages. In terms of religion, people practice Christianity (30%), Islam (35%), and indigenous religions (35%).

In daily life, most people use Swahili. But educational institutes and the media use English. As there is a fairly equal distribution among the members of the various religions (Christianity, Islam, and indigenous religions) there have been relatively few conflicts caused by religion, such as rebellions, or terror attacks. But the problem of Zanzibar independence is causing some social unrest.

It is predicted that Tanzania's economic growth will be increased thanks to an economic policy of government stimulation. The government of Tanzania has promoted economic stimulation policies such as tariff union of the east African economic community, invitation of foreign aid, and privatization of public enterprises. As a result, the country is expected to see continuous growth, with an economic growth rate of 6~7% annually until 2015. Since 2000, economic growth has continuously been more than 6% annually. Despite the economic crisis, Tanzania maintained more than 6% economic growth in 2009 due to gold exports.

Figure II-2 GDP growth rate of Tanzania



*Source: World Bank, The World Bank Poverty reduction and Economic Management Unit Africa Region, 2012.02

The mining sector, which is based on abundant natural resources such as gold, diamonds, and Tanzanite, is growing steadily, and has contributed to the overall economic growth of Tanzania. The country's major natural resources are gold, diamonds, iron ore, coal, nickel, and Tanzanite. Notably, Tanzania has verified reserves of 45 million ounces of gold. The mining sector accounted for 40% of Tanzania's total exports.

Tanzania maintained a socialism system, under which there was only one party (Tanzania Revolution Party), for quite a long time (1962~1991). Although Tanzania was democratized, only members of the Tanzania Revolution Party have any influenced on the society. Tanzania achieved independence from UK in 1962. The first president, Julius Nyerere, maintained the system of socialism. But in the 1990s, socialism was abolished through an economic revolution and global democratization.

In the 2010 presidential election, President Jakaya Kikwete from the governing party (Tanzania revolution party) was reelected, with 61% of the vote. For this reason, it is predicted that there will be no major political changes until the next presidential election in 2015. President Jakaya Kikwete was elected with 80% of the vote in 2005, but in this election he was elected with a smaller percentage of the vote.

Recently, the government of Tanzania has lost some public support due to high inflation and a high poverty rate. To regain public support, the government of Tanzania has established a policy called 'Tanzania vision 2025,' which is focused on quality of life and welfare. The 'Tanzania vision 2025' is aimed to be a medium

Since 1992, Republic of Tanzania established diplomatic ties with Republic of Korea. Between two countries, there are synthetic resins, petrochemicals and etc as trading goods.

Table II-2 Annual scale of export-import

Classification (million dollars)	2009	2010	2011	2012 (1/2 of year)	Trading goods
Export	68	107	91	45	synthetic resins, petrochemicals and etc.
Import	11	70	45	11	Aluminum, cooper, etc.

*Source: Korea Export and Import Bank, 2012

Table II-3 *Scale of direct investment between Korea and Tanzania*

Classification (thousand dollars)	2009	2010	2011	Total
Korea to Tanzania	1,015	348	-	7,246
Tanzania to Korea	-	-	-	450

*Source: Korea Export and Import Bank, 2012

2. Overview of Dar es Salaam

2.1 Overview

Dar es Salaam means ‘Heaven of peace’ in Arabic. The total populations is approximately 3.2 million people. The total surface area of Dar es Salaam city is 1,393Km². Dar es Salaam is the 1st city of Tanzania.

Table II-4 *Overview of Dar es Salaam*

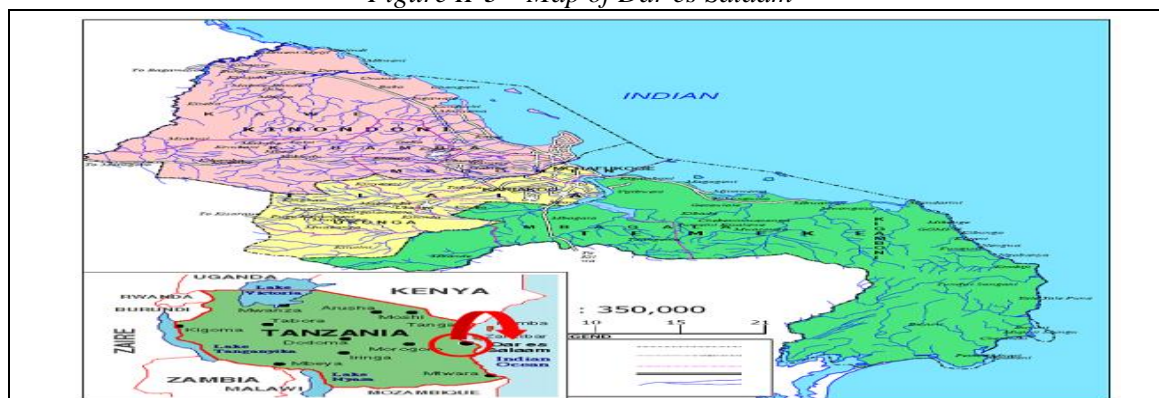
Surface of area	1,393Km ²	GDP	64.71 USD billion
Population	3.2 millions	GDP per capital	1500 USD
Political system	-	Currency	TZS
Foreign policy	-	Exchange rate	1TZS=1597 USD

*Source: CIA World Factbook

2.2 Geography

The City is located between latitudes 6.36 degrees and 7.0 degrees to the south of Equator and longitudes 39.0 and 33.33 to the east of Greenwich. It is bounded by the Indian Ocean on the east and by the Coast Region on the other sides. The City experiences a modified type of equatorial climate. It is generally hot and humid throughout the year with an average temperature of 29°C. The hottest season is from October to March during which temperatures can raise up to 35°C. It is relatively cool between May and August, with temperature around 25°C. There are two main rain seasons; a short rain season from October to December and a long rain season between March and May. The average rainfall is 1000mm (lowest 800mm and highest 1300mm). Humidity is around 96% in the mornings and 67% in the afternoons. The climate is also influenced by the southwesterly monsoon winds from April to October and northwesterly monsoon winds between November and March. The total surface area of Dar es Salaam City is 1,800 square kilometers, comprising of 1,393 square kilometers of land mass with eight offshore islands, which is about 0.19% of the entire Tanzania Mainland’s area. Temeke Municipality has the largest land surface area followed by Kinondoni while Ilala has the smallest area.

Figure II-3 *Map of Dar es Salaam*



2.3 Society and Economy

Dar es Salaam has been urbanized rapidly due to influx of the rural population, which has led to the social problem of urban poverty. 30% of the urban poor in Tanzania are living in the periphery of Dar es Salaam. So the periphery of Dar es Salaam has a serious sprawl called the poor residential area.

Most of the poor in Dar es Salaam are living in informal land which does not provide housing, water, or sanitation. Their residence is in a serious sprawl. In addition, there is very serious traffic congestion in Dar es Salaam due to difference between the urban and rural area in the speed of implementing infrastructure such as road construction. Especially the traffic congestion is extremely serious on weekends and during the morning and evening rush hour. As there is only two-lane road between the downtown and the suburb in Dar es Salaam.

The GDP of Dar es Salaam increased steadily from 1992 to 2002. It is predicted that the economy of Dar es Salaam will grow with the economic growth of Tanzania. In 2003, the GDP of Dar es Salaam was influenced by a decline in Tanzania's economic growth. As a result, it has slowed down slightly since then, with approximately 6% economic growth in 2004 and 8% economic growth in 2005.

Figure II-4 A growth rate of Dar es Salaam GDP



* Source : Economic potential of Dar es Salaam, data sources are unknown since 2005

There is a wide variety of domestic manufacturers and export goods in Dar es Salaam. 64% are located in Temeke and 29% are located in Kinondoni, with the remaining 7% located in Ilala. Types of industries located in Dar es Salaam include textile, brewery, distillery, beverage, bags, cigarette, cement, paints, dairy products, and garments, all of which fall into the category of light industry. In terms of ownership, 64% are privately owned, 19% publicly owned and 14% are joint ventures. Dar es Salaam is the major commercial, administrative and industrial center of Tanzania. The main factors that make Dar es Salaam an attractive investment destination are as follows.

- Zero rated VAT on goods manufactured for export;
- Access to large regional market both East African Community (Kenya, Uganda and Tanzania) and SADC covering 14 countries of Southern Africa.
- Access to all parts of the world offered by Dar es Salaam port and rail connection providing transport access to neighboring countries including DRC Congo, Malawi, Zambia, Burundi, Rwanda and Uganda
- Fast track to obtain other permits such as residence/work permits, industrial and other trading licenses with assistance of the TIC

3. Policies and Strategies

3.1 Tanzania's National Policies and Strategies

Improving the quality of life, achieving good governance, rearranging the legal system and enhancing the nation's competitiveness are goals presented in Tanzania Vision 2025.

- **High Quality Livelihood** : Tanzania should establish a democratic political system to improve the quality of life of the people, promote the equitable distribution of wealth and realize equality between men and women.
- **Peace, Stability and Unity** : Tanzania should work to create a democratic environment for the stabilization of political, social and national unity.
- **Good Governance** : By strengthening the principles of responsibility and compensation, Tanzania should formulate a plan for reforming the existing political structure and the prevention of corruption.
- **A well-educated and learning society** : Tanzania should establish competitive and mature civic awareness by encouraging education at the national level.
- **A competitive economy of capable of producing sustainable growth and shared benefits** : Tanzania should strengthen its national competitiveness and pursue sustainable development to respond flexibly to changes in the local and global economy.

Tanzania's 5-year economic development plan includes a leap forward to become a semi-industrial country that is able to compete in the global market while pursuing regionally balanced growth.

During the first period (2011/2012-2015/2016), the aim is to achieve an average annual growth rate of 8%, and during the second period (2015/2016-2020/2021) and the third period (2020/2021-2025/2026), the aim is to maintain an average annual growth rate of at least 10%.

Investments in relatively undeveloped areas are needed because despite the continuous growth of economy the poor strata has not been reduced in the past 15 years.

Barriers to Tanzania's economic development were derived through an analysis of the situation.

- Shortage of power supply (short-term or long-term power outages, more than once per day)
- Low quality of infrastructure and transportation network (roads, trains, and ports)
- Shortage of trained human resources
- Difficulty of securing land
- Relatively rapid climate change, lack of irrigation facilities
- Creation of value added domestic products is limited

- Difficulty of farming and small and medium-sized businesses to secure available funding

Securing funds for investment became an essential challenge, as spending on investment increased every year.

The 'Tanzania Open Government Partnership (OGP) Action Plan' aims to improve the management of public resources, to enhance transparency by fighting corruption, to strengthen public participation and to improve the public service delivery system.

OGP is supervised by an International Steering Committee composed of government officials and members of the public. It emphasizes the responsibility of the government to promote the public service.

Executive officers for ethics within the country were established, including a secretariat of anti-corruption and corruption prevention, and their responsibility was enhanced. Also, the responsibilities of organizations such as the public procurement regulatory authority, audit authority and audit committee of congress were enhanced.

For greater transparency, laws requiring leaders and senior public officials to disclose their incomes and assets were enacted.

The government recognized the importance of technology and innovation and set them as the highest priority on the agenda.

3.2 Dar es Salaam Policies and Strategies

In the 'Dar es Salaam city strategic plan for 2012-2013', the achievements and challenges of the 'Dar es Salaam city strategic plan for 2007-2010' were assessed, and the direction of the next three years was discussed.

The vision of the plan is to play an exemplary role through consultation and cooperation within the country, and the mission of the plan is to suggest the socio-economic development of local governments through cooperation with stakeholders.

The core values of the strategy are courtesy to all; good customer care, diligence; adherence to rules, regulations and confidentiality; team spirit; cooperative and participatory spirit; integrity; avoiding corruption, flexible and proactive; capable of coping with changes and challenges, accountable; responsible for the output and outcome.

The key challenges of the next three years (2010-2013) can be described as follows:

Table II-5 *Objectives and Targets of strategic plan for 2010-2013*

Objective	Targets
Improved services and reduced infection of HIV/AIDS	<ul style="list-style-type: none"> • RS HIV/AIDS Programs developed and implemented by June 2013 • Care and support services for those staff living with HIV/AIDS provided by June 2013 • HIV/AIDS plans in 3 LGAs supervised and coordinated by June 2013
Effective implementation of the national anti-corruption strategy	<ul style="list-style-type: none"> • 4 Anti-corruption committees in 4LGAs Coordinated by June 2013 • RS Anti-corruption committee activities implemented by June 2013

<p>Advisory and coordination services to LGAs and other stakeholders</p>	<ul style="list-style-type: none"> • Planning and coordination services for projects, population, gender, Community development, labor, ICT and children provided by June 2013 • Social services for education, health, sports, culture and youth development in 4 LGAs provided by June 2013 • Economic and productive services for agriculture, livestock, fisheries, natural resources cooperatives, energy, trade, industry and marketing in 4 LGAs provided by June 2013 • Infrastructure support services for urban planning, land surveying, land management, civil and building engineering, water, and transport in 4 LGAs provided by June 2013 • Local government services for capacity building in 4 LGAs provided by June 2013 • Statutory progress reports prepared and submitted by June 2013 Statutory meetings conducted by June 2013
<p>Improved internal capacity of RS</p>	<ul style="list-style-type: none"> • Professional training of staff conducted following training program by June 2013 • All Sectoral Overheads and operational costs met by June 2013 • Institutionalize LAN and WAN by June 2013 • Institutionalize OPRAS by June 2013 • Financial and audit reports prepared and submitted by June 2013 • Develop and implement procurement plan by June 2013 • Registry, sanitation, secretarial, security and transport services in RS provided by June 2013 • Complaints handling system established by June 2013
<p>Improved coordination of cross-cutting Issues</p>	<ul style="list-style-type: none"> • Disaster issues coordinated in 3 LGAs by June 2013 • Gender and diversity issues Coordinated in 4 LGAs by June 2013 • 36 awareness-raising creation meetings on disaster management conducted in 3LGAs by June 2013 • National and regional tree planting activities coordinated in 3 LGAs by June 2013 • All national festivals commemorated by June 2013. • Sports and culture in the region promoted by June 2013 • Public awareness campaign regarding people living in the hazardous prone areas co-coordinated in 3 LGAs by June 2013
<p>Improved peace and tranquility within the region</p>	<ul style="list-style-type: none"> • Peace and security initiatives in the community conducted by June 2013 • 1341 youth trained in People’s Militia skills by June 2013

*Source: Strategic plan for 2010/2011 ~ 2012/2013

4. ICT Environmental Analysis related to the Project

4.1 Dar es Salaam ICT Policies and Strategies

As legislation is only possible at the national level, Dar es Salaam is not able to establish its own policy, so it follows the national ICT policy.

Tanzania’s government has constantly been revising the related policies and legal provisions to create a better environment for ICT, but the legal system related to e-government that can be applied is still incomplete.

The status of ICT policies and the related provisions that have been enacted are given in the table

below.

Table II-6 *Status of ICT policies and related provisions enacted*

Year	Status of ICT policies and related provisions enacted
1993	Tanzania Communications Act and establishment of Tanzania Communications Commission
1997	National Telecommunication Policy
2003	Adoption of a national ICT Policy
2003	Tanzania Communications Regulatory Act
2003	Establishment of TCRA as a converged regulator combining Tanzania Communications Commission and Tanzania Postal Commission (TPC) and Tanzania Broadcasting Commission (TBC)
2005	TCRA converged licensing framework
2005	ICT backbone study

In National ICT Policy 2003, it is emphasized that ICT policy at the national level, legislation and other diverse areas must be changed comprehensively, and the awareness of the global network environment rapidly changed. The vision of the policy is that Tanzania becomes a hub of ICT infrastructure and solutions and promotes its own socio-economic development while reducing poverty. The output of ICT Activities will be utilized to achieve the goals of Tanzania Vision 2025. Objectives and issues based on Tanzania Vision 2025 are described as follows:

Table II-7 *Objectives and Issues of ICT Policy*

Objectives	Issues
Strategic ICT Leadership	For successful implementation of the plan, leadership that can manage various fields is needed in order to create an environment that is attractive to investors and consumers, secure funds, set the priority and manage related resources.
ICT Infrastructure	The appropriate ICT infrastructure is prepared and the connections within the infrastructure are strengthened. Also, in the multimedia area, global standards are pursued.
ICT Industry	Penetration of private capital for ICT expansion in small and dispersed areas is supported through policy by the government, in addition to encouraging active research and experimentation in the ICT industry.
Human Capital	As there is a lack of skilled ICT human capital in Tanzania, the utilization of manpower from overseas is preferred, while the education of human resources within the country is needed at the same time. Furthermore, lifelong learning and ICT applied education including distance learning are recommended.
Legal and Regulatory Framework	For secure e-commerce, a trusted environment is needed through an official institution such as the legal system. For this reason, enacting new laws to fit the internet environment is an urgent task.
Productive Sectors	Demand of ICT has been growing in various industries but ICT technology is not being utilized by small-scale producers, which has to be resolved.
Service Sectors	Creating an environment in which the service sector can utilize ICT interface is important. Improving efficiency is a goal in the field of e-commerce and financial services such as banking and insurance, as well as in the hospital and tourist industry.
Public Service	Since the mid-90s, the public service has shifted to become more effective and customer-centered. In addition to the establishment of e-government, ICT is applied to each different sector.
Local Content	Due to globalization, foreign contents tend to dominate rather than the cultural heritage of the local area or the local economy. Therefore, original cultural heritages have to be transformed moderately and then utilized. Also, the people inside the local area

	have to communicate with each other through ICT technology in order to develop the internal economy.
Universal Access	The information gap has to be considered. Ordinary citizens must be allowed to access the service. Also, awareness of the benefits of utilizing ICT must be raised so that ICT can be utilized in daily life.

*Source: ICT Policy 2003

Implementation plan is established based on a top-down model in 'ICT policy 2003,' and does not consider the actual participation of stakeholders. The e-government strategy (2008) presents e-government that delivers improved services in terms of quality, timeliness, accessibility and effectiveness, with five specific objectives. To improve public service, five specific objectives have to be achieved, and these are described as follows:

- Establish the institutional framework for e-government
- Implement the infrastructure for e-government
- Develop human resources for utilization of technologies
- Expand public awareness of e-government
- Develop public services of e-government

The basic principle of the e-government strategy is 'government that communicates through technologies,' and encompasses seven basic principles.

- Service innovation through relentless research and development
- Equal opportunity of access to service
- User-centered applications and serviceability from them
- Enhanced benefits compared to face-to-face service
- Securing safety and protecting privacy through security systems
- Partnerships between public agencies and stakeholders from private sector
- Interconnectedness of service management among agencies (open access)

4.2 Dar es Salaam ICT project plan related to the project

Table II-8 *Dar es Salaam ICT project plan related to the project*

Year	Dar es Salaam ICT project plan related to the project
2007.09	Development of a national statistical system for Tanzania, World Bank
2007.12	Tanzania Telecommunication Project (01), World Bank
2007.12	Tanzania Telecommunication Project (02), World Bank
2008.09	Feasibility study for applying IT to customs in Tanzania revenue authority, KIPA
2009.05	Feasibility study for introduction of e-office in Tanzania, KIPA

2010.05	Bank of Tanzania ICT and services strengthen the business world (AFRS)
2010.09	AfDB ISP for Good Governance II
2010.11.	Extending mobile applications in Africa - Tanzania (COSTECH), World Bank
2010.12	Feasibility study for modernizing customs administration of Tanzania Tax Agency, KOICA

4.3 Dar es Salaam ICT Organization and Business Process

The ICT organization of DCC existed as an independent department until August 2005, but was incorporated into the Department of Statistics in August 2005. Under the control of Mheziwa Bundala, who is the IT manager, one full-time employee and one contract employee are responsible for ICT operation.

EPICOR used in financial management was a vital element of ICT when ICT organization was operated independently. The operation of the Dar es Salaam website and provision of a GIS system was presented as an urgent task in the past.

The ICT organization in each municipality cooperates to provide optimal public service utilizing the e-government. Each organization cooperates to establish an ICT strategy and implementation plan while establishing procedures for the practical operation of ICT applications, and promotes the optimization of the system by utilizing ICT resources and through continuous management.

Technical education is conducted to raise awareness of ICT among civil servants. The specific services provided are described as follows:

- Planning of information systems and advisory services
- Management of network and web
- Development and management of database
- Maintenance and support of H/W and S/W

4.4 Dar es Salaam ICT Infrastructure

The local mobile and Internet providers are Vodacom, Airtel, Tigo, and Zantel, and the majority of citizens are using mobile phones. Internet has become more widespread since local companies have provided the network infrastructure. Offices have the highest internet usage, followed by homes and internet cafes. Internet cafe charge for an hour is approximately 1,000 TZS, which is approximately 1 USD. The price of home internet is approximately 30,000 TZS per month, which is approximately 20 USD.

One of the leading IT training institutions is DIT (Dar es Salaam Institute of Technology), which provides technology education in the field of applied science. There are some agencies in the private sector, such as banks, that operate as paperless offices, but most of the public institutions have not introduced an integrated system. Employees of most public institutions including City Hall are not familiar with using computers for work.

Soft Tech is a multinational company that has its headquarters in the United States, and it supplies hardware and software to public institutions in Africa, including in Ghana, Tanzania, Zambia, Malawi. While it doesn't have self-developed solutions, it localizes products of MS, Siquil and Oracle and applies them to the local area, while providing maintenance.

4.5 Implications

Politics, the economy, and many fields of society have been stabilized, and the growth trend is currently in good condition. Tanzania has been growing at a rate of about 6% per year since the early 1990s, and has enjoyed political stability despite the global recession. The country's intent to promote e-government was confirmed through the announcement of ICT Policy 2003.

As Tanzania is highly dependent on foreign economic cooperation, a large number of large-scale national information and communications development projects have been promoted with international organizations. DCC and the three municipalities deliver incoming and outgoing documents manually, which is the traditional process of working. Most documents are paper documents because only a minority of employees can utilize computers.

The annual usage of paper documents has been increasing constantly, and it is very difficult to store such paper documents properly. In addition, the distribution procedures are irregular and it normally takes a long time to get documents approved. The systems in DCC are not properly operated because of a lack of funds for informatization. In addition, because of the frequent outages of the external power supply, the deterioration of ICT equipment and PCs is accelerated.

A lack of professional human resources has worsened the current unfavorable circumstances.

Nevertheless, DCC has been actively promoting international cooperation activities for the promotion of e-government since 2003, in the ways described as follows:

- Establishment of the institutional framework for e-government
- Implementation of infrastructure for e-government
- Human Resources for utilization of technologies
- Expanding public awareness of e-government
- Developing public services of e-government

In addition, the ICT infrastructure has been improved since 2007, with tangible results achieved through ICT cooperation with international organizations such as the World Bank and AfDB.

5. Stakeholders Analysis

5.1 Stakeholders Analysis Overview

Stakeholders analysis is a methodology derived from enterprise management. It consists of identifying the stakeholders and analyzing their characteristics and the requirement for the smooth functioning of project promotion. Political and social influence has to be sufficiently considered in the analysis, and through this analysis, potential strategies related to cooperation between stakeholders can be derived.

The analysis consists of two phases. The first phase is classifying the stakeholders, and the second phase is evaluating the stakeholders. In the first phase, stakeholders relevant to the project are selected, and they are then classified into groups based on their common denominator. In the second phase, stakeholders are evaluated and core stakeholders are selected through qualitative

and quantitative assessment.

'Stakeholder analysis module II' provided by the World Bank is utilized, as this project is being conducted as a national project with the support of international financing. Also, a customized tool according to the characteristics of the project is used for quantitative evaluation.

According to the World Bank Stakeholder Analysis guideline, 'Stakeholder analysis module II' is divided into a Four-Step Process that can be described as follows:

- Identify Key Stakeholders
- Assess Stakeholder Interests and the Potential Impact of the Project
- Assess Stakeholder Influence and Importance
- Outline a Stakeholder Participation Strategy

The tool for quantitative evaluation designed to fit the environment of the project is divided into three-step process that can be described as follows:

- Classification of Stakeholders
- Stakeholder Assessment through customized indicators
- Implications

Table II-9 *Comparison of Stakeholder Analysis*

Division	Steps
World Bank Stakeholder Analysis	Identify Key Stakeholders
	Assess Stakeholder Interests and Potential Impact of the Project
	Assess Stakeholder Influence and Importance
	Outline a Stakeholder Participation Strategy
Customized Stakeholder Analysis	Classification of Stakeholders
	Stakeholder Assessment through customized indicators
	Implications

5.2 Classification of Stakeholders

As the first phase, classification of stakeholders involves identifying the individuals and groups who have a direct or indirect interest related to the promotion of the project.

According to the World Bank guideline, key stakeholders should be selected based on the following considerations.

Table II-10 *Considerations for stakeholder identification, as per the World Bank*

<ul style="list-style-type: none"> • Who are the potential beneficiaries? • Who might be adversely impacted? • Have vulnerable groups been identified? • Have supporters and opponents been identified? • What are the relationships among the stakeholders?

*Sources: World Bank website, Stakeholder Analysis (<http://www1.worldbank.org/publicsector/anticorrupt/PoliticalEconomy/stakeholderanalysis.htm>)

Considering all the information listed above, stakeholders relevant to the project are classified into 4 groups described as follows:

- **(Group 1) Borrower:** Individuals or groups who conduct and manage the project, with the support of international financing.
 - Full council, which is the key decision maker on the main business of the city
 - Mayor, Deputy mayor and Director and Senior officers in DCC, IMC, TMC, KMC
 - Planning, monitoring and statistics of DCC, the department of project management
- **(Group 2) Beneficiaries:** Individuals or groups who benefit by using the system
 - Public officials who utilize the system
 - Citizens who use public service
 - ICT management team in DCC, IMC, TMC, KMC
- **(Group 3) Affected groups:** Individuals or groups affected positively or negatively due to the project

- Companies participating in network building and procurement of technology
 - IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)
 - Companies participating in the supply and management of the ERP system
 - Companies participating in the procurement of business application and solutions of security
 - Consulting firms that want to participate in the introduction of e-document, e-signature and e-certification along with this project
 - Foreign governments that support domestic companies' overseas expansion to overseas markets and play a diplomatic role
- **(Group 4) Other interested groups:** Other individuals or groups related to the project, not classified
 - World Bank, which supports the industrialization of developing countries as well as the development of e-government
 - African Development Bank, which promotes social and economic development of African countries
 - Korea International Cooperation Agency, which supports Foreign free cooperation projects for the economic development of developing countries
 - Export-Import Bank of Korea, which promotes export-import, overseas investment and supports the economic development cooperation fund

5.3 Stakeholders Assessment

In this phase, through the interview conducted and the questionnaires collected in the first field trip, core stakeholders relevant to the project are selected, and described.

In the first stage, stakeholders are evaluated quantitatively according to the evaluation basis in 'Stakeholder Analysis Module II' proposed by the World Bank.

In second stage, stakeholders are evaluated qualitatively based on two factors that are closely related to the success of the project, intent of promoting the project and capability of conducting the project.

Table II-11 *Assessment resources and materials for stakeholder analysis*

Stage	Evaluation basis	Tool for Assessment
First Stage	Interests of the stakeholders	<ul style="list-style-type: none"> • Preliminary study (Reports, Web site, etc.) • Result of interview in each department/agency • Comments from companies and government
	Influence of the project on interests of the stakeholders	
	Evaluation of influence and importance of each stakeholder toward the project	
Second Stage	Political legitimacy	<ul style="list-style-type: none"> • Survey collected and other reference materials in Dar es
	Relevance to the success of the project	

	Leadership and intent of cooperation	Salaam
	Degree of understanding the project (knowledge of IT)	
	Degree of controlling the resource	
	Communication skill	

Utilizing the assessment tool of the World Bank, Interest of the stakeholders and Influence of the project on interest of the stakeholders are first derived, and then the influence and importance of each stakeholder in relation to the project are evaluated.

Detailed matters considered for evaluating indicators are described as follows:

Table II-12 *Evaluating indicators and detailed matters for the first stage*

Evaluating indicators	Detailed matters
Interest of the stakeholders, and influence of the project on the interest of the stakeholders	<ul style="list-style-type: none"> • What are the stakeholder’s expectations related to the project? • What benefits are there likely to be for the stakeholder? • What resources might the stakeholder be able and willing to mobilize? • What stakeholder interests conflict with project goals
Evaluation of influence and importance of each stakeholder in relation to the project	<ul style="list-style-type: none"> • Power and status (political, social, and economic) • Degree of organization • Control of strategic resources • Informal influence (e.g. personal connections) • Power relations with other stakeholders • Importance to the success of the project

*Source: Stakeholder Analysis Module II, World Bank

The Roles and Interests of stakeholders can be summarized as follows:

Table II-13 *Stakeholder Roles and Interests*

Group	Stakeholder	Roles	Interests
Borrowers	Full council	<ul style="list-style-type: none"> • Final decision-making related to the project 	<ul style="list-style-type: none"> • Economic development • Reduction of corruption • Efficiency of administration • Maintaining the vested right
	Mayor, Deputy mayor and Director and senior officers in DCC, IMC, TMC, KMC	<ul style="list-style-type: none"> • Discussing the scope, the responsibility of the project and the period of implementation with conducting companies • Key decision-making • Director for Protocol 	<ul style="list-style-type: none"> • Economic development • Reduction of corruption • Reinforcing the connection of work among municipalities • Maintaining the vested right

	Planning, monitoring and statistics of DCC, the department of project management	<ul style="list-style-type: none"> Setting the budget of the project Management of the status of the project 	<ul style="list-style-type: none"> Reducing the budget Efficiency of administration
Beneficiaries	Civil officials	<ul style="list-style-type: none"> Cooperate for the smooth progress of the project 	<ul style="list-style-type: none"> Improvement of efficiency at work Maintaining the existing system Maintaining the vested right
	Citizens	-	<ul style="list-style-type: none"> Improved quality of public service Reduction of corruption
	ICT management team in DCC, IMC, TMC, KMC	<ul style="list-style-type: none"> Providing relevant information to companies 	<ul style="list-style-type: none"> Supplying the IT infrastructure Reinforcement of manpower in team Increasing the role of IT department
Affected groups	Companies who take part in network building and procurement of technology	<ul style="list-style-type: none"> Supplying network and infrastructure hardware 	<ul style="list-style-type: none"> Supplying network (LAN, WAN) Supplying the hardware for work
	IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)	<ul style="list-style-type: none"> Shift the mindset of the civil servants through re-training Providing IT technology to civil servants 	<ul style="list-style-type: none"> Increased demand for IT training Reinforcement of IT infrastructure in Dar es Salaam
	Companies taking part in supply and management of ERP system	<ul style="list-style-type: none"> Supplying and managing the system 	<ul style="list-style-type: none"> Localization of ERP product Selling ERP product Invigorating the IT industry
	Companies taking part in procurement of business application and security solutions	<ul style="list-style-type: none"> Providing software relevant to public administration information system 	<ul style="list-style-type: none"> Selling applications for work Selling solutions for security Invigorating the IT industry
	Consulting firms	<ul style="list-style-type: none"> Checking the feasibility of the project Providing useful resources 	<ul style="list-style-type: none"> Participating in the project to introduce e-documents Participating in the project to introduce e-signature and PKI
	Foreign governments	<ul style="list-style-type: none"> Sharing the information of e-government Technical support 	<ul style="list-style-type: none"> Overseas expansion of domestic companies Overseas expansion of domestic manpower
Other Interest groups	World Bank	<ul style="list-style-type: none"> Delivering relevant project Financial support 	<ul style="list-style-type: none"> Invigorating promotion of the e-government project

	African Development Bank	<ul style="list-style-type: none"> Delivering relevant project Financial support 	<ul style="list-style-type: none"> Supporting economic and social development projects in African countries
	Korea International Cooperation Agency	<ul style="list-style-type: none"> Delivering relevant project Financial support 	<ul style="list-style-type: none"> Promoting friendly relations and mutual exchanges Cooperation through economic and social support
	Export-Import Bank of Korea	<ul style="list-style-type: none"> Delivering relevant project Financial support 	<ul style="list-style-type: none"> Financial support such as foreign investment funds, company funds for foreign local business and financial support for resource development

The table below describes the influence of the project on the interests of the stakeholders.

Table II-14 *Influence of the project on interests of the stakeholders*

Stakeholder	Interest(s) at Stake in Relation to Project	Effect of Project on Interest(s) + 0 -
Full council	Economic development	+
	Reduction of corruption	+
	Efficiency of administration	+
	Maintaining the vested right	-
Mayor, Deputy mayor and Director and senior officers in DCC, IMC, TMC, KMC	Economic development	+
	Reduction of corruption	+
	Reinforcing the connection of work among municipalities	+
	Maintaining the vested right	-
Planning, monitoring and statistics of DCC, the department of project management	Reducing the budget	+
	Efficiency of administration	+
Civil Officials	Improvement of efficiency at work	+
	Maintaining the existing system	-
	Maintaining the vested right	-
Citizens	Improved quality of public service	+
	Reduction of corruption	+
ICT management team in DCC, IMC, TMC, KMC	Supplying the IT infrastructure	+
	Reinforcement of manpower in team	+
	Increasing the role of IT department	+
Companies taking part in network building and procurement of technology	Supplying network (LAN, WAN)	+
	Supplying the hardware for work	+
IT education institutions (Dar es Salaam Institute of Technology, Dar Teknohama Business Incubator)	Increased demand for IT training	+
	Reinforcement of IT infrastructure in Dar es Salaam	+
Companies taking part in supply and management of ERP system	Localization of ERP product	+
	Selling ERP product	+
	Invigorating the IT industry	+

Companies taking part in procurement of business application and security solutions	Selling applications for work	+
	Selling solutions for security	+
	Invigorating the IT industry	+
Consulting firms	Participating in the project to introduce e-documents	+
	Participating in the project to introduce e-signature and PKI	0
Foreign governments	Overseas expansion of domestic companies	+
	Overseas expansion of domestic manpower	+
World Bank	Invigorating promotion of the e-government project	+
African Development Bank	Supporting economic and social development projects in African countries	+
Korea International Cooperation Agency	Promoting friendly relations and mutual exchanges	+
	Cooperation through economic and social support	+
Export-Import Bank of Korea	Financial support such as foreign investment funds, company funds for foreign local business and financial support for resource development	+

The importance of the stakeholders and the impact of each stakeholder on the project for the success of the project are described as follows:

Table II-15 *Evaluation of influence and importance of each stakeholder toward the project*

Stakeholders	Importance for the success of the project U = Unknown 1= Little/No Importance 2= Some Importance 3= Moderate Importance 4= Very Important 5= Critical Player	Influence on conducting the project U = Unknown 1= Little/No Influence 2= Some Influence 3= Moderate Influence 4= Significant Influence 5= Major Influence
Full council	4, Very Important Provides resources through the political and diplomatic activities associated with the project's progress	5, Major Influence Full council has right of making final decision on important issues
Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC	5, Critical Player Promoting intent of senior officers; ability to cooperate with other companies will determine the success of the project.	5, Major Influence Handle everything related to the administration, thus affecting the project internally and externally.
Planning, monitoring and statistics of DCC	5, Critical Player Organization that plans and manages the internal projects. Plays a key role with senior officers.	3, Moderate Influence No political influence, but a department that can have an important effect on the project.
Civil Officials	4, Very Important The support and cooperation of civil officials is required, as they will utilize the system to improve efficiency and increase transparency through the administrative information system.	3, Moderate Influence Participation and communication with other companies by officials affects the project
Citizens	1, Little/No Importance The importance of the citizens is almost negligible.	1, Little/No Influence Direct influence of citizens on changes in the system is insignificant.
ICT management team in DCC,	4, Very Important	4, Significant Influence

IMC, TMC, KMC	As they will be in charge of the operation and management of the system, operating and organizing the ICT management team would be very important	When conducting the project, the ICT management team is the organization with which other companies will communicate the most
Companies participating in network building and procurement of technology	4, Very Important	2, Some Influence
	Basic infrastructure system is absolutely required, and the appropriate network infrastructure should be supplied depending on the environment.	Not key decision-makers, but ongoing communication with the project consulting group is needed.
IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)	5, Critical Player	4, Significant Influence
	As civil officials have a low level of understanding of IT, training is essential to fully utilize the system resources.	They will have a major impact, as education is a big part of the project.
Companies participating in supply and management of ERP system	4, Very Important	2, Some Influence
	The system provider is very important, because introduction of the system that fits the environment is a key element of the success of the project.	Not key decision-makers, but ongoing communication with the project consulting group is needed.
Companies participating in procurement of business application and solutions of security	4, Very Important	2, Some Influence
	The role of the software provider is very important, as appropriate software needs to be introduced depending on the environment	Not key decision-makers, but ongoing communication with the project consulting group is needed.
Consulting firms	4, Very Important	4, Significant Influence
	As many companies will be involved in this project, the research and analysis capability and communication skills of the consulting firm will be very important	Consulting firms with relatively extensive experience in implementing systems will have as significant an impact on the project as the internal stakeholders.
Foreign governments	3, Moderate Importance	2, Some Influence
	Foreign governments with an excellent e-government system will support this project through sharing information, providing technical support, investment and advisory activities, along with financial support.	Foreign governments are less powerful than internal stakeholders during the progress of the project
World Bank	3, Moderate Importance	5, Major Influence
	The World Bank provides various resources for the successful implementation of projects in developing countries	The World Bank is very active in providing financial assistance and other resources, and has extensive project experience, so the influence to this project will be high.
African Development Bank	3, Moderate Importance	3, Some Influence
	AfDB contributes to the development of society in Africa through the procurement of resources for development and projects for social development.	Currently, there are not sufficient internal funds to implement the project in DCC. The provision of financial assistance and resources is required from the agencies for international development cooperation.

Korea International Cooperation Agency	3, Moderate Importance	3, Some Influence
	KOICA contributes to the success of the project as it provides e-government training to invited trainees	As Korea is the No.1 e-government country and supports EDCF funding to other developing countries, KOICA can provide funding and educational training.
Export-Import Bank of Korea	3, Moderate Importance	3, Some Influence
	Export-Import Bank of Korea supports international cooperation financially. So it would help Korean IT companies expand their businesses into other countries.	There are not many excellent IT companies in DCC, so the export-import bank of Korea seems to offer the opportunity to give DCC funding and technology.

The influence and importance of each stakeholder is described in the following table.

Table II-16 *Analysis of influence and importance of each stakeholder to the project*

Influence of Stakeholder	Importance of Activity to Other Stakeholders					
	Unknown	Little/No Importance	Some Importance	Moderate Importance	Very Important	Critical Player
Unknown						
Little/No Influence		Citizens				
Some Influence				Foreign governments	Companies participating in network building and procurement of technology	
					Companies participating in supply and management of ERP system	
Moderate Influence				African Development Bank	Civil Officials	Planning, monitoring and statistics of DCC
				Korea International Cooperation Agency		
				Export-Import Bank of Korea		
Significant Influence					ICT management team in DCC, IMC, TMC, KMC	IT education institutions (Dar es Salaam Institute of technology, Dar Teknoham a Business

						Incubator)
					Consulting firms	World Bank
Major Influence					Full council	Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC

As the second assessment, stakeholders are analyzed quantitatively according to two evaluation bases closely related to the success of the project. Each basis has three indicators, which have weighted values.

As political factors have the biggest influence on the implementation of a national project, of the three criteria in the first basis, political legitimacy has the highest value and relevance to the success of the project, and leadership and intent of cooperation are also considered.

Of the three criteria in the second basis based on the analysis of the environment, degree of controlling the resource is the most important factor to implement the e-office system, and degree of understanding the project and communication skill are also considered.

Table II-17 *Evaluation basis for the second stage of Stakeholder assessment*

Evaluation basis	Criteria	Weighting	Detailed basis
Intent of promoting the project	Political legitimacy	40	<ul style="list-style-type: none"> Political issues
	Relevance to the success of the project	30	<ul style="list-style-type: none"> Possibility of utilizing the human network Securing of communication channels
	Leadership and intent of cooperation	30	<ul style="list-style-type: none"> Awareness level of project necessity Personal relationships
Capability of conducting the project	Degree of understanding the project	30	<ul style="list-style-type: none"> IT Knowledge Knowledge related to administration information system Level of understanding of project definition and application scope of the project
	Degree of controlling the resource	40	<ul style="list-style-type: none"> Capital financing ability Degree of controlling the related infrastructure
	Communication skill	30	<ul style="list-style-type: none"> Experience in similar projects Strategic communication skill

The first three indicators are evaluated as follows:

Table II-18 *Evaluation for Possibility of project realization*

Stakeholders		Intent of promoting the project						Total (100)	
		Political legitimacy (40)		Relevance to the success of the project (30)		Leadership and intent of cooperation (30)			
		level	score	level	score	level	score	level	score
Full council	A	5	40	4	24	3	18	4.1	82
Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC	B	5	40	5	30	5	30	5	100
Planning, monitoring and statistics of DCC	C	3	24	3	18	4	24	3.3	66
Civil Officials	D	2	16	2	12	3	18	2.3	46
Citizens	E	1	8	1	6	1	6	1	20
ICT management team in DCC, IMC, TMC, KMC	F	2	16	4	24	4	24	3.2	64
Companies participating in network building and procurement of technology	G	2	16	3	18	3	18	2.6	52
IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)	H	2	16	4	24	4	24	3.2	64
Companies participating in supply and management of ERP system	I	1	8	3	18	3	18	2.2	44
Companies participating in procurement of business application and security solutions	J	1	8	3	18	3	18	2.2	44
Consulting firms	K	2	16	5	30	5	30	3.8	76
Foreign governments	L	2	16	2	12	3	18	2.3	47
World Bank	M	4	32	4	24	4	24	4	80
African Development Bank	N	4	32	2	12	3	18	3.1	62
Korea International Cooperation Agency	O	4	32	2	12	4	24	3.4	68
Export-Import Bank of Korea	P	4	32	2	12	4	24	3.4	68

Scoring criteria									
Very high	5	High	4	Medium	3	Low	2	Very low	1

The next three indicators are evaluated as follows:

Table II-19 *Evaluation for Intent of Project promotion*

Stakeholders		Capability of conducting the project						Total (100)	
		Degree of understanding the project (30)		Degree of controlling the resource (40)		Communication skill (30)			
		level	score	level	score	level	score	level	score
Full council	A	3	18	4	32	3	18	3.3	68
Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC	B	5	30	4	32	4	24	4.3	86
Planning, monitoring and statistics of DCC	C	4	24	3	24	4	24	3.7	72
Civil Officials	D	2	12	1	8	2	12	1.7	32
Citizens	E	1	6	1	8	1	6	1	20
ICT management team in DCC, IMC, TMC, KMC	F	4	24	2	16	5	30	3.8	70
Companies participating in network building and procurement of technology	G	3	18	3	24	4	24	3.4	66
IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)	H	3	18	3	24	3	18	3	60
Companies participating in supply and management of ERP system	I	3	18	3	24	3	18	3	60
Companies participating in procurement of business application and security solutions	J	3	18	3	24	3	18	3	60
Consulting firms	K	5	30	2	16	5	30	4.1	76
Foreign governments	L	2	12	2	16	2	12	2	40
World Bank	M	4	24	5	40	4	24	4.3	88
African Development Bank	N	2	12	2	16	2	12	2	40
Korea International Cooperation Agency	O	2	12	2	16	3	18	2.4	46
Export-Import Bank of Korea	P	2	12	2	16	3	18	2.4	46

Scoring criteria									
Very high	5	High	4	Medium	3	Low	2	Very low	1

Table II-20 Result of the second stakeholder assessment

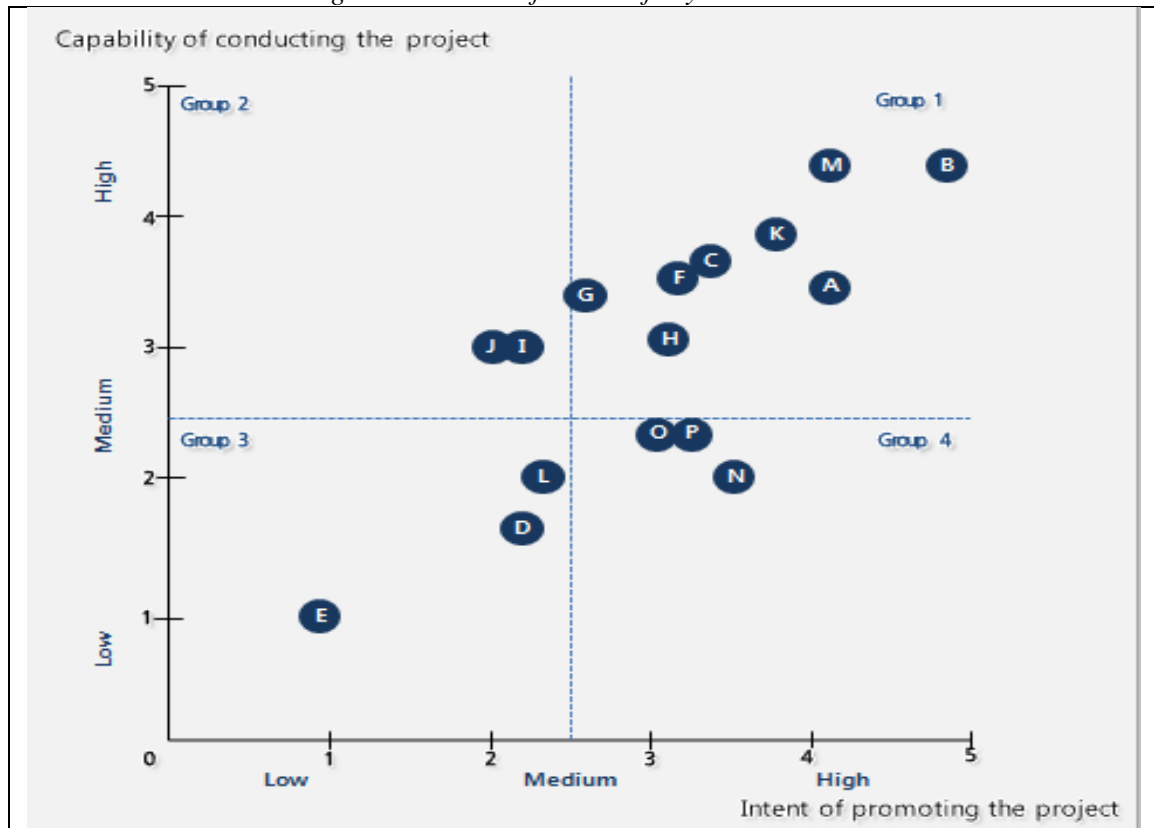
(Unit: High ●, Middle ◐, Low ○)

Stakeholders		Intent of promoting the project		Capability of conducting the project		Total (Average)	Remark
		Score (100)	Remark	Score (100)	Remark		
Full council	A	82	●	68	◐	75	●
Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC	B	100	●	86	●	93	●
Planning, monitoring and statistics of DCC	C	66	◐	72	●	69	◐
Civil Officials	D	46	◐	32	○	39	○
Citizens	E	20	○	20	○	20	○
ICT management team in DCC, IMC, TMC, KMC	F	64	◐	70	◐	67	◐
Companies participating in network building and procurement of technology	G	52	◐	66	◐	59	◐
IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)	H	64	◐	60	◐	62	◐
Companies participating in supply and management of ERP system	I	44	◐	60	◐	52	◐
Companies participating in procurement of business application and security solutions	J	44	◐	60	◐	52	◐
Consulting firms	K	76	●	76	●	76	●
Foreign governments	L	47	◐	40	○	43	◐
World Bank	M	80	●	88	●	84	●
African Development Bank	N	62	◐	40	○	51	◐
Korea International Cooperation Agency	O	68	◐	46	◐	57	◐
Export-Import Bank of Korea	P	68	◐	46	◐	57	◐

Scoring criteria		
Score	Meaning	Remark
71-100	High	●
40-70	Medium	◐
0-39	Low	○

Based on the assessment result, each stakeholder is classified into one of the following 4 groups.

Figure II-5 Identification of key stakeholders



- Group 1
 - Institutions that received high scores in both evaluation bases
 - As these institutions are essential for conducting the successful project, a strategic and coordinated approach to them is required at all levels of operation.

- Group 2
 - Institutions that received a low score in the basis 'Intent of promoting project' but received a high score in the second basis, 'Capability of conducting the project'
 - Proper consultation through communication with these institutions is required for the successful operation of the project.

- Group 3
 - Institutions that received low scores in both evaluation bases
 - This group is relatively less important than the other groups, because it does not have a huge impact on the success of the project.

- Group 4
 - Institutions that received a low score in the second basis, 'capability of conducting the project' but received a high score in the first basis, 'intent of promoting project'
 - As this group consists of the international organizations other than the World Bank, they do not directly affect the success of the project but can be good information providers related to the project.

5.4 Implications

Based on the first and second stakeholder assessment, key stakeholders and future strategy to the Stakeholders are derived.

- In the first stakeholder assessment, key stakeholders are defined as a group that received a score higher than 3.
- In the second stakeholder assessment: Key stakeholders are defined as a group positioned in Group 1 in the matrix.

Table II-21 *Identification Result of the first and second assessment*

1 st Stakeholder assessment	<ul style="list-style-type: none"> • Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC • Full council • IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator) • Consulting firms • World Bank • ICT management team in DCC, IMC, TMC, KMC • Planning, monitoring and statistics of DCC • Civil Officials • African Development Bank • Korea International Cooperation Agency • Export-Import Bank of Korea
2 nd Stakeholder assessment	<ul style="list-style-type: none"> • Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC • World Bank • Consulting firms • Full council • Planning, monitoring and statistics of DCC • ICT management team in DCC, IMC, TMC, KMC • Companies participating in network building and procurement of technology • IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)

Based on the result of the first and second stakeholder assessment, the following common key stakeholders are derived as follows:

Table II-22 *Common key stakeholders from the first and second stakeholder assessment*

<ul style="list-style-type: none"> • Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC • Full council • IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator) • Consulting firms • World Bank • ICT management team in DCC, IMC, TMC, KMC • Planning, monitoring and statistics of DCC

When the system is implemented, the following considerations should be taken in communications with the key stakeholders, to avoid conflicts and promote a cooperative relationship among the stakeholders.

- Mayor, Deputy mayor, Director and senior officers in DCC, IMC, TMC, KMC
 - Securing smooth communication channels is important because they play a key role in decision-making at all stages of the project
 - Through the interviews and questionnaires, it was found that current status and requirement of DCC and the three municipalities are quite different. For this reason, there must be common agreement related to the implementation of the system in advance.
 - In particular, some officials are afraid they may lose their jobs when existing task systems are changed. So encouraging them to have a positive attitude toward this project and IT technology is important.
- Full council
 - As the DCC full council is the key decision-making body that sets the agenda, if laws, regulations and other institutional aspects must be changed in relation to the system, active cooperation with full council will be important.
 - Direct communication may be difficult because of political factors. In the preparation stage, the application scope of the technology and the relevant regulations must be clearly defined.
- IT education institutions (Dar es Salaam Institute of technology, Dar Teknohama Business Incubator)
 - As it is critical for employees to adapt to the new working environment, the establishment of a detailed training plan is required.
 - In the first field trip it was found that local educational institutions do not have a high level of IT knowledge, so acquiring knowledge through seminars in foreign countries and aid from foreign governments can be a good solution.
- Consulting firms
 - Companies with extensive experience in overseas projects must be assigned to this project. Also, consultants who are proficient in English are required.

- Along with this project, the introduction of e-documents, e-signature and e-certification will be carried out in the near future. For this reason, a company with extensive knowledge and expertise in related business should be selected.
- World Bank
 - The World Bank is classified as an important resource provider that provides advice on the development plan as well as financial support.
 - The World Bank will support the funding of this project and is expected to be involved in all phases of the project.
 - The legitimacy of this project always has to be considered, since the World Bank places a high value on the public welfare as well as transparency of administration.
- ICT management team in DCC, IMC, TMC, KMC
 - As they are the most knowledgeable about operating ICT in Dar es Salaam, they can act as a communicator regarding the progress of the project.
 - Local ICT professionals may be helpful as there is currently a shortage of professional technicians.
 - Through the mutual cooperation of educational institutions, it is necessary to acquire knowledge that can be applied to the management of S/W and H/W.
- Planning, monitoring and statistics of DCC
 - This is the department that monitors and evaluates the projects conducted by the internal departments. It reviews project budget and development plans, and prepares statistical data for administration.
 - This includes the ICT team, and reviews important details such as project approval and input costs. This department has to be the connection among the companies participating in this project.
 - This must be the directing department that supports increases in the staff and expanding the budget for utilizing the IT system.

III. Technical Analysis

1. Overview

A Technical Analysis (TA) is conducted to measure the level of e-government in Dar es Salaam and examine the feasibility of the administrative information system. Ultimately, the TA determines the limitations and the things to be improved in order to establish the to-be model.

Technical Analysis (TA) consists of 4 parts, which can be described as follows:

- Requirement Analysis
 - Derivation of the main issues and requirement in each department organized functionally
- Current Status Analysis
 - System Configuration
 - H/W, S/W, N/W analysis
 - Business Process
 - Organization Process
- SWOT Analysis
 - Identification of internal factors (strengths and weaknesses) and external factors (opportunities and threats) involved in this project through a structured method, based on the data presented above.
- Constraints and Issues to Address
 - Determination of potential problems related to conducting the project, and derivation of challenges to solve and implications.

2. Requirement Analysis

Based on the questionnaires collected and the interviews conducted during the field visit, the major issues and requirements were comprehensively grasped.

Table III-1 *Major issues and requirements of Key institutions*

Institution	Issues and requirements
DCC	This project has to be promoted since 'paperless office' is associated with the national ICT policy, despite large resistance. But financial assistance from WeGO, World bank and KEXIM will be needed in the future because of insufficient ICT budget.
IMC	First of all, computer training for employees is required. To implement the e-office system, the issues of insufficient power and low PC penetration rate have to be resolved.
TMC	Guidelines for establishing the e-government system and network are needed. Education on the effectiveness of the project is required because some employees

	are concerned that they may lose their jobs through the digitalization of administrative tasks.
KMC	Intranet inside KMC is necessary for better communication, and intranet that can connect KMC to DCC is also required. Messenger and bulletin board are necessary for internal communication. Standardization of documents is necessary.
Planning, Monitoring and Statistics Unit	It is necessary to train employees in MS Office and basic computer use.
Legal Affairs Unit	As education is most critical to implement the informatization system, assistance from IT technicians and specialists is needed.
Procurement Management Unit	Since the budget for paper purchasing has been reduced, the e-office system is urgently needed.
Internal Auditing Unit	For the efficiency and the productivity of work, the administrative information system is required.
Finance Administration Department	Digitalization is needed in financial management such as tax collection and expenditure.
Personnel and Administration	Assistance from IT technicians and specialists is needed.
Waste Management Department	First of all, a pilot study must take place in the core departments High speed internet is required, and PCs must be distributed to all employees.
Urban Planning, Environment and Transport dept.	Implementation of the infrastructure and digitalization of tasks are most critical because of insufficient informatization competency.

3. Current Status Analysis

3.1 System Configuration

3.1.1 Overview

DCC and the three municipalities utilize seven systems when they work on the tasks associated with finance, human resources management, tax collection, budget planning and statistics. Each municipality uses the same system, but information sharing is not possible, as there is no intranet. Basically, DCC is involved in the operation of the systems in all the municipalities.

The central government has the authority to implement the system, and the implementation of a new system is only possible when it has been approved by the Prime Minister.

3.1.2 EPICOR

EPICOR was introduced by a company from United States, EPICOR, with the support of twenty consultants from a local company, Soft-tech. Local government agencies currently use this system. The Ministry of Finance in the central government adopted this system in 1999. The Department of Treasury has the authority to maintain and manage the system, while at the level of city council only data input and output are available. The finance department of DCC and the three municipalities utilize this system for financial and accounting administration. Data input by each municipality is sent to the server in DCC by the client and server system (C/S) through WAN.

Table III-2 *Current status of EPICOR*

Name	Year Implemented	Managing Dept.	Utilizing Dept.	Function of the system (work-related)
EPICOR	More than 10 years	Ministry of Finance	Finance	Financial and accounting administration
Operating method	Linked systems	Linked Information	Utilization rate	Institution with the authority of the establishment
C/S	N/A	N/A	N/A	Ministry of Finance

3.1.3 MOLIS

MOLIS is utilized for the management of land and rental revenue, and has been installed and operated in 39 local governments. It was introduced by the Ministry of Land of the central government and was adopted by local governments.

The Ministry of Land, Transport and Maritime Affairs in the central government has the authority to maintain and manage the system, while at the level of city council only data input and output are available. Data input in each municipality is sent to the server in DCC by the client and server system (C/S) through WAN.

Table III-3 *The current status of MOLIS*

Name	Year Implemented	Managing Dept.	Utilizing Dept.	Function of the system (work-related)
MOLIS	2008	Ministry of Land, Transport and Maritime Affairs	Planning, Monitoring and Statistics	Management of land and rental revenue
Operating method	Linked systems	Linked Information	Utilization rate	Institution with the authority of the establishment
C/S	N/A	N/A	High	Ministry of Land, Transport and Maritime Affairs

3.1.4 HRIS

HRIS is utilized for systematic personnel management, and has been installed and operated in 68 local governments. It was introduced by the prime minister's office of the central government in 2010, and was adopted by local governments.

As the prime minister's office of the central government has the authority to maintain and manage the system, at the level of city council only data input and output are available.

It is operated through a Web-based interface and can be accessed via internet in city council.

Table III-4 *The current status of HRIS*

Name	Year Implemented	Managing Dept.	Utilizing Dept.	The function of the system (work-related)
HRIS	2010	Minister's office of the central government	Personnel administration	Personnel management
Operating method	Linked systems	Linked Information	Utilization rate	Institution with the authority of the establishment
Web	N/A	N/A	High	Minister's office of the central government

3.1.5 MRECOM

MRECOM (Municipal Revenue Collection Manager) is a system for collecting taxes effectively from the citizens. It is installed and managed autonomously in the finance department of DCC and the municipalities. The utilizing department is the finance department, which performs administrative tasks associated with tax collection.

Input and output of data, including statistical indicators, are available at the level of city council, but the prime minister's office of the central government has the authority to maintain and manage the system.

Data input in each municipality is sent to the server in DCC by the client and server system(C/S) through WAN.

Table III-5 *The current status of MRECOM*

Name	Year Implemented	Managing Dept.	Utilizing Dept.	Function of the system (work-related)
MRECOM	2008	Finance department	Finance department	Tax collection
Operating method	Linked systems	Linked Information	Utilization rate	Institution with the authority of establishment
C/S	N/A	N/A	High	Finance department

3.1.6 LAWSON

LAWSON system is human resource management software for the systematic management of salaries, pensions and other detailed data. The President's Office, Public Service Management (PO-PSM) began to use this system in 2006, and DCC and the municipalities introduced it in 2010.

It is utilized in HR administration in each municipality. Data input and output are available at the level of city council but the Public Service Management (PO-PSM) has the authority of maintenance and management of the system. It is operated through a Web-based interface and the server is located in Public Service Management (PO-PSM).

Table III-6 *Current status of LAWSON*

Name	Year Implemented	Managing Dept.	Utilizing Dept.	Function of the system (work-related)
LAWSON	2010	The President's Office, Public Service Management (PO-PSM)	HR administration	Human resource management
Operating method	Linked systems	Linked Information	Utilization rate	Institution with authority of establishment
Web	N/A	N/A	High	The President's Office, Public Service Management (PO-PSM)

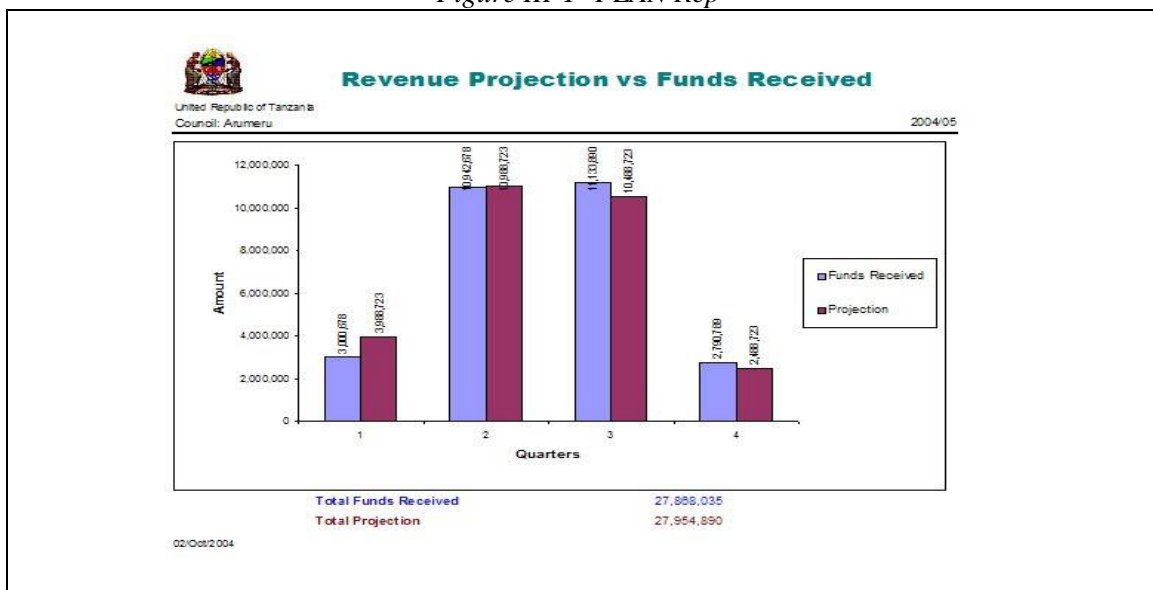
3.1.7 PLAN Rep

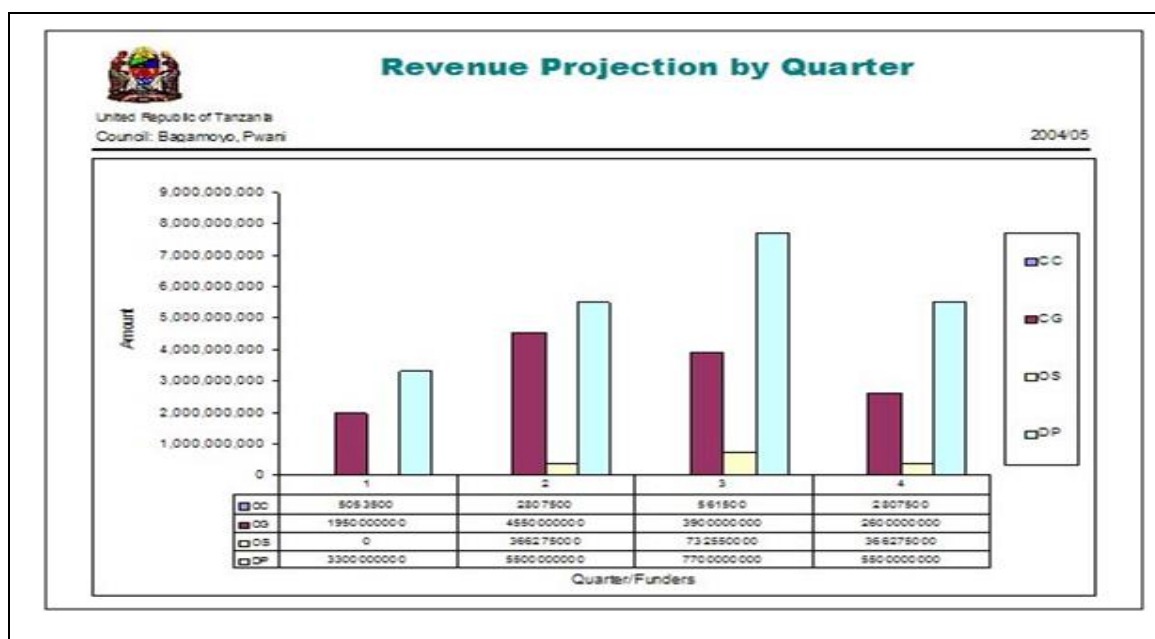
PLAN REP (The Local Government Planning and Reporting Database) is used to increase the efficiency of the compilation of budgets. It was introduced by the Prime Minister's Office of the central government and the department of finance in 2004.

It provides a number of functions, which include recording revenue, funding, expenditure and period of project implementation as well as establishing a medium-term expenditure framework that can be utilized in the compilation of a budget. It is based on a Microsoft Access DB, and the Department of Planning, Monitoring and Statistics is responsible for the management of the system.

As it is operated as a standalone system, which does not transmit data through the server, data movement is carried out passively. Systematic budget formulation is possible with the system, and its utilization rate is 100%.

Figure III-1 *PLAN Rep*





Systematic budget formulation is possible with the system, and its utilization rate is 100%.

Table III-7 *The current status of Plan Rep*

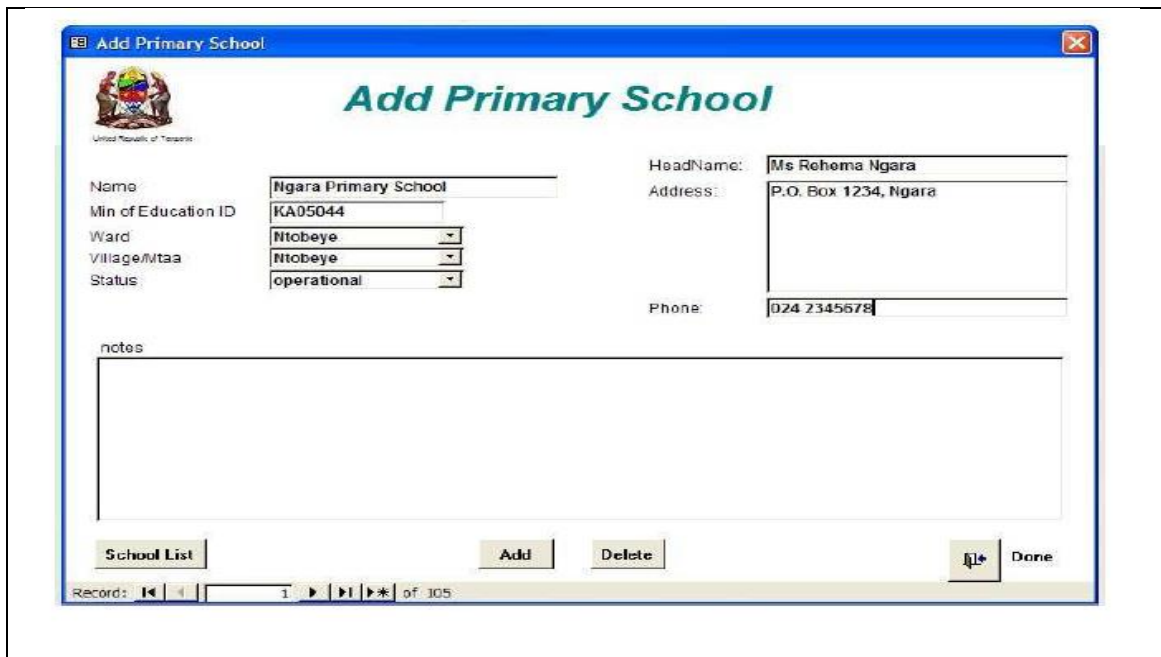
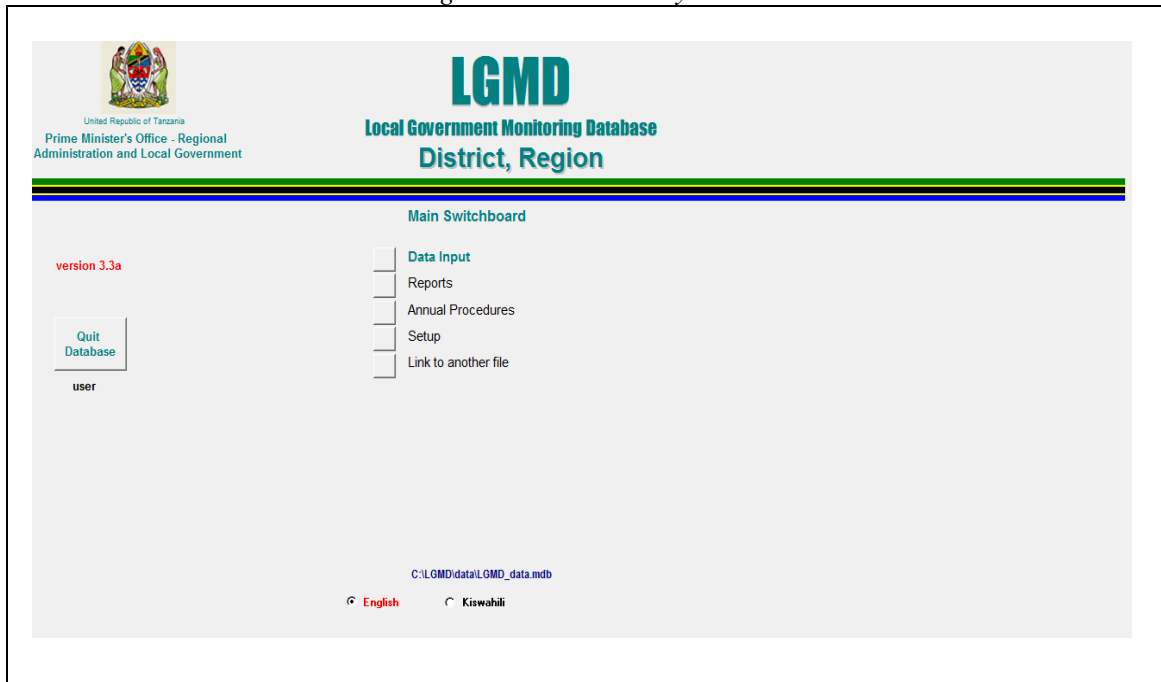
Name	Year Implemented	Managing Dept.	Utilizing Dept.	Function of the system (work-related)
PLAN Rep	2004	Planning, Monitoring and Statistics	All the departments	Compilation of budget
Operating method	Linked systems	Linked Information	Utilization rate	Institution with authority of establishment
Stand alone	N/A	N/A	100	Prime Minister's Office Department of Finance

3.1.8 LGMD

The Local Government Monitoring Database (LGMD) creates statistical indicators for decision-making through effective data management. It is a database application program, and was produced by the central government for local government agencies in 2005.

Data input can be done by operators at the village, ward, and district levels. Accumulated data regarding education, agriculture and the natural environment is utilized to derive more than 90 statistical indicators. It is based on a Microsoft Access DB, and the Department of Planning, Monitoring and Statistics is responsible for the management of the system. Since it is operated as standalone system, which does not transmit data through the server, data movement is carried out passively.

Figure III-2 LGMD system



3.2 Business Process

DCC has approximately 400 employees, including technicians, general staff members, drivers and engineers. There are approximately 30 officers in senior management positions with large internal influence. The majority of employees write documents by hand when they work, without using computers. There are only 50 computers available, while there are 400 employees, so the actual number of employees who can utilize a computer is very low. Three desktop computers are installed at each department, so approximately 20 secretaries who assist senior management use computers when they work on documents. Employees are not familiar with using computers due to a lack of awareness of the IT environment, so handwriting on documents is common.

Approximately 50,000 Sheets of paper are used per day, for about 1.5 million sheets used per month. Handwritten documents such as official records of civil complaints are filed periodically and kept in an archive, but their quality tends to degrade quickly.

Figure III-3 Current status of record center



In addition, documents are not standardized yet, and with the exception of those used in the HR department each document has different type or form. Due a lack of intranet, DCC and the three municipalities exchange paper documents directly when they need to communicate with each other, including for reports.

When reporting, employees at the managerial level write on a piece of paper and then have their secretaries rewrite the document on a computer. Delivering documents takes a long time because secretaries have to go from place to place to get approval for the document. In addition, there are inefficiencies occurs due to the duplication of documents.

The utilization rate of e-mail is very low, and extension lines are not utilized either. Also, employees require changes in business process due to the excessive paperwork. DCC is required to submit four quarterly reports to the Ministry of Local Government. MS Office is used to make reports, which are sent in the form of printouts.

3.3 H/W, S/W, N/W Analysis

3.3.1 The current status of H/W

DCC has 100 computers. IMC and KMC have 150 computers each, and TMC has approximately 50 computers. Unfortunately, only 50% of these computers can be actually used because they are so frequently out of service. Power outages occur frequently due to the lack of electricity production. This results in frequent computer breakdowns. On average, power outages occur about three times per week, and while they normally last less than 1 hour, occasionally they can last more than 24 hours in severe cases. The central government has the authority to construct power plants, and usually construction is supported by overseas economic aid. The construction of additional power plants is being planned, and the actual project will be launched in 2013.

While a UPS is installed to power the server in emergencies, it can only supply electric power for 30 minutes or less because it is so out-of-date.

Figure III-4 Server of DCC



3.3.2 Current status of S/W

MS Office has been installed on all computers, and some employees can utilize MS Excel and MS Word when they need to work on certain tasks.

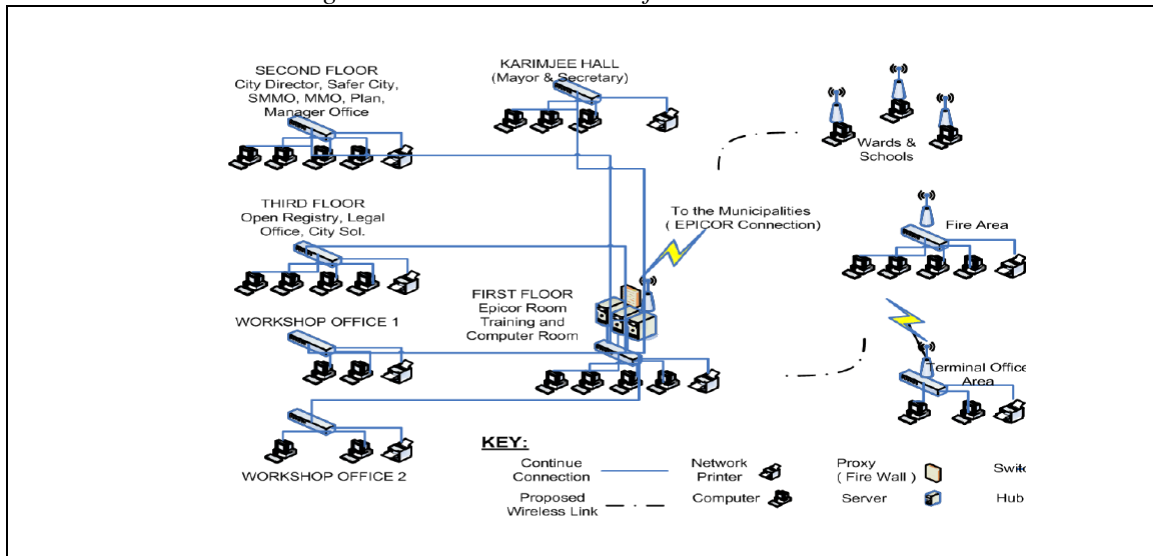
The legal departments of DCC and the other municipalities have introduced e-LAW applications and use these at work. e-LAW applications enable users to search all the information in

frequently used law books (total: 20) and casebooks (total: 8) by entering search terms into the search engine. These have been developed autonomously in each department and are operated as standalone systems. Overall, e-LAW applications improve the efficiency and processing speed of work.

3.3.3 The current status of N/W

An internal network configured through LAN at a speed of 100M and WAN environment exists with the D-Link router. Within the DCC, Wi-Fi is currently not provided, and dial-up modems are used only in certain areas, such as the HR system. There are 3 servers operated for EPICOR, mail, and other programs, and the details of the network are as follows:

Figure III-5 Current status of Network in DCC



Dar es Salaam University Computer Center (UCC) provides an internet connection to DCC through VSAT. KMC has an internal network through LAN at a speed of 64M and uses internet through VSAT provided by Costech at a speed of 11M. There are 3 servers operated for mail, database and applications, and details of the network are as follows:

Figure III-6 Current status of Network in KMC

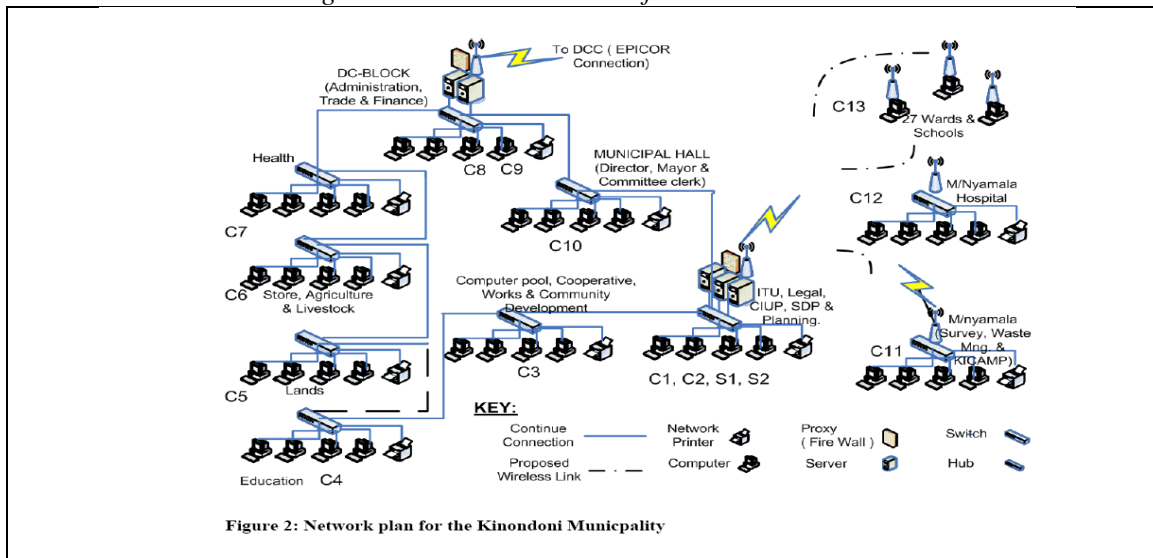
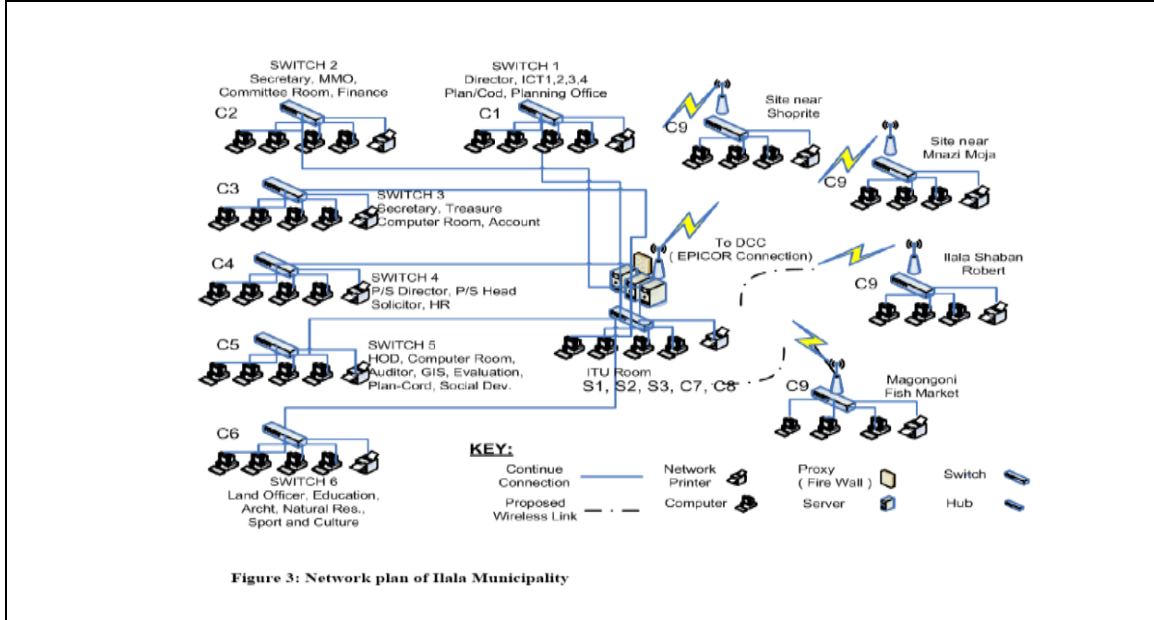


Figure 2: Network plan for the Kinondoni Municipality

IMC has an internal network through LAN at a speed of 100M and uses internet through VSAT provided by Costech. There are 3 servers operated for mail, database and files, and details of the network are as follows:

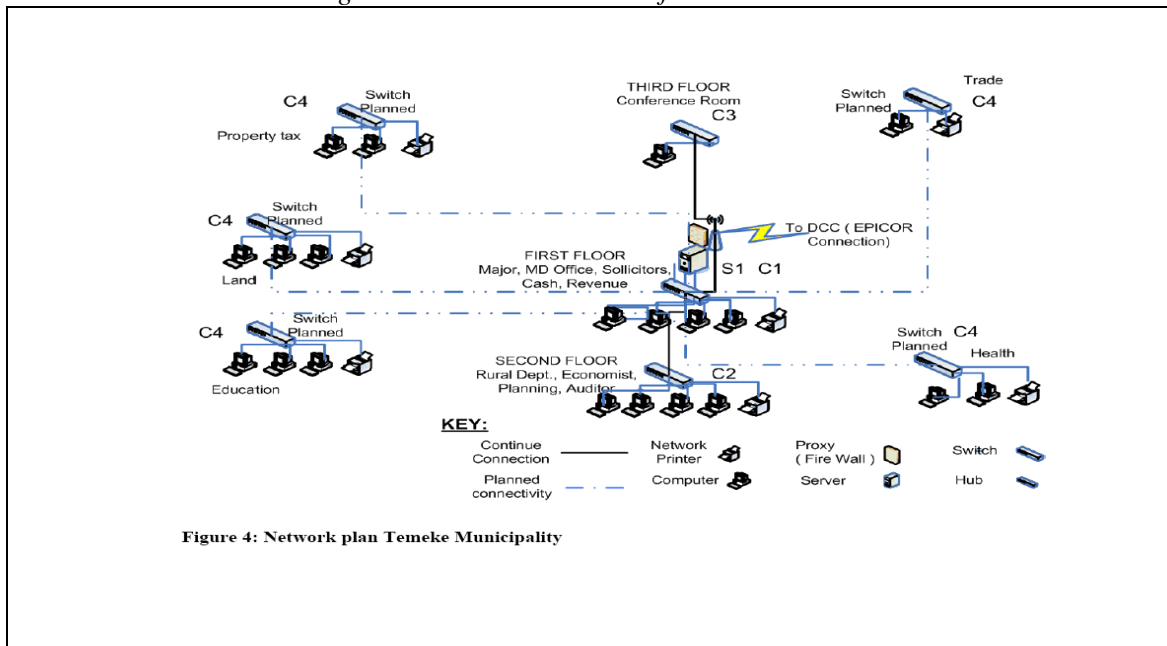
Figure III-7 Current status of Network in IMC



TMC has an internal network through LAN at a speed of 100M and uses internet through VSAT provided by Costech.

Currently, there is one server operated for databases, and details of the network are as follows:

Figure III-8 Current status of Network in TMC



3.3.4 Organization Process

ICT organization is operated for the management of H/W and S/W in DCC and the three municipalities. Details are as follows:

Table III-8 *Current status of operating ICT organization*

Division	DCC	IMC	TMC	KMC
Number of employees on the team (Unit: person)	2	3	4	15
Number of employees on the team /Total employees (Unit: percent)	0.4	0.06	0.07	0.2
Number of computers to be managed per employee	50	50	12.5	10

The Department of Planning, Monitoring and Statistics carries out ICT management in DCC, and two employees are responsible for ICT-related maintenance.

Maintenance of H/W is not conducted systematically because of the poor environment. Currently, the hardware management competencies of the employees inside the DCC are relatively low. Also, it is impossible to use the services of an outside contractor because of a lack of internal funds.

The ICT management team is operated as an independent department in IMC under the supervision of the City Director. System administrators, network and hardware administrators and database administrators work on the team.

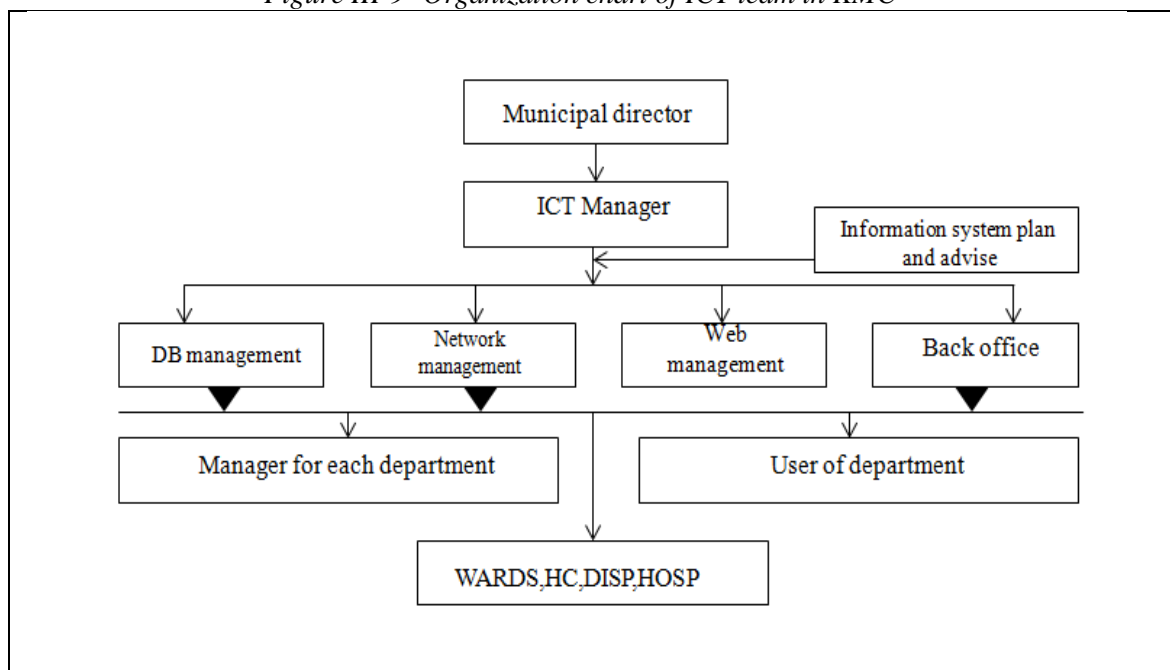
The Department of Planning, Monitoring and Statistics carries out ICT management in TMC, and four employees are responsible for ICT-related maintenance.

The ICT management team is operated as an independent department in KMC under the supervision of the City Director. The ICT manager supervises other employees, and the specific details of the activities of the team members are described as follows:

- ICT manager
 - Planning of information management and system management to achieve the objectives in each department
 - Promoting effective organizational management through performance-based management, and contributing to the development of a more effective organization through investment in IT
- Network Administrator
 - In charge of the security of network and software; manages and supervises the network to provide the best service
 - Diagnosing and resolving technical issues that occur in the infrastructure of LAN / WAN / INTRANET and applications
 - Providing an environment for a smooth internet connection within office hours

- Database Administrator
 - Managing potential security problems related to the utilization of databases and database design/development
 - Diagnosing technical problems associated with the database
- Computer and software maintenance and help desk support
 - Handling hardware and software problems that occur in the day-to-day operations
 - Computer management tasks such as cleanup of computer files, defragging, and virus scanning.
- Webmaster
 - Management and planning of the website
 - Creation and upload of content on website
 - Making graphics, images and photos for online productions
 - Management of web server

Figure III-9 Organization chart of ICT team in KMC



3.3.5 Examination of the possibility of applying the latest technology to DCC

Governments of developed countries such as South Korea, the United States and the United Kingdom are pursuing the adoption of cloud computing technology for e-government with the goal of discovering new growth engines.

Cloud computing, a phrase coined by a senior engineer at Google, is the provision of high

expandability and huge IT resources through the internet. High expandability means the computing resource can react rapidly and flexibly when the number of transactions or the number of users increases. Cloud computing provides various IT resources to users, based on an on-demand rather than an on-premise method.

Through the technical analysis, the administration information system of DCC has to be introduced by considering the following characteristics:

- System configuration
 - Functions including human resources, finance, accounting and budgeting
 - Connection among the municipalities
- S/W, H/W, N/W
 - Maintenance of security
 - Speed of the network
 - Stability of the system
- Business Process
 - More than 500 people can use the same database.
 - Organization for operation and management of the system

In relation to the introduction of the e-office system, the merits of an ERP system and a cloud computing-based system were compared. This comparison, which is described in the table below, found that ERP is more suitable than a cloud-based system.

Table III-9 *Strengths and weaknesses of ERP system and Cloud computing-based system*

	ERP system	Cloud computing-based system
Strengths	<p>Domestic companies and local companies can provide the network infrastructure and software.</p> <p>If electrical power is supplied smoothly, the system can be used stably.</p> <p>In terms of security, ERP system is safer and more standardized compared to a cloud computing-based system, since administration information systems are sensitive to security problems.</p> <p>There are some best practices worth referring to for the enactment of new legislation relevant to the system. So if the leadership has the will, legislation can be time consuming but can be done as soon as possible.</p>	<p>Expenditure for purchasing H/W, S/W can be saved. Each user can use up-to-date software without special IT knowledge.</p> <p>Equipment for security can be reduced and specialized personnel can be decreased since the cloud-computing providers manage the IT resources.</p>

Weaknesses	<p>The organization for IT management needs to update the systems of individual users separately.</p> <p>Since operations and management have to be conducted internally, there would be fixed costs incurred regularly.</p>	<p>There is no standard for cloud computing-based systems, and not enough examples that can be referenced.</p> <p>There are difficulties in terms of maintenance, and high cost involved in installing a large cloud computing center. Since one server provides lots of service, there is the possibility of various problems, and attacks from many directions should also be considered.</p> <p>When under attack such as DDoS, all the services are stopped, which makes all the tasks shut down.</p> <p>Due to a lack of standardization, if it is necessary to move to a different platform in the future, the existing service and database will no longer be available.</p>
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3.4 Implications

To overcome the inefficiency and high cost of the current business process, it is urgent to convert to digitalized tasks. The supply of electric power is the biggest source of concern. Different systems are operated in several departments, so from a long-term perspective, the integration of the systems is required for efficiency and stable maintenance.

DCC and the three municipalities have the network infrastructure for Intranet. But the internet is frequently disconnected, and the bandwidth is too low. The environment of the information system office needs to be properly improved, and a strategy to secure additional funding is required since the budget for information has been decreased. While the three municipalities have 3~4 employees who work on the ICT team, DCC has only 2 employees on the ICT team. Considering that the scale of Information and communication and the workload of DCC is larger than that of the municipalities, DCC has to hire more people for the ICT team.

Considering the overall environment, the systems for administrative management must be integrated.

4. SWOT Analysis

4.1 SWOT Analysis Overview

SWOT analysis is a technique for analyzing a company or organization and the environment in which it operates, and derives the strengths, weaknesses, opportunities, threats in order to establish a strategy. The strengths and weaknesses are identified through an internal environment analysis, and the opportunities and threats are identified through an external environment analysis.

Finally, the SWOT matrix is used to derive a strategy for the organization or company. The Customer-Oriented SWOT Analysis developed by Professor Malcolm McDonald will be used to perform a quantitative SWOT analysis of the current status of DCC.

Opportunities and threats are derived from an external environment analysis, and should illustrate factors that can be directly controlled or influenced. When deriving opportunities and threats from the external environment, they should be sorted to eliminate meaningless requirements or conjecture.

In order to recognize the strengths and weaknesses of an organization internally, the Customer-Oriented SWOT analysis developed by Professor Malcolm McDonald uses the following method.

Table III-10 *Establishment plan for strategic marketing - SWOT analysis*

Strategic marketing planning exercise – SWOT analysis																						
1. SEGMENT DESCRIPTION It should be a <i>specific</i> part of the business and should be <i>very important</i> to the organisation																						
2. CRITICAL SUCCESS FACTORS In other words, how do customers choose?	<table border="1" style="margin: auto;"> <tr><td style="width: 20px;">1</td><td style="width: 50px;"></td></tr> <tr><td>2</td><td></td></tr> <tr><td>3</td><td></td></tr> <tr><td>4</td><td></td></tr> <tr><td>5</td><td></td></tr> </table>		1		2		3		4		5											
1																						
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3. WEIGHTING How important is each of these CSFs? Score out of 100	<table border="1" style="margin: auto;"> <tr><td style="width: 50px;"></td></tr> <tr><td></td></tr> <tr><td></td></tr> <tr><td></td></tr> <tr><td></td></tr> <tr><td style="text-align: center;">Total 100</td></tr> </table>							Total 100														
Total 100																						
4. STRENGTHS / WEAKNESSES ANALYSIS How would your customers score you and each of your main competitors out of 10 on each of the CSFs? Multiply the score by the weight.	<table border="1" style="margin: auto;"> <tr> <th style="width: 20px;"></th> <th style="width: 30px;">You</th> <th style="width: 30px;">ComA</th> <th style="width: 30px;">ComB</th> </tr> <tr><td>1</td><td></td><td></td><td></td></tr> <tr><td>2</td><td></td><td></td><td></td></tr> <tr><td>3</td><td></td><td></td><td></td></tr> <tr><td>4</td><td></td><td></td><td></td></tr> </table>			You	ComA	ComB	1				2				3				4			
	You	ComA	ComB																			
1																						
2																						
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4																						
5. OPPORTUNITIES / THREATS What are the few things outside your direct control that have had, and will have, an impact on this part of your business?	<table border="1" style="margin: auto;"> <tr> <th style="width: 60px;">Opportunities</th> <th style="width: 60px;">Threats</th> </tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> <tr><td></td><td></td></tr> </table>		Opportunities	Threats																		
Opportunities	Threats																					
6. KEY ISSUES THAT NEED TO BE ADDRESSED What are the really key issues from the SWOT that need to be addressed?																						

* Source: SWOT analysis from Malcolm McDonald Marketing Lesson

4.2 Classification of SWOT

As mentioned above, the customer-oriented SWOT analysis developed by Professor Malcolm McDonald was utilized as an analysis method for DCC. The interviews and questionnaires conducted in the 1st field study were the basic material for the SWOT analysis.

When considering a developed country's e-government practice, the government-led policies are regarded as key success factors. Therefore, the policy and legal issues are weighted to have a score of 40. Based on the indicators of ITU, WEF, IDC, UN and IMD, each of the critical success factors, which are informatization infra and economic issues, is given a different weighting score.

Table III-11 *Critical Success Factors and Weighting*

		Critical Success Factors	Weighting		
1	Informatization infra issues	Telecommunication infra	5	40	100
2		Human resource infra (Experts)	5		
3		System infra	5		
4		Awareness of informatization project	3		
5		Intent of informatization project	5		
6		Expectation level of informatization project	3		
7		Level of resistance to informatization project	3		
8		Ability of IT utilization	5		
9		IT education level	5		
10		IT education curriculum	1		
11	Economic issues	Scale of ICT budget	10	20	
12		Proportion of the city government budget dedicated to ICT	10		
13	Legal and Policy issues	Presence of relevant polices for informatization	15	40	
14		Authority of decision making for informatization	5		
15		Presence of an organization for promoting informatization	5		
16		Presence of a legal framework for informatization	10		
17		Authority of enacting relevant laws	5		

The information was obtained through interviews, questionnaires, and a pre-survey. Based on the information, each DCC, SMG and the government of Tanzania were evaluated, with 5 levels for each critical success factor. (Very low=1, Low=2, Medium=3, High=4, Very high=5)

Total score was calculated by weighting multiplied evaluated scores. Through this process, total scores were derived for DCC, SMG, and the government of Tanzania.

Please note that for resistance level, a higher score means a higher resistance level. For this reason, it is not identified as strength.

Table III-12 *Score of CSF and Total Score*

		Critical Success Factors	Weighting		Total Scores			
1	Informatization infra issues	Telecommunication infra	5	40	100	25	10	10
2		Human resource infra (Experts)	5			25	5	10
3		System infra	5			25	10	10
4		Awareness of informatization project	3			15	12	12
5		Intent of informatization project	5			15	25	25
6		Expectation level of informatization project	3			12	12	12
7		Level of resistance to informatization project	3			3	9	9
8		Ability of IT utilization	5			25	10	10
9		IT education level	5			25	5	10
10		IT education curriculum	1			5	1	2
11	Economic issues	Scale of ICT budget	10	20	100	50	20	20
12		Proportion of the city government budget dedicated to ICT	10			50	10	20
13	Legal and Policy issues	Presence of relevant polices for informatization	15	40	100	75	30	30
14		Authority of decision making for informatization	5			15	5	15
15		Presence of an organization for promoting informatization	5			25	5	10
16		Presence of a legal framework for informatization	10			50	20	20
17		Authority of enacting relevant laws	5			20	5	15

Through the analysis of the above results, strengths and weaknesses are derived. Opportunities and threats were then derived from an analysis of the external environment, and these are as follows.

Table III-13 *SWOT classification*

	Strength	Weakness
Internal Environment	<ul style="list-style-type: none"> Strong intent among decision-makers to promote informatization system High interest of public officials in implementing informatization system Experience of operating informatization system English communication ability among approximately 80% of public officials Deep understanding of implementing informatization system of core human resources 	<ul style="list-style-type: none"> Shortage of budget for ICT sector Shortage of ICT infra Shortage of relevant laws Shortage of ICT experts Resistance of some public officials to changing the working process Low knowledge among public officials on the informatization system Low fiscal self-reliance due to high dependency on foreign aid

	Opportunities	Threats
External Environment	<ul style="list-style-type: none"> Ease of obtaining information for global e-government as member of WeGO Establishment of policies at a national level for ICT development, such as National Policy 2013 Growth of internet access by increasing the number of internet cafés and the usage of mobiles The problem of power supply will be solved by the central government, and it is predicted to provide power in 2013 As a priority aid country, ease of obtaining funding through foreign aid 	<ul style="list-style-type: none"> Frequent blackouts No experience of directly implementing informatization system High possibility of exclusion of investment owing to top priority projects such as construction of roads, water and sewage, malaria Low actual penetration of PCs, despite high mobile usage rate and internet usage No Tanzanian IT company DCC has no authority to establish policy for ICT, as all authority for ICT policies belongs to the central government

4.3 Implications

	Strength	Weakness
	<ul style="list-style-type: none"> Strong decision-makers intent to promote informatization system High interest of public officials in implementing informatization system Experience of operating informatization system Approximately 80% of public officials able to communicate in English Deep understanding on implementing informatization system of core human resources 	<ul style="list-style-type: none"> Shortage of budget for ICT sector Shortage of ICT infra Shortage of relevant laws Shortage of ICT experts Resistance of some public officials to changing the working process Low knowledge of public officials regarding informatization system Low fiscal self-reliance due to high dependency on foreign aid
Opportunities	SO strategy	WO strategy
<ul style="list-style-type: none"> Ease of obtaining information for global e-government as a member of WeGO Establishment of policies for ICT development at a national level, such as National Policy 2013 Growth of internet access through increasing number of internet cafés and usage of mobile devices The problem of power supply will be solved by the central government, and it is predicted to provide power in 2013 As a priority aid countries, ease of funding through foreign aid 	<ul style="list-style-type: none"> It is necessary for interest of public officials to be raised It is necessary to link interest in IT to education in order to develop IT experts It is necessary to promote an informatization system using foreign aid and the strong will of decision makers 	<ul style="list-style-type: none"> It is necessary to increase the budget for the ICT sector It is necessary to organize ICT infra and relevant laws Through continuous education and training, resistance to changing the way of working should be reduced, and the low knowledge of informatization should be increased.

Threats	ST strategy	WT strategy
<ul style="list-style-type: none"> • Frequent blackouts • No experience of directly implementing informatization system • High possibility of exclusion of investment owing to top priority projects such as construction of roads, water and sewage, malaria • Low actual penetration of PCs, despite high mobile usage rate and internet usage • No Tanzanian IT company • DCC has no authority to establish policy for ICT, as all authority for ICT policies belongs to the central government 	<ul style="list-style-type: none"> • It is possible to utilize experience of operating an informatization system. New information systems can be adapted rapidly when it is possible to utilize experiences. • Approximately 80% of public officials can communicate in English. When core human resources have a deep understanding of implementing the informatization system, it is possible to have a deep understanding of the new informatization system. • Based on National ICT policies, it is necessary to enhance the decision-makers' intent to promote the informatization project in order to become a top priority project for investment 	<ul style="list-style-type: none"> • DCC has to enhance the fiscal self-reliance share by increasing the budget for ICT. • It is necessary to develop small Tanzanian IT companies. • Internet speed should be increased through additional network construction, and it is necessary to make a plan for power supply through the installation of UPS.

5. Constraints and Addressing Issues

5.1 Constraints

There are technical problems in connecting multiple operating systems. As the year purchased, programming language for software and system module of the systems are all different, the introduction of a single window is required based on the assumption that all systems should be integrated. The introduction of a low-cost open source solution that has already been proven is highly recommended because there is little chance of securing the funds for informatization in the short run.

5.2 Addressing Issues

Implementation of the e-office and development of a connecting system is required for the whole administration information system, which is operated as a single window for the future. DCC and the three municipalities should have an Intranet environment, but to minimize the interruption of work, a computer communication network has to be built separately.

In addition, obsolete equipment needs to be changed and UPS has to be introduced.

IV. Legislation and Regulation Analysis

1. Legal/Regulatory Analysis

1.1 Overview

The realization of the e-office system is possible through the support of the legal system, along with ICT infrastructure, the system software and management organization. Therefore, a plan for improvement must be derived by analyzing the status of the legal systems and regulations, and considering the relevant best practices.

1.2 Legal/Regulatory Context

1.2.1 Tanzania's national legal system related to ICT

Starting in the 1990s, as the central government emphasized the importance of the ICT sector, ICT related legislation was enacted along with ICT policies made around the same time.

Laws are enacted by the National Assembly and the Tanzania Communications Regulatory Authority (TCRA), which is the national organization that oversees the telecommunications and broadcasting sectors.

Table IV-1 *The enactment of laws related to ICT in Tanzania*

Year	Enactment
1993	Tanzania Communications Act of 1993
2003	Tanzania Communications Regulatory Authority Act of 2003
2005	The Tanzania Communications (Broadband Service) Regulations
	The Tanzania Communications (Consumer Protection) Regulations
	The Tanzania Broadcasting Services (Content) Regulations
	The Tanzania Communications (Licensing) Regulations
	The Tanzania Communications (Importation and Distribution) Regulations
	The Tanzania Communications (Installations and Maintenance) Regulations
	The Tanzania Communications (Interconnection) Regulations
	The Tanzania Communications (Telecommunication Numbering and Electronic Address) Regulations
	The Tanzania Postal Regulations
	The Tanzania Communications (Radio Communications and Frequency Spectrum) Regulations
	The Tanzania Communications (Tariff) Regulations 2005
2006	The Tanzania Communications (Type Approval of Electronic Communications Equipment) Regulations
	The Tanzania Communications (Quality of Service) Regulations
	The Tanzania Communications (Access and Facilities) Regulations
2006	The Universal Communications Service Access Act of 2006
2010	Amendment of Section 26 of the Electronic and Postal Communications Act, 2010
	The Electronic and Postal Communications Act, 2010 (Act No. 3/10)
2011	The Electronic and Postal Communications (Quality of Service) Regulations
	The Electronic and Postal Communications (Central Equipment Identification Registers) Regulations
	The Electronic and Postal Communications (Digital and Other Broadcasting Networks) Regulations
	The Electronic and Postal Communications (Computer Emergency Response Team) Regulations
	The Electronic and Postal Communications (Competition) Regulations
	The Electronic and Postal Communications (Tariffs) Regulations

	The Electronic and Postal Communications (Mobile Number Portability) Regulations
	The Electronic and Postal Communications (Postal) Regulations
	The Electronic and Postal Communications (Radio Communications and Frequency Spectrum) Regulations
	The Electronic and Postal Communications (Interconnection) Regulations
	The Electronic and Postal Communications (Accounting Separation) Regulations
	The Electronic and Postal Communications (Consumer Protection) Regulations
	The Electronic and Postal Communications (Electronic Communication Numbering and Addressing) Regulations
	The Electronic and Postal Communications (Access, Co-Location and Infrastructure Sharing) Regulations
	The Electronic and Postal Communications (Licensing) Regulations

National ICT law mainly covers mobile-oriented content in the private sector and does not have an electronic government act. So this does not contribute to the development of e-government. Specifically, in the absence of laws regulating e-documents and e-signatures, digitalized tasks have no legal validity. For this reason, the local governments cannot conduct business process reengineering.

Digitalized work has been done in various industries, including education, banking and agriculture. But the lack of a definite legal system at the national level opens the possibility of cyber crime.

1.2.2 Legal system in DCC

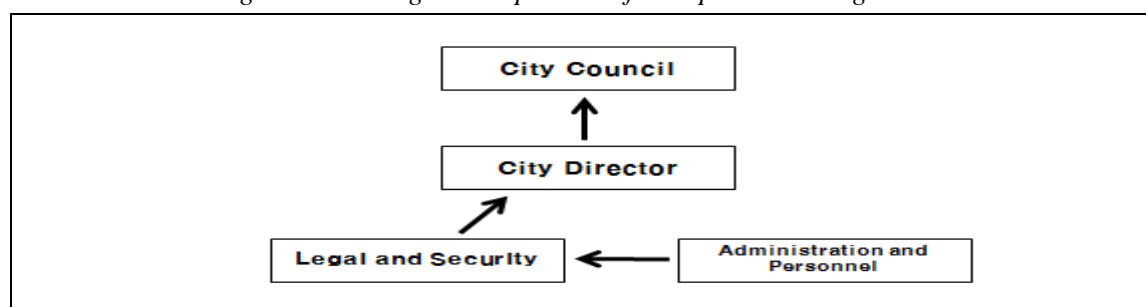
PO-PSM (President's office, Public service management) is in charge of all legal systems related to ICT. As local government at the city level does not have the right to revise the law, the direction of the approach to the to-be model should be the rearrangement of general operational regulations.

The HR team in administration and personnel discussed the legal system, regulations and policies and applied them appropriately to staff management in DCC for the fair treatment of all DCC staff.

Regulations discussed in administration and personnel are adjusted appropriately once again considering when they are applied to the three municipalities. Legal affairs is responsible for professional legal advice regarding the regulations.

The City Director reviews the regulations and determines whether or not there is any conflict with the law and current policies. He also adjusts the regulations so as not to cause a conflict among the three municipalities. Finally, the full council approves the regulations, considering that they have to be appropriate to the entire city.

Figure IV-1 legislative process of the operational regulation



Generally, administration and personnel make plans to enact new institutions and regulations, and legal affairs determine whether they are legally eligible through a screening test. Then the City Director, as a representative of civil officials, reviews them, and finally City council approves them.

Table IV-2 *The role of each department*

Department	Role
City Council	<ul style="list-style-type: none"> • The top decision-making organization in DCC • Making a final decision, considering the environment of the DCC as well as the other three municipalities • Acting as a supervisory agency that can lead improvements in the quality of public service by encouraging civil officials through effective regulations
City Director	<ul style="list-style-type: none"> • Managing the civil officials according to the constitution and the law • Managing the civil officials in DCC to lead them to work effectively, while managing the relationship between DCC and the three municipalities • Managing the civil officials to ensure that their work is in accord with the standards and regulations
Legal and Security	<ul style="list-style-type: none"> • Governing all the legal problems in accordance with the constitution and the law of the DCC • Appropriate legal advice must be offered before the new regulation is enacted • In charge of all possible legal cases and proceedings • Responsible for the connection to the Ministry of Justice in central government, through which legitimacy is acquired
Administration and Personnel	<ul style="list-style-type: none"> • Taking the role of human resources director • Promotion of the legislation • Deciding whether to enact the new regulations or to follow the existing law after considering the regulations and laws of the central government.

As civil officials in DCC are familiar with the culture of handwriting, there is no institution that can be utilized for e-government and informatization. Therefore, regulations must be enacted to allow the electronic processing of tasks through the data-processing system.

1.2.3 Operating case of SMG's e-government

SMG applied the electronic government act, which is a higher law enacted at the national level. Major contents are e-complaints, e-administration, development of e-services, e-documents, e-transmission, e-signature, e-certificates and regulations on sharing administrative information.

In addition, SMG continuously revises the operating regulations to facilitate the electronic administration in 'Regulations on sharing administrative information.'

- Purpose: Improving the efficiency of the administration and promoting simplification, standardization, scientific movement and informatization of the tasks by regulating the matters related to administrative duties.
- Rules on the handling of public records management and administrative duties
 - Specific regulation regarding the types of documents, electronic processing, the validity of documents, creation principles of writing documents, approval of documents, registration of documents, signature, sending and receiving documents, etc.

- Regulations on building and operating an administrative management system
 - Regulations on the configuration and operation of an administrative management system
 - Regulations on the standard, format control and management of official seal, etc.

1.2.4 Major law related to e-government

Table IV-3 *Introduction of Major law related to e-government*

Enactment	Contents
Electronic government act	The purpose of this act is to facilitate projects for materializing electronic government, improve the productivity, transparency, and democracy of administrative agencies and ultimately improve quality of life in the knowledge information age by providing fundamental principles, procedures, promotion methods, and other relevant matters for the electronic processing of administrative works.
Digital signature act	The purpose of this act is to establish the basic framework for the system of digital signatures in order to secure the safety and reliability of electronic messages and to promote their use, thereby stimulating the use of electronic records and communications on a national level and advancing social benefit and convenience.
Framework act on electronic document and electronic commerce	The purpose of this act is to contribute to the national economy by clarifying the legal relations of electronic commerce and electronic documents, ensuring its security and reliability and laying the foundation for its promotion.
Personal Information Protection Act	The purpose of this act is to prescribe matters concerning the management of personal information in order to protect the rights and interests of all citizens and further realize the dignity and value of each individual by protecting personal privacy from collection, leakage, misuse and abuse of individual information.

1.2.5 Constraints and Addressing Issues

Through the analysis of the legal system and the current status of e-government in DCC, it was found that there is no urgent need to revise the legal system in order to introduce an internal information system. But in the future, for the sharing of information, the introduction of e-documents and e-certificates and e-complaints, legal support is required.

However, the minimum amendment required for the realization of the paperless office is as follows:

- Establishment of regulations regarding the efficiency of administration
 - For the purpose of improving administrative efficiency by promoting simplification and informatization of tasks
 - Enactment of regulations on the handling of administrative duties such as standardization of documents, e-transmission of documents, creation principles of writing documents, and sending and receiving documents with an e-signature
 - Enactment of regulations which allow document management

1.2.6 Implications

DCC is in the stage of building an infrastructure for informatization, for the sole purpose of improving internal administrative efficiency. Therefore, there is currently no need to change the legal system, but regulations governing the management of administrative affairs must be revised.

2. Institutional Analysis

2.1 Institutional Structure

Dar es Salaam is administratively divided into the three municipalities, and 4 city councils (DCC, IMC, TMC and KMC) are operated as local governments.

IMC, TMC, KMC were officially established in 2001 to support the DCC and fulfill a political, legal, administrative, and financial role in accordance with the Local Government Act, which was revised in 1999.

The Mayor acts as a representative of the members of the council, and the City director plays an administrative role as a top manager of employees in each local government. There is a committee for the purpose of making important decisions in city council, and each local government can make an important decision internally and submit it directly to the relevant central government department. Each local government provides services related to urban development, education, culture, and trade to the citizens under its jurisdiction.

DCC acts as a coordinator when deciding issues such as policing and traffic related to the overall infrastructure of the city that require the cooperation of the three municipalities.

Figure IV-2 Organizational chart of local government in DCC

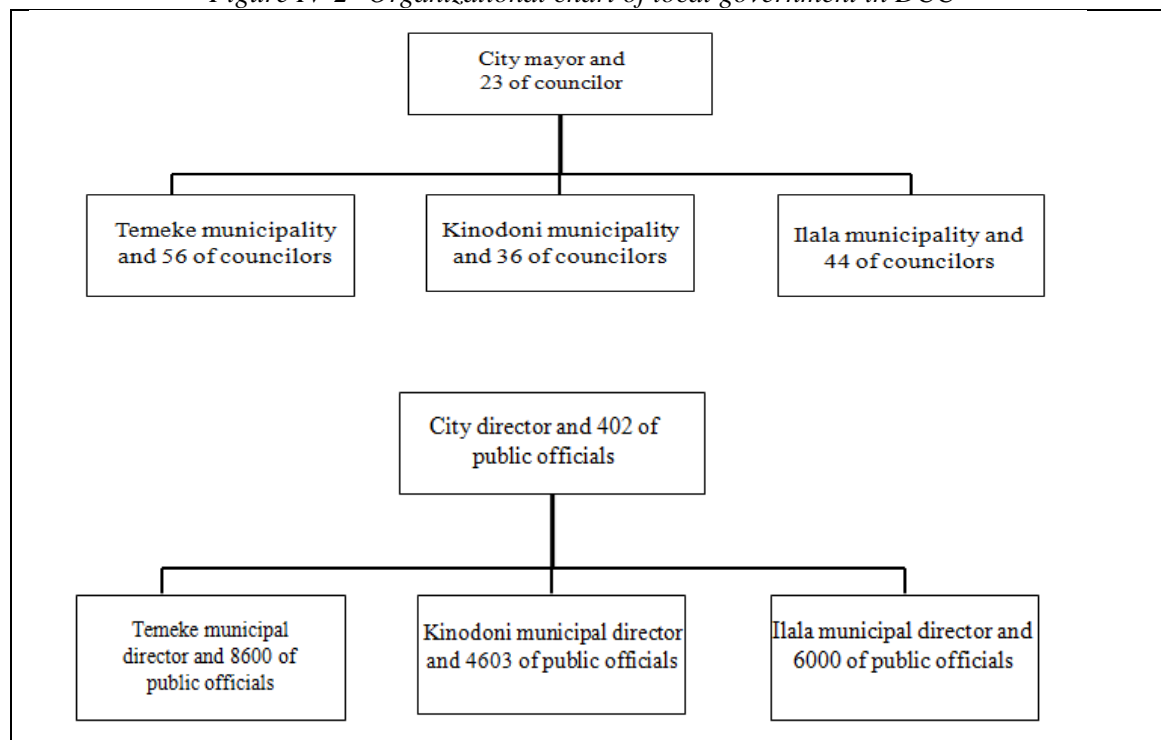
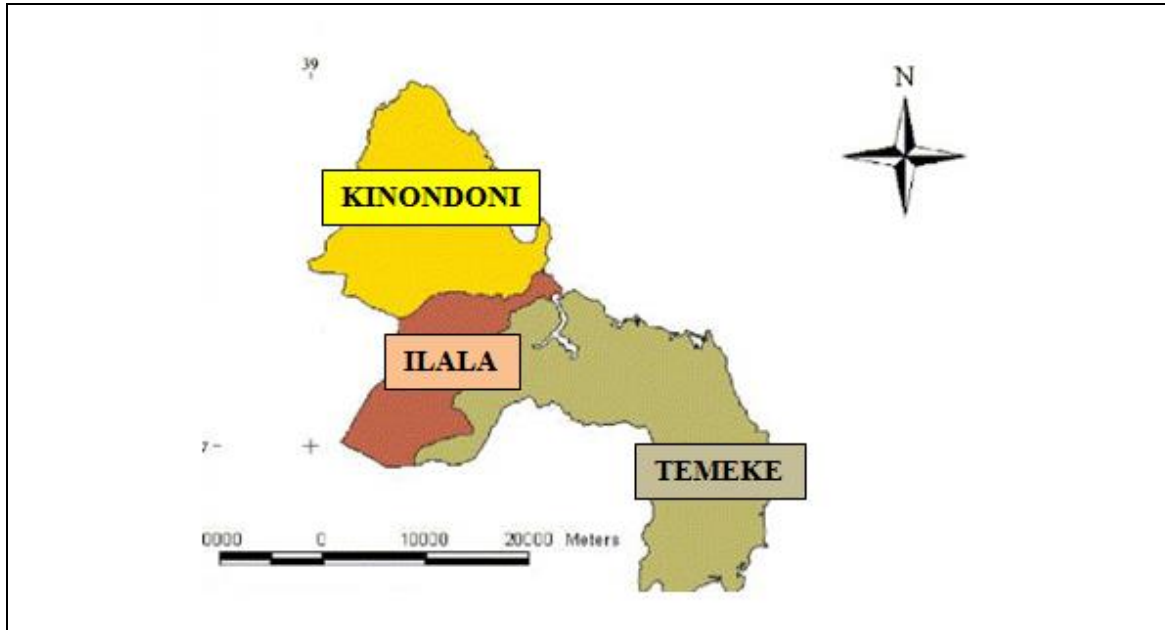


Figure IV-3 Location of LGAs in Dar es Salaam



DCC is composed of 23 senators in the full council, four secretariats and five departments. 11 of the 23 in the full council are elected in the three municipalities, 7 of the 23 are appointed by the national assembly, and the remaining 5 positions are assigned to congresswomen.

The term of the mayor and congressmen is five years, while the deputy mayor is elected by the full council every year. KMC consists of 56 senators in full council and five Secretariats and eight departments. TMC consists of 44 senators in full council and five Secretariats and seven departments.

Figure IV-4 Organization chart of DCC

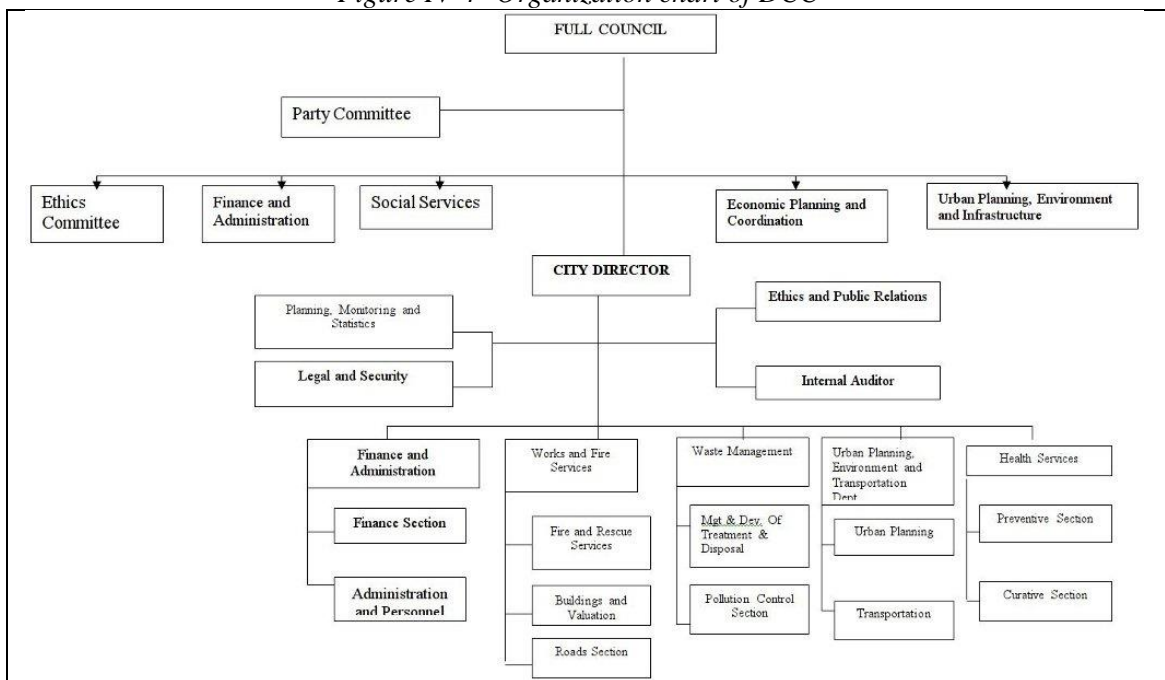
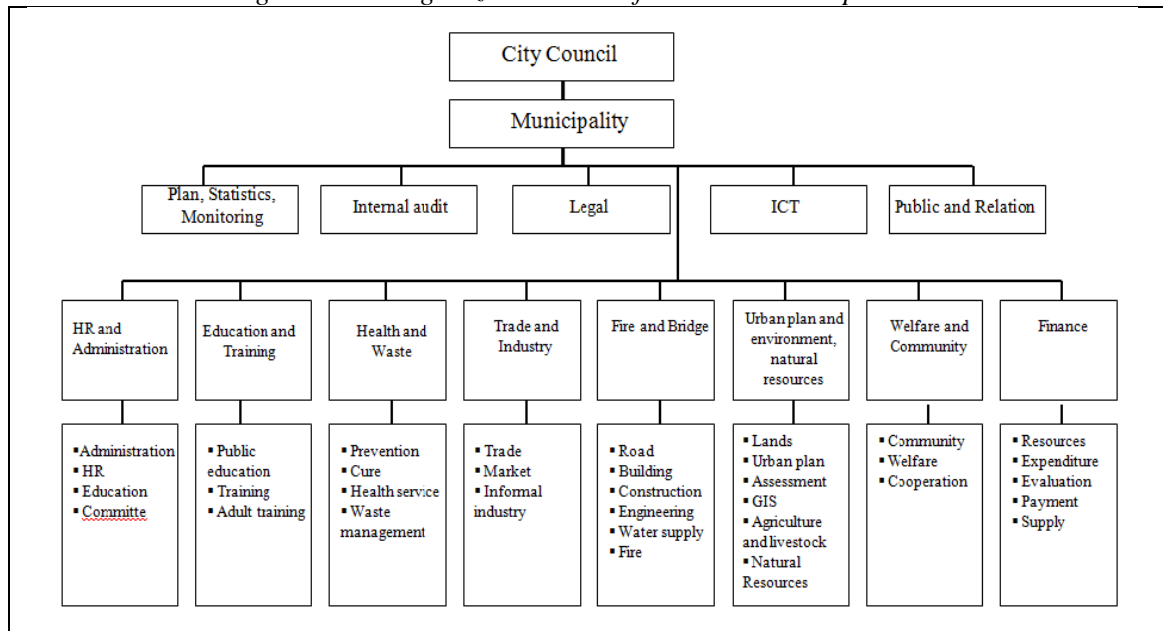


Figure IV-5 Organization chart of the other municipalities



2.2 Core Activities

DCC considers the issues that affect the entire city administratively, and acts as a coordinator among the three municipalities. The details of its activities are as follows:

- Balancing the interests of the local governments in relation to the installation and utilization of urban infrastructure.
- Establishing the urban development framework to strengthen sustainable development
- Promoting cooperation of DCC and local government agencies
- Identifying problems among interdependent public agencies and resolving them
- Providing fire prevention and emergency services such as ambulance services, and supporting auxiliary police which can maintain peace and security
- Playing a ceremonial role in the events of various public agencies

IMC, TMC, and KMC have departments subdivided by function, and under the supervision of the City Director, each department performs the following roles.

- Maintaining the peace and safety of citizens in the public sector and the private sector
- Providing social and economic public services to citizens
- Contributing to the nurturing of industry within the region

- Providing services such as health, education, culture and entertainment to the public and fostering the quality of services.
- Supporting economic activities for poverty reduction among youth, the elderly and people with disabilities

Table IV-4 *Function of the departments in IMC, TMC, KMC*

Division	Function
Planning, monitoring and statistics	<ul style="list-style-type: none"> • Preparation of yearly development budgets through participatory planning according to needs and priorities. • The Department is responsible for compiling the development plans from different municipal wards and departments and preparing the Municipal development Plan. • The Department is responsible for informing the low level (wards & mitaa) which projects are approved for the financial year for each ward and the amount of fund approved. • The Department prepares the action plan and cash flow for the approved budget and sends it to the regional secretary for endorsement of quarterly funds for project implementation by the Ministry of Finance. • The Department is responsible for the monitoring and evaluation of the implementation of development projects. • The Monitoring and Statistics Department is also responsible for keeping the different data that will enable the department and other departments to prepare different development reports. The Department also prepares a Municipal profile, and updates it yearly in order to have updated information and data.
Internal audit	<ul style="list-style-type: none"> • Evaluating controls and advising managers at all levels • The internal auditor's work includes assessing the tone and risk management culture of the organization, as well as evaluating and reporting on the effectiveness and efficiency of the implementation of management policies. • Internal auditors identify key activities and relevant risk factors and assess their significance. • Analyzing operations and confirming information • Compliance review ensures that the organization is adhering to rules, regulations, laws, codes of practice, guidelines and principles as they apply individually and collectively to all parts of their organization.
Legal section	<ul style="list-style-type: none"> • Making by-laws, Interpreting by-laws and principal laws • Providing technical advisory services to the council and the public
Information and communication technology section	<ul style="list-style-type: none"> • LAN and WLAN (wireless LAN) installation and maintenance • Computer repair and maintenance • Website administration and email services to staff • Database administration
Public relations	<ul style="list-style-type: none"> • Planning, developing and implementing Public Relations (PR) strategies • Exchanging information with managing director for all public relations matters • Maintaining media information services; e.g. answering enquires from media, handling public relations sponsorship
Administration and personnel	<ul style="list-style-type: none"> • Provide general administration and management of the Council • Ensure the availability of staff regulations, circulars, standing orders, disciplinary code and other relevant materials

	<ul style="list-style-type: none"> • Interpret laws, rules and regulations governing employees and advise the municipal director and various Council Committees on matters concerning personnel, deal with recruitment and confirmations of employees, deal with employee promotion • Carry out annual performance appraisal of staff, carry out disciplinary action for employees, deal with staff development (long and short term training plan) • Prepare and maintain employee records, prepare personnel emoluments budget, prepare monthly, quarterly and annual report for human resources section
Finance	<ul style="list-style-type: none"> • Prepare estimates (budget and expenditure) • Effective financial management of property of councils • Prepare the end of year inventory • Financial negotiations and banking arrangement • Supervision of Council's revenue collection • Supervision of procurement arrangements • Responsible for training the council in all aspects of Financial Management • Reporting to Council and Committees on revenue and expenditure
Education and culture development	<ul style="list-style-type: none"> • To co-ordinate and supervise all teaching activities, examinations, release examination results for standard IV and VII national examinations • Coordinating and supervising student registrations, and participation until they complete their primary education • Directing and coordinating starting/commencing to register public and private schools • Making sure that all school infrastructures are constructed through the accepted values and vocational training centers
Works and water department	<ul style="list-style-type: none"> • Maintaining the municipal roads network • Construction and maintenance of roads and storm water drainage system • Construction and maintenance of culverts/bridges • Control of erection of billboards (advertisements boards)
Urban planning, agriculture, natural resources and environment	<ul style="list-style-type: none"> • To carry out all tasks and overall management related to Land Surveying and Mapping within the Municipality boundaries, and in particular the cadastral survey • Control of the Urban development Plan

2.3 Communication

First, the DCC Management Team proposes the motion. Then, the city director, committee, full council and City Director, in turn, approve the motion, after which it is finally approved by the Mayor. The DCC Management Team consists of the chiefs of each department, and discusses the main agenda items of the city. Each department writes monthly, quarterly, and yearly reports that it gives to the full council, and also periodically reports to the ministries of the central government.

Figure IV-6 Communication system for decision making in DCC

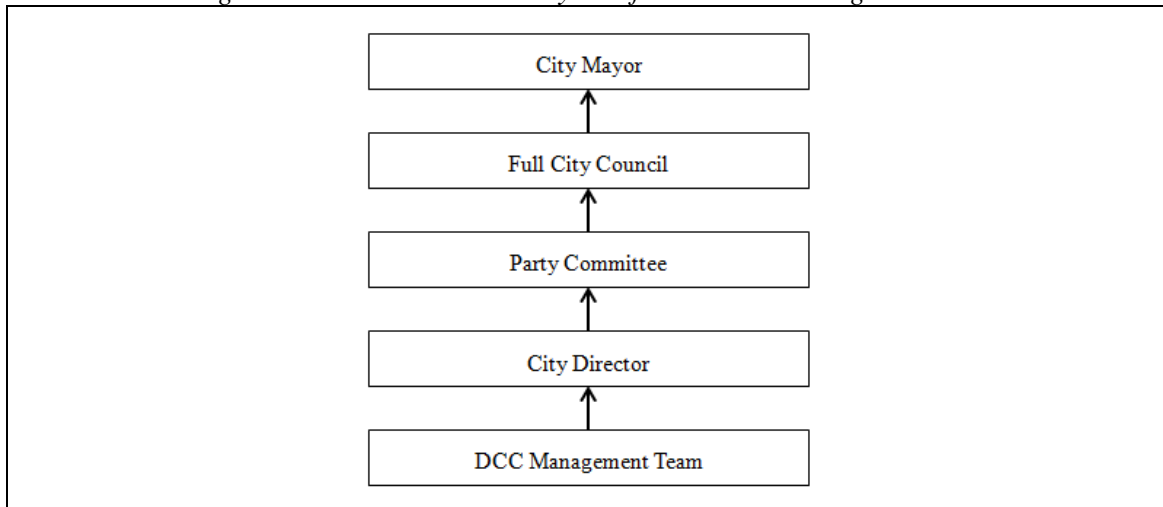
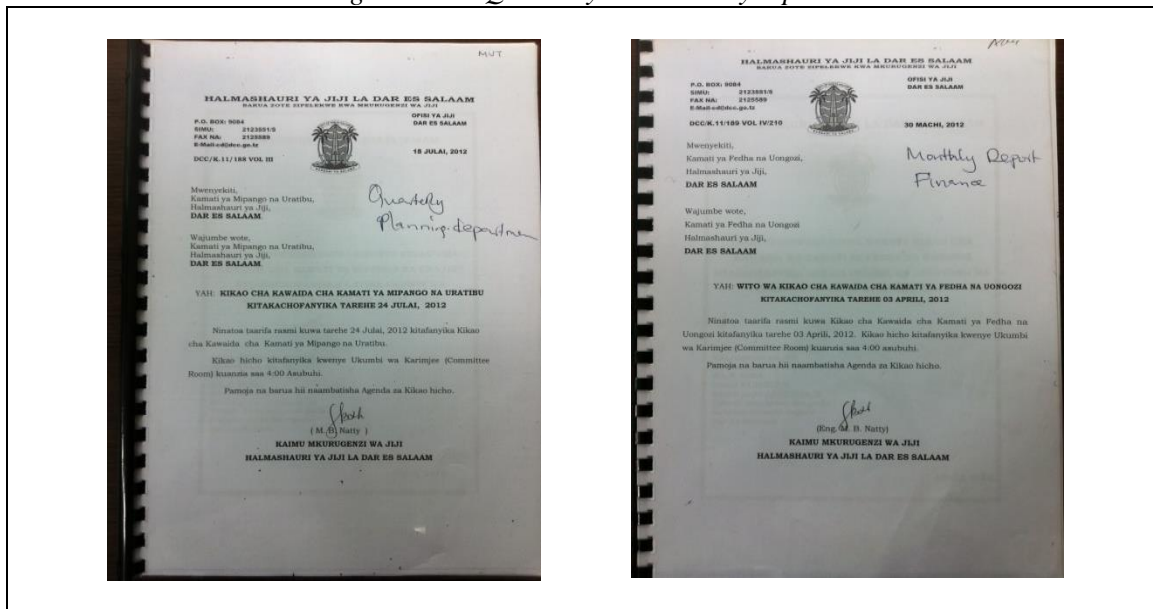


Figure IV-7 Quarterly and monthly report



The internal organization of each department is structured with the chief as the center. Details are described as follows:

Table IV-5 Communication of departments in DCC

Administration and personnel			
Job title	Report to	Responsible for	Job purpose
Principal Internal Auditor	City Director	Staff in the Internal Audit Unit	Appraise the soundness and application of the Accounting Financial and Operational Controls of the Council's activities
City Administrative Officer	City Director	All Staff under department	Ensure the smooth administration of the City Council and provide personnel services and advice
Senior Manpower Management	City Administrative Officer	Staff in Administration cadres	Ensure quality personnel service in the City Council

Officer			
Manpower Management Officer	Senior Manpower Management	Administrative staff cadres in staff other departments	Ensure that all personnel functions are carried out effectively and efficiently
Head, Municipal and Stakeholders Coordination Unit	Municipal Director	Staff in the Municipal and Coordination Unit	Facilitate DCC's function of coordinating Municipal Councils and enhance cooperation between the DCC and Municipal Councils on one hand and among the Municipal Councils
Transport Officer	Manpower Management Officer	Drivers	Provide transport services to the Council
City Solicitor	City Director	Staff in the Legal Unit	Advise the council on all legal issues and carry out required actions
Legal Officer	City Solicitor	Staff in the Legal Unit	Ensure compliance with all relevant laws and by-laws
Public Relations Officer	City Administration Officer	Subordinate Staff in the Public Relations Section	Cultivate, Promote and Develop the Government Public Image of the Dar es Salaam City Council (DCC) and establish a positive relationship between the DCC and the Residents of Dar es Salaam through the dissemination of information on the Development Plans and Activities of DCC via Mass Media
Committee Clerk	Senior Manpower Management Officer	Personal Secretary and office attendants working under him/her	Record all the deliberations and resolutions of the Council
Senior Office Supervisor	Senior Manpower Management Officer	Registry assistants, Telephone operators, Personal secretaries, office Assistants	Render clerical, secretarial and messenger services to the council
Office Management Secretary	Supervisor as assigned	Office Assistants, Driver, Typists and Personal Secretaries in her/his department	Provide Secretarial and Office Administration
Personal Secretary	Assigned Supervisor	Office Attendant	Establish and maintain good internal and external communication, ensuring a two-way flow of information between Supervisor, fellow employees and public at large
Registry Assistant.	Office Supervisor	Office Assistant	Files and stationery management
Commandant City Auxiliary Police	City Administrative Officer	Auxiliary Police, Police Auxiliary Command in Municipal Councils	Plan, Coordinate, facilitate, command, control and evaluate City Auxiliary Police activities, operations and training
Senior Binder	Senior Office Supervisor	Binders	Print and bind official documents

Office Assistant/Messenger	Personal Secretary/ Office Supervisor	-	Facilitate logistical support in the office
Driver	Transport Officer or assigned Supervisor	-	Drive Council vehicles safely for Council duties
Security Guard	Head Security Guard	Head Security Guard	Ensure all Council assets and tools are guarded and secured

Finance department			
Job title	Report to	Responsible for	Job purpose
City Treasurer	City Director	Heads of Section in Finance Department	Manage the financial affairs of the City Council
Expenditure Accountant	City Treasurer	Accountants, Accounts Assistants, and other subordinate staff in the section	Oversee and certify as correct all Council expenditure
Revenue Accountant	City Treasurer	All staff in the section	Ensure that Council has an adequate revenue base, that revenue is maximized and collection is controlled
Accounts Assistant (Platinum)	City Treasurer	Providers of information inputs	Preparation of Final Accounts
Accounts Assistant (Cheque Issue)	City Treasurer	Office Assistant.	Prepare/Write cheques
Accounts Assistant (Salaries)	Expenditure Accountant	Accounts Assistants	Produce Final Accounts
Final Accounts Accountant	City Treasurer	Staff in the Final Accounts Section	Supervise year-end closing of Books of Accounts and salaries payments
Cashier	Expenditure Accountant/ Revenue Accountant	Revenue/ Expenditure Accountant	Ensure that all money collected is properly recorded in the control cash book and promptly banked to receive cash and make postings in cash books
City Supplies Officer	City Treasurer	All stores and Supplies staff	Responsible for all stock and other equipment and documents in the section
Supplies Officer	City Treasurer	All stores and Supplies staff	Responsible for all stock and documents in storage
Stores Officer	City Supplies Officer		Ensure goods are received and issued economically according to the council policy
Revenue Collector	Revenue Accountants		Collect revenue arising from solid waste disposal operations

Urban planning environment and transportation			
Job title	Report to	Responsible for	Job purpose
City Planner	City Director	Sectional &	Ensure sustainable city development, taking into

		Program Heads	account environmental consideration in development planning; enhance stakeholder involvement and participation, and foster food urban governance
Principal Town Planner	City Planner	Staff under his/her supervision	Plan and supervise the implementation of participatory approaches pioneered by the EPM process in collaboration with Head of section
City Land Surveyor	City Planner	3 Sub-Sections- Land Survey, Survey Records and Cartography (Mapping)	Co-ordinate surveys and mapping activities in the three Municipalities; facilitate city-wide town planning activities
Principal Land Surveyor	City Land Surveyor – Head of Section	Subordinate staff in the Land Survey Section.	
Senior Cartographer II	City Planner	Subordinate staff	Maintain City Information and data, particularly in (GIS)
Cartographer Technician	Senior Cartographer		Coordinate all matters concerning mapping of different land uses, updating dissemination
Coordinator Safer	City Planner	Sectional Staff	Strengthen Capacity of Local Authorities to address issues of Urban Insecurity and delinquency
Coordinator Community Infrastructure Upgrading	City Planner	Staff in the section	Day to day Planning, Execution, Monitoring and backstopping CUI Activities
Head: Urban Transportation Section (Transport Management Specialist)	City Planner	All staff in the section	Coordinate the provision of quality public transport in the City
Community Development Officer	Coordinator Community Infrastructure Upgrading	Personal Secretary, Office Attendants, site program staff	Liaise with selected community on data collection, planning and training activity.

Health department			
Job title	Report to	Responsible for	Job purpose
City Medical Officer of Health	City Director	Three Head of sections	Ensure that Dar es Salaam Health Systems are coordinated and provide quality services
City Health Officer	City Medical Officer of Health	Environment Health Staff	Coordination of environmental and preventive health services in the City; providing technical support to Municipalities on the promotion of environmental health services in the context of preventing and controlling communicable diseases and other environmental hazards that may affect human health
Health Officer	City Health Officer	Preventive Section Staff.	Coordinate and monitor disease control
City Nursing Officer	City Medical Officer of Health	Nursing staff and other junior staff	Coordinate nursing activities of Municipalities

Economic planning monitoring and statistics department			
Job title	Report to	Responsible for	Job purpose
City Economist	City Director	Three Heads of Section	Organize, supervise and coordinate Planning and Investments and Information Technology
Head: Planning and Coordination section	City Economist	Staff in the section	Provide assistance to the City Economist in undertaking development planning and implementation of economic plans and projects.
Head: Investment Section	City Economist	Staff in the section	Enhance the Council's revenue through investment, and to build and maintain a business environment conducive to investment
Economist	Head of Department Section.	Secretary, Office Assistant	Provide assistance to the City Economist in undertaking several economic planning issues
Manager Ubungo Bus Terminal	City Economist	All staff in Ubungo Bus Terminal	Manage the Bus Terminal Operations development
Head of Information Technology	City Economist	Staff working in the unit	Introduce and maintain information technology systems in the Council

Works and fire services			
Job title	Report to	Responsible for	Job purpose
City Engineer	City Director	Heads of Sections	Coordinate all Engineering works within the DSM City and make sure that the Engineering department fulfills its responsibilities.
Planning Engineer.	City Engineer	Technicians under planning unit	Execute plans and monitor all engineering works
Road Engineer.	The City Engineer	Technicians, contractors and other subordinate staff on road works	Design, construct and maintain City Roads
Building and Estate Engineer.	City Engineer (Head of Department)	All staff under building section	Manage the design, construction and maintenance of buildings of the Council
Drainage Engineer.	City Engineer	Technicians on the drainage unit	Ensure the orderly and professional construction and maintenance of the drainage system in the City
Mechanical Engineer.	City Engineer	Workshop Staff.	Control all aspects of Central workshop vehicle operations in accordance with standard procedures
Quantity Surveyor.	City Engineer		Quantify and cost all Engineering Works
Technicians (Civil).	Road Engineer, Building and Estates Engineer	Laborers	Assist the Engineer in charge on field operations, through setting out of quality control works, measurements of works and maintenance of building roads and drainage systems
Technicians (Electrical/Refrigeration).	Electrical Engineer/Building and Estate Engineer	Laborers	Assist the Building and Estates Engineer in the maintenance and installation of electrical/refrigeration of the council
Chief of Fire and	City Engineer (Head of	Fire Preventive Section Head,	Head of Fire and Chief Advisor to management on emergency preventive services

Emergency Services.	Department)	Fire Fighting Section Head and Emergency Services Head	
Chief of Ambulance Services	City Medical Officer	Ambulance Assistants	Save human lives during rescue operations

2.4 Challenges

Introducing the e-office system is expected to improve work efficiency by over 30% and to reduce paper usage by more than 60%. But human resources who are used to the current secretary culture may be anxious about the changes to their job that will come through adopting an information system. It is recommended that these employees be reorganized when the organization is reformed in order to reduce inefficiencies. Moreover, it is necessary to re-allocate existing human resources through re-education. It is also inevitably necessary to expand the organization and reinforce human resources to operate and maintain the system.

2.5 Implications

Dar es Salaam is divided administratively into three municipalities. The local governments are DCC, IMC, TMC and KMC. The mayor of the local government is the political representative, and he or she should be the top-decision maker for Dar es Salaam. The city director has responsibility for all public administration matters. The organization of City Hall is segmented by function, and has a hierarchical structure by grade. There is a secretary culture to distribute public administration documents for each division in Tanzania. The DCC has two organizations: an organization for public administration, and a full council which is the civil administration.

3. Constraints and Addressing Issues

3.1 Constraints

The City Director has the authority of administrative management, but the important thing is that the Mayor is the one who is authorized to make decisions regarding the new project and budget formulation. As such, the City Director does not have ability to formulate a budget for developing the information system.

3.2 Addressing Issues

The ICT team for operation and management has to be reorganized. The team, which currently consists of 2 employees, has to be significantly expanded for smooth operation. Also, employees have to be offered the opportunity to develop specialized skills.

V. Benchmarking

1. Overview

2. Best Practice 1

2.1 SMG's organization of an Administration Information System

SMG organized its informatization according to the ICT policy, and carried it out from the early 1970s to the 2000s.

Year	Formation of the organization
1971. 6	Foundation of the data processing department of tax administration in finance bureau
1978. 5	Foundation of the data processing department in the office of planning and management
1981. 11	Restructuring of the statistics data processing department in the office of planning and management
1983. 11	Foundation of three electronic computer centers (class IV) (Statistics data processing department→Statistics department, data processing department→Integrated as electronic computer center)
1988. 7	Foundation of two data processing departments in the office of planning and management
1988. 8	Expansion of the electronic computer center, installation of the project office (class III) and the electronic planning department (class IV)
1993. 7	Integration of the statistics data processing departments in the office of planning and management
1996. 1	Restructuring of the four departments of electronic information in planning and management
1996. 1	Electronic computer center→ computer & information center (change of name, adjustment of organization)
1998. 1	Establishment of the planning group for geographic intelligence in technology commission
1999. 3	Introduction of CIO (3 offices, 1 group, 1 project office) (Informatization planning, IT development, geographic information, department of managing electronic information)
2000. 9	Foundation of internet policy in the department of informatization planning
2001. 6	Foundation of information and communication office (3 officers, 1 group, 1 project office)
2003. 1	Expansion of the organization (Foundation of two internet related teams, statistics related team, information protection Team) Renaming (office of development of informatization→ office of information system→ office of information and communication)
2012. 1	The organization is currently composed of 5 offices, 25 teams, 1 project office and 4 departments

2.2 Process of promoting the administration Information System in SMG

SMG began to shift toward digital administration as part of its 'Five-year digitalization of administration' plan. Its internal promotion policies are described below:

Year	Process
1981	Implementation of digitalized car registration
1981	Implementation of digitalized civil petitions
1983	Computer education for senior management officers (over level 5)
1985~1987	Expanding online processing system to the whole city
1987~1990	Digitalization of land records management
1988	Digitalization of civil affairs through the introduction of national ID card, digitalized resident registration and cadastral system
1990	Digitalization of resident tax collection

1997	Introduction of e-payment system
1999	Establishment of the basic informatization plan
1998~2001	Promoting the projects of urban informatization - Digitalization of family registration - DB construction of administrative data - Digitalization of building register - Implementation of geographic information system
2003	Establishment of informatization master plan for Seoul
2003	Amendment of regulations governing efficient management of administrative affairs and archives management

Despite the establishment of the policies and the introduction of the system, employees still handled civil affairs manually, and did not fully utilize the digital system until the mid-1990s due to a shortage of hardware and a lack of IT education. The main cause of the failure is described as follows:

- Penetration rate of PCs was low, one PC per two people
- Old-fashioned software was not suitable to the age
- Lack of IT literacy among employees

At the turn of the 2000s, 100% PC penetration was achieved and the base of the administration information system was prepared with the settlement of the electronic reporting system. The informatization education center in SMG contributed to a transition in employee attitudes regarding IT, and helped employees to acquire IT skills. Various IT training was conducted that not only included training in person but also expanded to cyber education training. Details are described as follows:

- e-learning website for public officials
- Off-the-job training, field trips
- Q&A of cyber learner
- Cyber public lecture
- Cyber instructional videos
- Conducting the annual compulsory education system
- From 2002 to 2005, 275 informatization education sessions were conducted.
- Since 2005, evening classes have been opened for the acquisition of certification.
- Education has also been provided to the public via the internet.

2.2.2 Status of information services and resources in SMG

From 2002 to 2005, websites that had previously been operated separately were integrated and provided contents that the public needed. Before the websites were integrated in 2003, the related operating budget was 1,974 million won. This was decreased to 1,308 million won in 2004, a 33.7% drop, and to 910 million won in 2005, a 30.4% reduction. The operating personnel for homepages were also reduced from 35 to 16 people.

There are 209 Seoul integrated websites. Detailed information is provided below:

Table V-1 *Status of operation of SMG integrated websites*

Division	Sum	Institution		Characteristic		Language			
		Main office	Project office	Organization	Information	Korean	English	Chinese	Other
Sum	209	162	47	43	166	163	21	14	11
Direct Management	65	50	15	34	31	63	2	0	0
Indirect management	144	112	32	9	135	100	19	14	11

*Sources: 2012 SMG Informatization Plan

More than 680 types of online services and approximately 2,000 types of information are provided to citizens through the one-click online civil service. Details are as follows:

Table V-2 *Status of operation of SMG civil service*

Path of service	Civil petitions	Office of primary responsibility	Connection
Electronic civil petitions	Consultation/Report	Office for Investigating Complaints	Electronic approval, SMS system, electronic mail system
	Registration of difficulties	Office for Investigating Complaints	
	Report of corruption	Office of Investigating	
Citizen participation	Idea for budget reduction	Office of budget	
Office of the Mayor	Request to Mayor	Office for Investigating Complaints	
Homepage in a foreign language	Request to Mayor (in a foreign language)	Office for Investigating Complaints	

*Source: 2012 SMG Informatization Plan

Transportation, land, environment, culture and tourism and map search functions are provided to the public through the geographic information portal service. Based on the established geographic information, the portal service was developed from June 2003 to June 2004 and opened in July 2004. Currently, approximately 5,000 citizens use the service.

An advanced data center was introduced to integrate information resources to solve the problems of poorly operated data processing rooms. In 2003, it was started as the core business of integration and linkages, and fully opened 24 February 2004. The size of the data center was expanded from 150 square meters to 270 square meters, and it is operated non-stop with an automated system 24 hours a day, 365 days a year.

Compared to using a private data center, 2.1 billion won in administrative costs were saved, an additional 800 million won was saved in 2004 and 300 million won was saved in 2005. It also improved the quality of service, with a 76% reduction in down time.

In total, 246 systems were introduced and used. Details are as follows:

Table V-3 *Current status of the systems in SMG*

Sum	Own business	Service	Joint business (other agencies)	Others
246	31	154	16	45

*Source: 2012 SMG Informatization Plan

789 Servers, 62 Disk storages, 14 Automatic backup devices, and 40 Additional devices are utilized in SMG. Details are as follows:

Table V-4 *Current status of the system servers in SMG*

Back office				Front office			
Server	Storage	Automatic Backup	Other	Server	Storage	Automatic Backup	Other
431	39	12	20	358	23	2	20

*Source: 2012 SMG Informatization Plan

The number of communications devices currently used is 202. Details are as follows:

Table V-5 *Current status of communications equipment in SMG*

Sum	Front Office	Back Office	Internet	LAN	e-Seoul Net	National Information Communication Networks	Office, Inter-agency	Backup and other
202	58	58	11	21	8	6	11	29

*Source: 2012 SMG Informatization Plan

The number of data circuits currently used is 50. Details are as follows:

Table V-6 *Current status of data circuits in SMG*

Sum	Office	Internet	National information communication networks	Relevant organizations	External administration organization
50	22	3	2	18	5

*Source: 2012 SMG Informatization Plan

3. Best Practice 2

3.1 Overview

3.1.1 Reason for selecting Birmingham

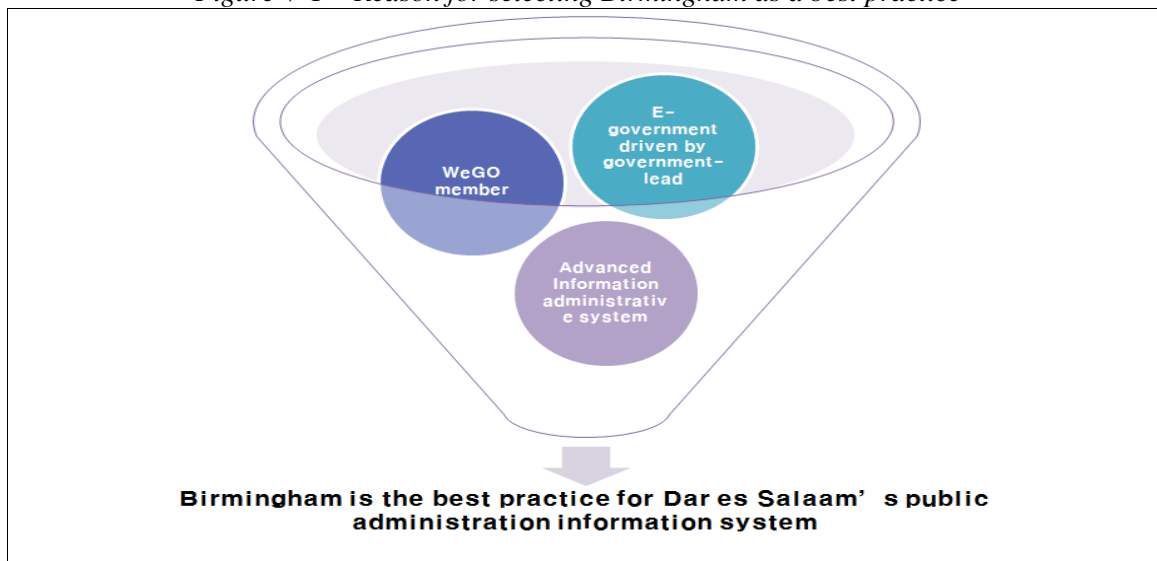
Birmingham is selected as the 2nd best practice for Dar es Salaam, because Birmingham is also a WeGO member. In addition, SMG and Birmingham are considered case studies of e-government driven by the government. In the members of WeGO, the 2nd best practice city should use advanced public administration information system and the city should obtain effects of paper and cost saving through the advanced public administration information system. This is why

Birmingham was selected. In Seoul, Korea and Birmingham, UK, both governments strongly pushed to allow cities to implement their public administration information system as the first priority.

Birmingham is a representative industrial city in the UK. After the industrial revolution, Birmingham underwent a thoroughly planned urban development, and is currently regarded as the leading IT city in the UK.

Birmingham held the Digital Birmingham Awards in 2009 as it was selected as an excellent e-government city among the UK cities. In addition, Birmingham was awarded Aston pride in a national level project in the UK for the construction of more equitable society through e-government and ICT.

Figure V-1 Reason for selecting Birmingham as a best practice



3.2 National policy of UK

The UK government initiated the first national informatization strategy in 1996. The government promoted its plan to modernize the public sector as the Modernizing Government Action Plan 1999~2002.

First, the government built websites for each department. Informatization policies were established based on government-led policies and then were enacted. Through those efforts, the UK was able to become a leading IT government country.

As a strategy, public administration in the information age focused on informatization of government and industry sectors. 'Getting government online' was carried out in this context during 2000~2005.

The UK government achieved the generalization of an online-based environment and online services in the public sector. In particular, the government invested more than 10 billion pounds over three years in order to implement a public administrative information system. By introducing a public administrative information system, the government sought to change the way public officials worked in the public sector. In doing this, the government was attempting to provide efficient, effective public administration services.

To realize a flexible and innovative digital government, the UK government integrated websites and focused on strengthening their capabilities from 2005~2008. An annual report was published to check the performance of information. In other words, the annual reports were designed to ensure continuous progress in the information system.

The UK government has tried to transform beyond e-government into a smart government that is the more effective, efficient and flexible, based on the information strategies it has been pursuing for the last 10 years: from 2009 till now. After the 2000s the public administration information system was modified and complemented as a rationalization strategy. This saved over 3 billion pounds per year, increased the work efficiency of public officials and improved public service quality.

3.3 Information policy of Birmingham City Council

Birmingham City Council implemented the public administration information system through 'Getting Government Online,' which progressed as the UK's national information policy during 2000~2005.

Since the 19th century, Birmingham had always had a city development plan, which allowed it to implement infrastructure more easily. This was a good opportunity to develop into the leading IT city in the UK.

In order to introduce the public administration information system, an IS/IT (Information System, Information Technology) strategy was established. The ultimate goal of this strategy was to save costs in order to expand funding.

After 2005, a website was built to provide public services to citizens based on the public administrative information system. All information was opened to citizens to strengthen the capabilities of digital Birmingham. The web portal site that could offer public sector services to citizens 24 hrs daily was opened. Birmingham city council tried to open information related to city council and provide public services. To implement a one-stop portal website, the website related to sightseeing and the public administration website related to city council portal were separated from each other. Other websites were integrated into a one-stop portal website for cost saving and strengthening capabilities.

Currently the Birmingham city council has prepared for informatization by establishing 'Sustainable Community Strategy: Birmingham2026'.

The purpose of Birmingham 2026 is to develop Birmingham into a safe, clean and eco-friendly city. Furthermore, the goal of Birmingham is to leap forward to become a Smart city through improvements in data analysis and management technology via the public administration information system. The city council is also attempting to expand to tasks digitalization in the private sector based on digitalization in public sectors. This will cut CO₂ emissions to 25% by 2013. In other words, by utilizing ICT effectively, an advanced public administration information system will be accomplished, increasing work efficiency and eliminating unnecessary emission of CO₂.

3.4 Current status of public administration information system of Birmingham City Council

The organization of informatization in city council is performance & information division. Total 320 of public official work in the division.

Table V-7 *Current status of public administration information system of Birmingham city council*

The number of IT division	The number of staffs in IT division	IT budget	PC penetration	Internet penetration
1	320	£ 85,243	60%	100%

According to the national ICT policy (Getting Government Online, 2000~2005), all public sectors are digitalized by phase. In order to digitalize all public tasks, firstly, Birmingham city council educated and trained public officials to reduce resistances against changing of the way of working. Beside, the city council collaboratively worked with private sectors to achieve successful administrative information system, efficiently and widely.

Even though, currently PC penetration is not 100%, all desktop and lap top has been standardization 100%. Based on 100% of internet penetration, it is seeking to enhance work efficiency. In addition, the city council has implemented public administration information system since 2000. With 100% of internet penetration and advanced public administration information system, the city council tries to reduce emission of CO₂ to leap smart city. Moreover, the city council has tried to provide high quality civil services using computing clouding which is the latest technology.

In the first year of conducting public administration information system, £ 2.13 millions were saved. For four years, over £ 4 millions have been saved. Through public administration information system, the city council aims to have cost savings, continuously.

3.5 Implication

Both SMG and Birmingham as best practice of public administration information system have been promoted by government. According to the national ICT policies, they organized IT organization. SMG has currently 25 teams and four of divisions for IT and Birmingham has one division (Performance & Information Division), which has 320 staffs.

Public administration information system for two of cities has been promoted by phase. Each phase is for implementing infrastructure, service expansion, and advancement. In case of SMG, public administration information system has been promoted since 1980's. Public administration information system for Birmingham also has been promoted since 2000's according to national policy. When e-government is implemented, it is recommended to stabilize internal public administration, first. And then public services are expanded and have various channel for civil by phase.

Regarding educations and trainings, it is necessary to have educations and trainings for staffs to reduce resistances against changes the way of working. Thus previous education has to be conducted.

VI. Recommendation

1. Strategy and Direction

1.1 Strategy for establishing the to-be model

- Scope of establishing the to-be model

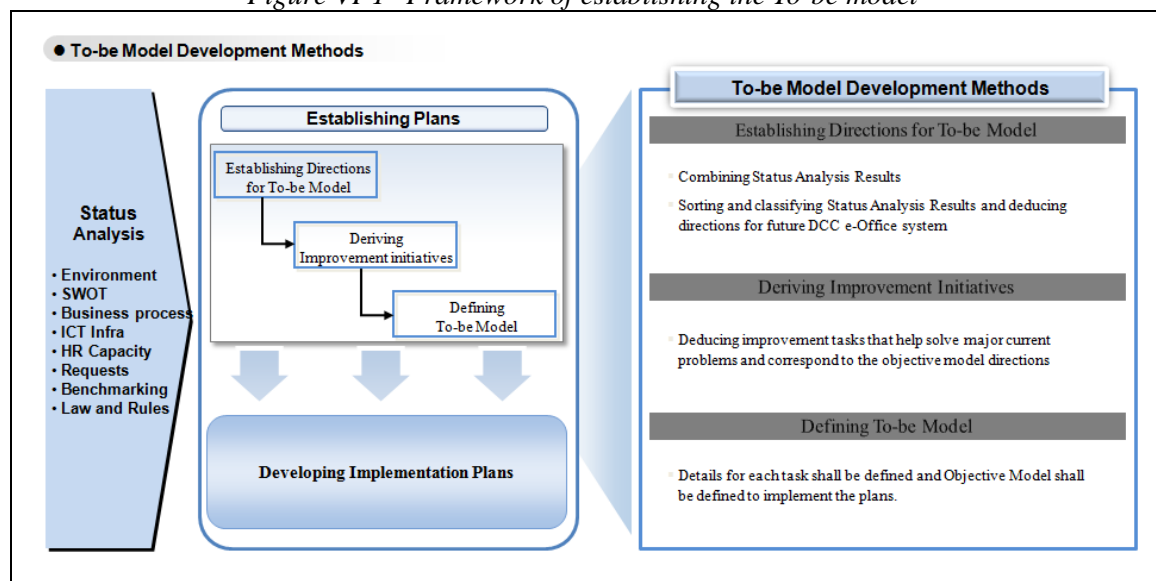
To-be model has to be established in order to implement the e-office system in DCC and has to include the structure of the system and configuration of S/W, H/W.

The To-be model is based on the three years development plan which includes improvement of the infrastructure, stage of implementing the fundamental system, stage of diffusion and stage of advancement.

- Method of establishing the to-be model

After analyzing the environment of DCC and the issues and implications which was derived in the current status analysis, issues for improvement are derived. Then improvement issues, objectives, contents and main services are defined. Finally through an evaluation of the priorities, the roadmap of the establishment is established.

Figure VI-1 Framework of establishing the To-be model



1.2 Direction of establishing the to-be model

For improvements in efficiency of administration and realization of paperless office, the basic model for administration information system is established mainly through benchmarking on SMG's experience of e-government. But administrative culture, IT infrastructure and the budget of informatization have to be fully considered in order to make the To-be model achievable.

The To-be model is focused on maximizing the efficiency by minimizing handwritten documents and shortening the time of incoming and outgoing of documents and approval of documents.

Physically separated operation and management of communications equipment and operating equipment is desirable as a solution for frequent power outages in Dar es salaam but the infrastructure for information and communication has to be designed, considering the capability of funding and the possibility of change in supply and demand of electricity.

A change in the way of working from manual to digital requires basic knowledge of IT among the staffs in DCC, so training for utilization of IT and acquiring technical skills should be preceded.

The introduction of electronic document is essential for operating the e-office system but to achieve this, legal support has to be supported. However, DCC does not have the direct authority on revision of the law, so at this time To-be model is simply established as a way of improving the efficiency of the work and reducing paper documents first and then introduction of electronic document would be subsequent project in the future.

The e-office system is composed of intranet portal, management of documents and the function of community. The current management of ordering and receiving will be converted to management of information, and the system will also include a community function to facilitate contact with other workers.

Rather than overall development, to minimize the potential risk factor it would be appropriate to conduct a pilot test on 3~4 departments which have heavy work first on a trial basis, and then spread the system to all departments.

Issues and problems derived from the study on the environment for improving the work efficiency and paper savings are classified into 4 categories.

Table VI-1 *Issues and problems of the administrative document management*

Category	Issues and problems
Internal and external environment	There are 23 departments and approximately 500 civil officials in DCC. Among them, administrative personnel are about 200 and most of them do not have much experience of utilizing computers.
	DCC, IMC, TMC and KMC are physically separated according to the jurisdiction.
	Mayor is elected by popular vote and he has right to make official decisions. City Director controls the administrative management as a civil servant.
	Without the help of international cooperation, promoting informatization as well as the maintenance of the system is practically impossible.
Business process	Too much paper document-driven tasks which are simple and repeatable
	The productivity decreases because it takes too much time to deliver the paper document and identifying the situation relevant the tasks is impossible.
	Document management is focused on tasks related to funding, accounting, and personnel
	Copy of the document is frequent
	Lots of material reported to higher authorities at regular intervals
	The fear of losing jobs increases due to the informatization.
Resistance to change of existing business process is expected.	
ICT Infra	Devices such as servers, desktops have been deteriorated due to frequent blackouts.
	DCC has approximately 100 PCs and internet is connected. However, there is no intranet.
	The central government controls the informatization budget and the budget

	allocated for DCC is small.
	The systems currently used in DCC was supplied on the needs of the central government and maintenance is very unstable due to the lack of the budget.
	Absolutely low PC penetration for human resources of public administration management (40%)
	Most of the system equipment does not work properly because of the deterioration.
	Network is frequently disconnected because of the breakdown of equipments such as network server.
	Due to the shortage of system maintenance experts(currently there's only 1 person), sometimes there are too much workload. It leads to decrease the service quality.
	There are only a few experts who have high level of IT literacy, but the majority of the employees need to be trained.
The legal system	Because the authority to revise laws and policies belongs to the central government and city council, it takes lots of time to revise the legal system.
	There are no e-documents-related laws
	There is limitation to revise the legal system at the level of the city.

Through an analysis of the current status and reflection of requirements on the document management of DCC, the following opportunities for improvement were derived:

Figure VI-2 Elicitation of opportunities of improvement

Issues		Opportunities of improvement	
Internal External environment	<ul style="list-style-type: none"> - Most of human resources have a few experiences in utilizing computer - Physically 4 municipalities are separated - Without support of international cooperation, it is impossible to maintain system and promote informatization project under current circumstances 	System implementation of DCC	<ul style="list-style-type: none"> - Standardization of documents - Re-building of working process - System implementation of administrative documents management - Development of expanded management system for each department - Introduction of e-document
Business Process	<ul style="list-style-type: none"> - There are many paper oriented tasks which are simple, repetitive - It is hard to comprehend tasks owing to an off-line way to delivery documents - When tasks are promoted, documents are copied repeatedly. - An anxiety of job cut could be increased consequential informatization - It is predicted to have resistances of changing tasks through informatization 	Improvement of ICT infra	<ul style="list-style-type: none"> - Implementation of Intranet in DCC & reinforcement of communication server - Introduction of operation server, portal server and hardware - Introduction of UPS which has proper capacity for each device
ICT Infra	<ul style="list-style-type: none"> - Devices such as servers, desktops have been deteriorated due to frequent blackouts - There is no intranet even though an internet have been connected - It is hard to maintain current using system - Absolutely low PC penetration for human resources of public administration management (40%) - Due to shortage of system maintenance experts, sometimes the expert have too many work load. It leads to decrease service quality. 	IT education/ Training	<ul style="list-style-type: none"> - Demands survey - Establishment of plan for education, training - Conducting of education, training
Legal framework	<ul style="list-style-type: none"> - Because an authorities to revise laws, policies belongs to central government or city council. It does take a lot of time to revise laws, policies. - There are no laws as to e-documents - In respect of the city council, it has limitation to revise laws 	Improvement of system	<ul style="list-style-type: none"> - Establishment of act for operation, management - systemization of e-document

In this F/S project, To-be model is aimed at the development of the basic functions of the e-office, the international cooperation for the implementation and the improvement of ICT infrastructure, business process and institution.

Improvement issues derived from the 4 fields including the implementation of the e-office system, the improvement of ICT infrastructure, IT education/training and the improvement of institution can be achieved through the 10 long-term improvement projects described as follows:

Table VI-2 *Derivation of improvement issues*

Fields	Improvement issues	Key issues ID
Implementation of the e-office	(1) Development of the e-office(Business portal administration system) and standardization of the document	A-2, B-1, B-2, B-3, B-4, B-5
	(2) Reinforcement of communication network in DCC and establishment of communication network among the municipalities	A-2, C-3
	(3) Introduction of UPS system	C-1, C-6
	(4) Implementation of administrative management system such as accounting, human resources, tax	B-3, B-6
	(5) Establishment of e-document	A-2, B-1, B-2, B-3, B-4, B-5, B-6
Maintenance and management	(6) Organizing TFT in charge of operation and management of the information system and reinforcement of human resources	C-1, C-6, C-7, C-8, C-9
	(7) Education and training of informatization on sections	A-1, B-6, B-7, C-9
Improvement of institution	(8) Change of regulations governing efficient management of administrative affairs	D-1, D-2, D-3
	(9) Foundation of operating procedure for e-document	
Funding	(10) Development of network with international organizations for cooperation	A-3, A-4, C-3, C-4

Each issue and problem is coded to Key Issue ID according to the classification, which is mapped to specific fields and improvement issues.

2. To-be model

2.1 Service Image of To-be model

The e-office system of DCC was designed through customizing the basic model of SMG's document management system. It includes approval, distribution, management, e-mail, bulletin board and communication channel which make communication across departments possible. Relevant tasks are connected and are handled under the single window all together.

Users of business portal administration system are authorized to write, approve and return the document. Also, they can confer remotely with other users online, through messenger, communities, and bulletin boards. Therefore, they can maximize the reduction in the time of working and paper-document.

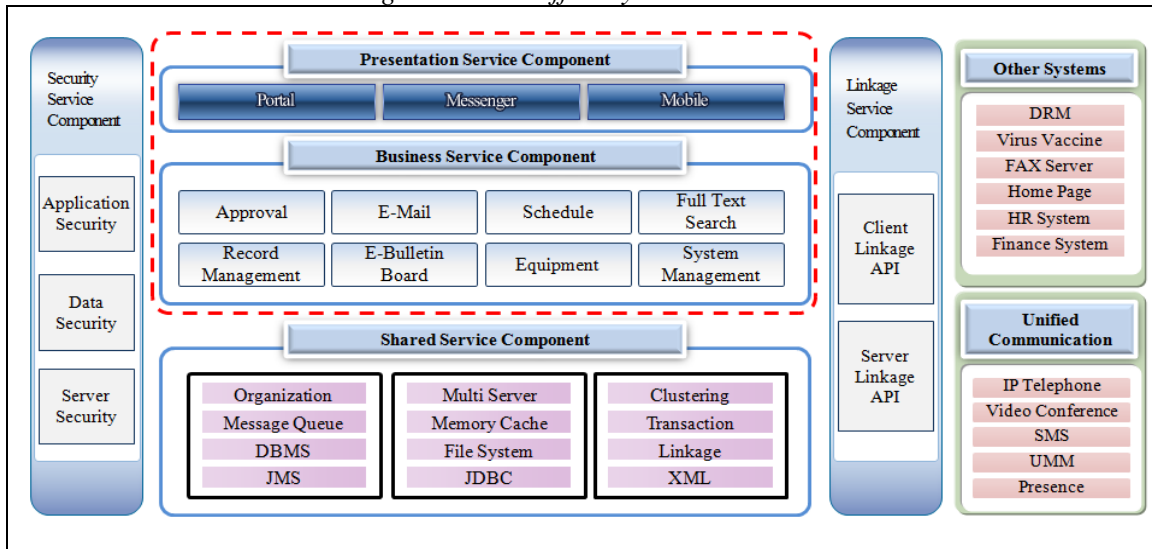
2.2 System architecture of To-be model

The e-office system is designed to have structure which can manage user security, processing of administrative paperwork, community, connection system and assisting devices.

Considering the need for expandability and the flexibility, which means the connection to the relevant systems such as accounting, human resource, tax, civil petition and homepages in the future, the system has to be designed to be component-based so that combine and separation would be possible in the future.

A component-based structure is an important factor to operate resource management system effectively and to minimize the cost for reinvestment or disposal.

Figure VI-3 e-office system structure



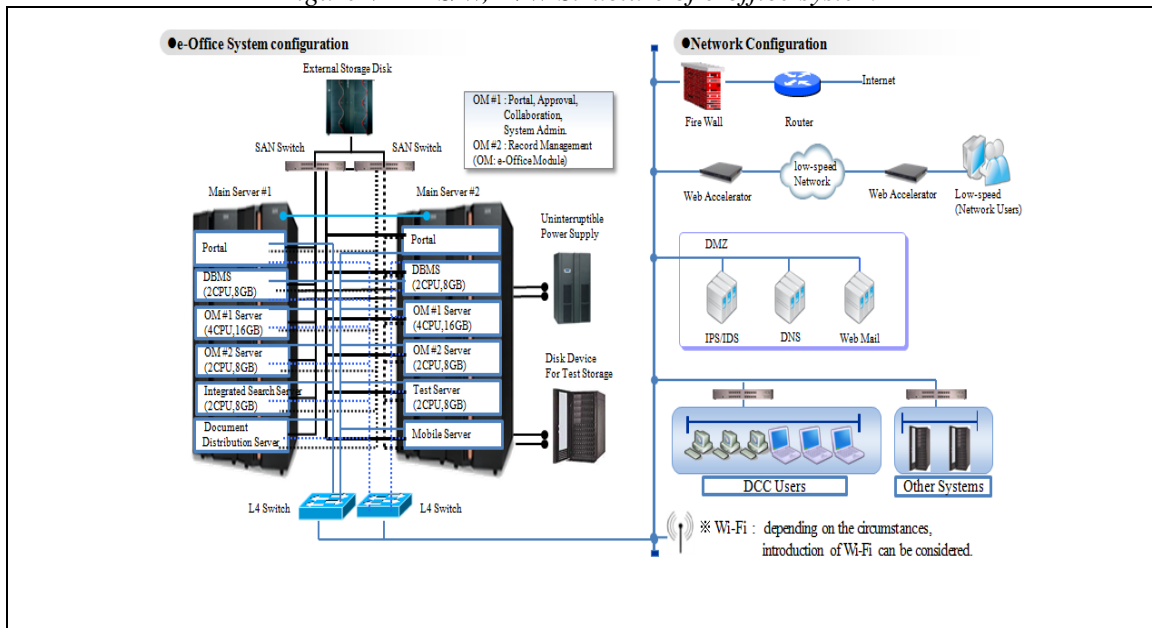
2.3 Block diagram of S/W, H/W in To-be model

The e-office system physically consists of computer sever, storage devices and main computer with accessory device such as UPS and also contains network which can connect between main server and users.

The main server is divided into the server for operation and the backup server, and has to include a firewall that can protect against possible invasions. Laptops are placed in key departments in case of power outage.

UPS is installed to operate the system without interruption since main server and communications equipment are vulnerable to the power outage.

Figure VI-4 S/W, H/W Structure of e-office system

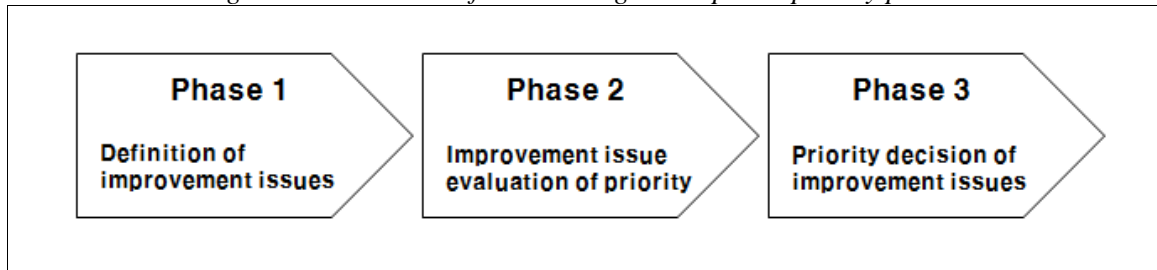


3. Stage based Development Plan

3.1 Development Framework

At first, 10 of improvement project which are derived from implementation of DCC e-office system, maintenance and management, finance aid, etc. are needed to define and then a priority is determined through evaluation of priority.

Figure VI-5 Method of establishing development plan by phase



3.2 Definition of improvement issues

- Area of e-office system implementation

(1) Development of the e-office (Business portal administration system) and standardization of the documents

Based on the public administration information system, the e-office task portal let public officials of city hall do making, sending and approving documents, e-mailing, bullet board, SNS, messenger according to user's authority.

The development of standard documents is the issue which defines standardization of document. All public administration documents of city hall are divided into common documents and individual documents. According to authorities of public officials, it is implemented for every public official to utilize making, distributing and approving documents.

(2) Reinforcement of communication network in DCC and establishment of communication network among the municipalities

Dar es Salaam's public administration management tasks consist of collaborative tasks with IMC, TMC, KMC and city hall of Dar es Salaam. Currently, it is needed to expand communication network of bandwidth capacity for city hall. In addition, three municipalities have to implement wireless or wired network newly. It is essential to have precise diagnosis of current telecommunications network due to capacity expansion of telecommunication network server according to increasing users. According to results from precise diagnosis of current telecommunications network, reusable availability of current telecommunications network will be determined. In other words, it can be expanded or newly introduced.

(3) Introduction of UPS system

The power supply in Dar es Salaam is unstable. Frequently blacking-out happens in a day. In order to protect network, computer server, etc. from overloading of power and manage the public administration management of DCC continuously, it is necessary to install UPS system with priority.

The UPS will be connected with main server, telecommunication equipments and computers of core departments. So if the power is gone, it will be operated to run system without any interruption. Depending on the capacity of UPS equipments, the price of UPS is different. It is needed to choose appropriate capacity of UPS.

(4) Implementation of public administration management system such as accounting, human resources, taxes etc.

After implementing public administrative documents system which is based on the e-office, informatization project should be conducted for each department such as human resource management, education, finance, taxes etc. The human resource management of city hall is the management system as to career of whole public officials, jobs, ability, and education. The accounting system manages revenues, expenditures through automation caused by informatization. The more effective informatization project will be developed with the first priority.

(5) Implementation of e-documents

The e-document is the most basic system for e-government. But in order to introduce and promote the use of e-document, legal framework should be established in advance. By digitalizing the work processes involved in public administration, the e-office promotes an increase in working efficiency and reducing the amount of paper documents as a top priority. With the stable operation of the e-office system, the basic e-government infrastructure will be completed through the introduction of e-documents. By managing public administrative documents as digital files, the reliability of public administration management will be increased, and easy revision of records will be possible. Also, it is easy to link to the government institution which can be expanded to e-government by securing e-document which is the core infrastructure for e-government.

- Area of management and maintenance

(6) Organizing TFT for information system management and reinforcing human resources

It is appropriate that each a person is allocated to operation & management, system maintenance when considering current DCC's information system. Although human resources are flexible depending on the scale of operation & management system, the number of user, diversity of work. However it is urgent to reinforce human resources for maintenance and improve infrastructure due to frequent blackouts which cause operation cessation, depreciation of equipments. Currently there is a person who works for maintenance of DCC's information system. To overcome the difficulties presented by the expansion of system and tasks, it is necessary to reinforce human resources for the information system.

(7) Informatization training for each department

For all public officials of City Hall, the education demands for experts to participate in training in the utilization and operation of the information system should be recognized. The technical requisites and educational requisites should be surveyed. Based on a survey of those, a curriculum is derived and applied to manage accomplishments and performance. Public officials at City Hall are divided into high, medium and low level according to their ability to use a computer, and appropriate curricula are developed. Education sessions are conducted for each level, and officials can start in an upper level

if some education has been completed in advance.

- Area of improvement of infrastructure

(8) Regulation revision of public administration tasks management

The e-office system changes the working environment, the template of public administration documents and the way public administration documents are distributed. Based on these changes, the regulations for the office should also be changed. In addition, the relevant regulations should be changed through the phases of implementing e-office. The office regulations related to utilizing the information system have to be newly established. It is necessary to establish a new regulation for managing public administration documents which are distributed by the information system.

(9) Establishment of new regulations for the operation and management of e-documents

Using e-documents shifts the paper documents currently used at City Hall to the digital domain. By saving and distributing e-documents in storage devices via computers, paper documents can be eliminated. The relevant documents can simply be stored in the information system and distributed to computers or external IT devices. The process can also be verified. Therefore, to introduce e-documents, it is necessary to revise the regulations on public administration management in a wide-ranging way.

- Area of funding

(10) Development of network with international organizations for cooperation

E-office implementation of DCC is needed small and large finances for long term. Annual budget for informatization of DCC is quite small amount. In order to conduct project through supporting of the government, there are limitations in terms of long-term negotiation with the government. Therefore alternative is the funding from collaboration with international organization for implementing.

DCC has promoted collaboration with international organization continuously with strong intent for informatization. As a result SMG which is the chair city of WeGO and Worldbank, has announced its intent to support DCC's urban development. The collaboration with multilateral international organization is emphasized under the focused circumstances from both internal and external interests.

3.3 Improvement issue evaluation of priority

10 issues for medium and long-term improvement in the implementation of the e-office by DCC can be divided into top priority issues and priority issues. Each issue has its own characteristics. Based on the nature of each issue, importance, effectiveness and mutual correlation of issues will be analyzed objectively.

Some issues cannot be dealt with without handling other specific issues first. As such, the priority sequence for issues is determined. Criteria for evaluating the priority of improvement issues are evaluated on a three-level scale from low to high. Scores of each criterion are calculated as 5,3,1 and summed up. When there are prerequisite issues, points are deducted as restricted requisites on a scale -1 to -5. These are calculated and summed up. The issues with a total score from 16 to 20 are selected as top priority issues.

Table VI-3 Evaluation criteria of improvement issues

Transformation of score		Calculation of scores					
Evaluation	Score	Urgency	Effectiveness	Availability of implementation	Difficulties	Restricted requisites	
High	5	1	H	H	H	H	-2
Medium	3	2	M	H	H	H	-2
Low	1	3	M	H	H	H	-3
		4	L	H	M	M	-2
		5	M	M	H	M	-3
		6	H	M	H	H	-2
		7	M	H	M	M	-1
		8	H	H	M	M	-2
		9	M	H	H	H	-5
		10	H	H	M	L	0

Final evaluation of priority	
Total score	Final evaluation
16~18	Top priority issues
14~15	Priority issues
10~13	Implementation issues

- Evaluation score transformation of improvement issues

As to 10 issues, each evaluation criteria are divided into high, medium and low. Then these are transformed to score and summed up. After summing up the scores, the scores can be deducted according to restricted requisites. Finally, total scores are calculated. Improvement issues are enumerated in order of high scores. If two issues score are a tie, the issues which has no restricted requisites will be prior to another.

Table VI-4 Evaluation of priority for improvement issues

The number of issues	Name of issues	Prerequisite for priority issue	Urgency	Effectiveness	Availability of implementation	Difficulties	Restricted requisites	Total score	Ranking
1	Tasks portal of e-office and development of standardized documents		5	5	5	5	-2	18	1
2	Reinforcement of telecommunication network in city hall and implementation of telecommunication network in three municipalities.	1,8	3	5	5	5	-2	16	2

3	Implementation of UPS	1,2,8	3	5	5	5	-3	15	4
4	Implementation of public administrative system such as HR, finance, taxes	1,2,7,8	1	5	3	3	-2	10	10
5	Implementation of e-document	1,2,7,8,9	3	3	5	3	-3	11	9
6	Organizing TFT for informatization and reinforcement HR		5	3	5	5	-2	16	2
7	Education and training of informatization for each area	1	3	5	3	3	-1	13	7
8	Revision of regulation for public administration tasks management	1	5	5	3	3	-2	14	5
9	Establishment of new regulation for managing and operating public administration documents	1,2,4	3	5	5	5	-5	13	7
10	Development of collaborative network with international organizations		5	5	3	1	0	14	5

Transformation of score	
Evaluation	Score
High	5
Medium	3
Low	1

Final evaluation of priority	
Total score	Final evaluation
16~	Top

Calculation of scores					
	Urgency	Effectiveness	Availability of implementation	Difficulties	Restricted requisites
1	H	H	H	H	-2
2	M	H	H	H	-2
3	M	H	H	H	-3
4	L	H	M	M	-2
5	M	M	H	M	-3
6	H	M	H	H	-2
7	M	H	M	M	-1
8	H	H	M	M	-2

18	priority issues					
14~15	Priority issues	9	M	H	H	H
10~13	Implementation issues	10	H	H	M	L
						-5
						0

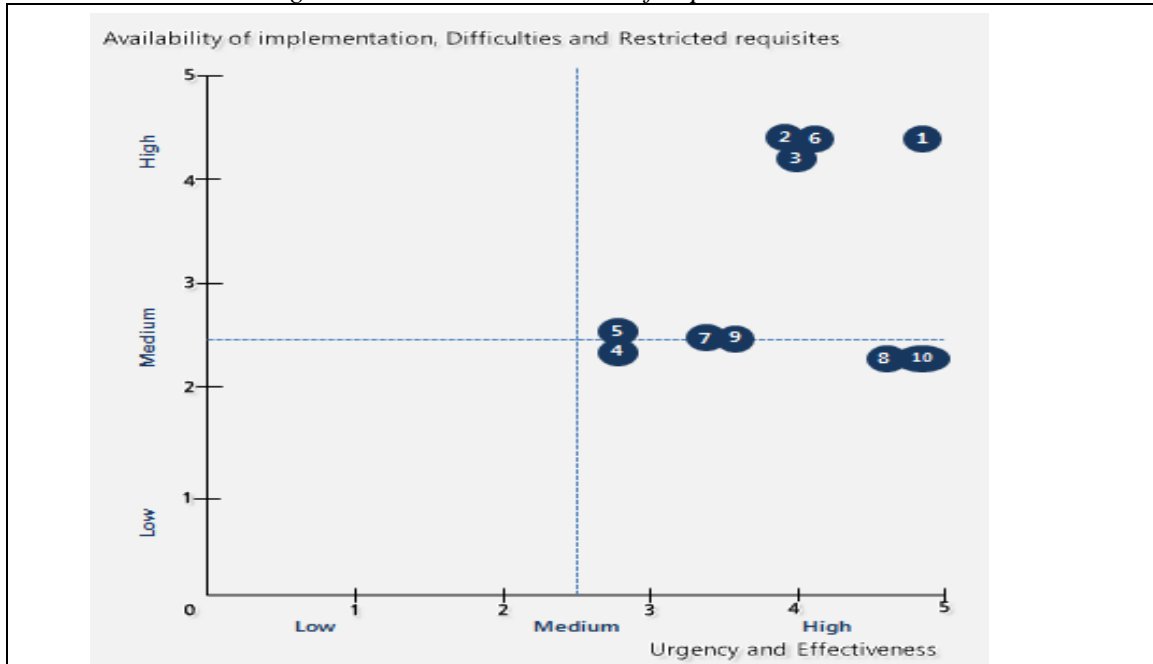
3.4 Priority decision of improvement issues

Three improvement issues are selected as top priority issues. These are: “Tasks portal of e-office and development of standardized documents,” “Reinforcement of telecommunications network in City Hall and implementation of telecommunications network in three municipalities,” and “Organizing TFT for informatization and reinforcement of HR.”

Table VI-5 Selection of top priority issues group

Total scores	Improvement issues	Final evaluation
18	Tasks portal of e-office and development of standardized documents	Top priority implementation issues
16	Reinforcement of telecommunication network in city hall and implementation of telecommunication network in three municipalities.	Top priority implementation issues
16	Organizing TFT for informatization and reinforcement HR	Top priority implementation issues
15	Implementation of UPS	Priority implementation issues
14	Revision of regulation for public administration tasks management	Priority implementation issues
14	Development of collaborative network with international organizations	Priority implementation issues
13	Education and training of informatization for each area	Implementation issues
13	Newly establishment of regulation for managing and operating public administration documents	Implementation issues
11	Implementation of e-document	Implementation issues
10	Implementation of public administrative system such as HR, finance, taxes	Implementation issues

Figure VI-6 Evaluation result of improvement issues



4. Project Components

4.1 Tasks portal of e-office & Development of standard documents

Project components	Specific project contents	
Tasks portal of e-office	Name of specific project	BPR/ISP for implementing e-office
	Scope of project	<ul style="list-style-type: none"> Inefficient factors are eliminated in current process of public administration management for each department. And informatization factors will be added to work flow in order to handle rapidly. In other words, the process of public administration will be improved. Tasks of public administration management are given a large-scale classification, a medium-scale classification and a functional classification. Each classification also defines their process. For each organization, horizon and vertical process will be analyzed. Without repeated processes which are against with regulation of public administration and complication of approval phase, re-designation will be conducted. Long term implementing strategy will be established according to results of requirements of city hall and current status of public administration management.
	Results	<ul style="list-style-type: none"> Current status management of public administration document informatization survey Task survey of management of public administration documents and efficient tasks

		re-designation <ul style="list-style-type: none"> • Designation of re-organizing • Establishment of implementation plan for e-office infrastructure system • List of equipments for implementing e-office infrastructure • Establishment of conducting plan for implementing e-office
	Introduction of equipments	<ul style="list-style-type: none"> • N/A
	Considerations	<ul style="list-style-type: none"> • It is necessary to select appropriate strategies that are in accordance with the directive of DCC's informatization through technical research, such as a wide use groupware solution, Google apps, Microsoft Business solutions, and cloud computing which is the latest technology for implementing..
Development of standardized documents	Name of specific project	<ul style="list-style-type: none"> • Standardization of public administration documents
	Scope of project	<ul style="list-style-type: none"> • All public administration documents including each department will be standardized. So common format can be defined to available for all public officials.
	Results	<ul style="list-style-type: none"> • Survey of public administration documents in the city hall • Survey of best practice for management of public administration documents • A common documents, making standard templates for each document • Establishment of plan for management of public administration documents
	Introduction of equipments	<ul style="list-style-type: none"> • N/A
	Considerations	<ul style="list-style-type: none"> • Common area of documents will be reduced as possible. Consensus of users is considered the most important in preparing a guideline for making documents • The plan for reducing the number of documents will be prepared through integrating the public administration documents.
Implementation of e-office tasks portal	Name of specific project	<ul style="list-style-type: none"> • Implementation of e-office tasks portal
	Scope of project	<ul style="list-style-type: none"> • Development of single window for e-office intranet portal • User registration and development of administrator function • Development of management tool for the public administration document • Development of solution for tasks management such as document management, e-mail, messenger, bullet board, etc. • Education of professional technology and

		<p>transfer of operational and managing techniques</p> <ul style="list-style-type: none"> • Installation and operation of test bed • Operation of pilot system
	Results	<ul style="list-style-type: none"> • Development of portal frame • Portal accessing for Single Sign ON • Management of users, schedule, searching engine • Management of document, approval, distribution, bullet board, system management • Messenger, mobile, SNS, UMM etc.,
	Consideration	<ul style="list-style-type: none"> • According to process which is defined in the area of BPR, processes such as sending, approval and cooperation are followed. • By its nature, the development of an e-office tasks portal is connected with the activities of each department and the work flow of each organization. As such, it is possible to introduce an appropriate solution or develop a solution. However, considering scalability and portability, ERP or Groupware should be strongly considered • Connecting a document management tool with the City Hall homepage and the public administration tasks portal should be considered. • It is hard to expand budget for informatization of DCC for short term. So it is appropriate to introduce cheap solution and open software which is easy to maintenance.
	Introduction of equipments	<ul style="list-style-type: none"> • Two of portal servers • Back-up equipment and equipment of system operation

4.2 Strengthening of city hall's telecommunication network and implementation of three municipalities telecommunication

Project components	Specific project contents	
Strengthening of city hall's telecommunication network	Name of specific project	Strengthening of city hall's computer telecommunication network
	Scope of project	<ul style="list-style-type: none"> • Performance diagnosis for each system network in city hall's intranet • Based on 300 users, equipment capacity, status of communication line, bandwidth and capacity of telecommunication network among three municipalities, network will be implemented. • Performance test of telecommunication • Introduction of pilot system
	Results	<ul style="list-style-type: none"> • Table of performance result as to telecommunication network equipment (speed, performance)

		<ul style="list-style-type: none"> Table of performance result as to intranet back-born Education of technology transfer and manual for restoration errors
	Introduction of equipments	<ul style="list-style-type: none"> Telecommunication network server for intranet Telecommunication equipments such as L4 switch, Firewall
	Consideration	<ul style="list-style-type: none"> In order to expand server capacity of telecommunication network through increasing users, it is necessary to scrutinize the current telecommunication network. And then the current telecommunication network will be determined whether it is possible to re-use or not. Depending on availability of re-use, it will be determined to expand or introduce new one. Under the hard circumstances to improve as to power supply, it should be considered that both wires and wireless communication are implemented in Dar es Salaam.
Implementation of telecommunication network for three municipalities	Name of specific project	<ul style="list-style-type: none"> Implementation of telecommunication network for three municipalities(IMC,KMC,TMC)
	Scope of project	<ul style="list-style-type: none"> Implementation of telecommunication line between intranet equipment of three municipalities and intranet server equipment of city hall
	Results	<ul style="list-style-type: none"> Telecommunication network intranet among three municipalities
	Introduction of equipments	<ul style="list-style-type: none"> Three server of telecommunication network Telecommunication network equipments such as L4 Switch, Firewall
	Consideration	<ul style="list-style-type: none"> It is not far distance from city hall to three municipalities. It is necessary to consider how to implement network line as to both wire and wireless under the possibility of disconnection network liner and blackout.

4.3 Implementation of UPS equipment

Project components	Specific project contents	
Implementation of UPS equipment	Name of specific project	Introduction of UPS which is core equipment for intranet of city hall and three municipalities
	Scope of project	<ul style="list-style-type: none"> Installation of UPS for core computer server in DCC Installation of UPS for core intranet server in DCC Installation of UPS for core intranet server in three municipalities
	Results	<ul style="list-style-type: none"> UPS for each communication server in DCC, IMC,TMC, KMC UPS for main intranet server of DCC

		<ul style="list-style-type: none"> • UPS for main computers in core management departments in DCC • Urgent recovery manual and education for technology transfer
	Introduction of equipments	<ul style="list-style-type: none"> • Two of UPS for main computer servers • 10 of UPS for computers of core departments
	Consideration	<ul style="list-style-type: none"> • According to capacity, the prices of UPS are different. so appropriate capacity of UPS has to be chosen for each equipment • Introduction of laptop is encouraged due to availability under the circumstance of blackout. However it is expensive compared using desktop, lap tops will be used in the core department at first. • If the power supply is interrupted for a long time, manual for operation and management of system must have essentially noticing message as to suspending/resuming system in advance

4.4 Implementation of system for public administration management, such as Accounting, HR, Taxes, etc

Project components	Specific project contents	
Implementation of Accounting system	Name of specific project	Implementation of Accounting system
	Scope of project	<ul style="list-style-type: none"> • Implementation of system for accounting such as transaction, date, month, year, etc • Linkage to system for public administration management • Pilot test
	Results	<ul style="list-style-type: none"> • Intranet system of accounting management • Manual for operational management
	Introduction of equipments	<ul style="list-style-type: none"> • N/A
	Consideration	<ul style="list-style-type: none"> • The system for accounting management is linked to overall tasks in the city hall. So it is encouraged to be developed to link to public administration tasks.
Implementation of HR system	Name of specific project	Implementation of HR system
	Scope of project	<ul style="list-style-type: none"> • Implementation of system for HR department which handle recruiting, retirement, training, jobs, etc • Human Resource Management system • Pilot test
	Results	<ul style="list-style-type: none"> • Intranet system for HRM • Manual for operational management
	Introduction of equipments	<ul style="list-style-type: none"> • N/A
	Consideration	<ul style="list-style-type: none"> • HR system is needed to have security. Because it manages to personal information of public officials.

Implementation of Taxes	Name of specific project	<ul style="list-style-type: none"> Implementation of Taxes
	Scope of project	<ul style="list-style-type: none"> Implementation of system for taxes department which handle revenues, expenditures, etc Implementation of linkage to accounting system Pilot test
	Results	<ul style="list-style-type: none"> System of taxes management
	Introduction of equipments	N/A
	Consideration	<ul style="list-style-type: none"> It is needed to be developed to be in accordance with the goal of central government due to possibility linked to higher authorities.

4.5 Implementation of e-document

Project components	Specific project contents	
Implementation of e-document	Name of specific project	Implementation of e-document
	Scope of project	<ul style="list-style-type: none"> Pre-survey as to possibility of e-document introduction e-document standardization definition of public administration document in city hall Introduction of solution for e-document management Evaluation for adequacy of introducing e-document Implementation of e-document function such as approval, distribution, management Implementation of e-document data management system Implementation of linkage system for public administration management Pilot test
	Results	<ul style="list-style-type: none"> System of e-document management Manual for operational management
	Introduction of equipments	N/A
	Consideration	<ul style="list-style-type: none"> In this phase, public administration document has digitalized. It is necessary to be checked errors in approving, distributing, managing in this phase. Introducing e-document, e-signature, PKI(Public Key Infrastructure) is the project for infra of e-government in national level, it is necessary to have legal framework in advance. In terms of city hall, introducing e-document is needed to be check circumstance of national e-government and be preceded feasibility study.

4.6 Organizing TFT in charge of operation and management of the information system and reinforcement of human resources

Project components	Specific project contents	
Organizing TFT in charge of operation and management of the information system and reinforcement of human resources	Name of specific project	Organizing TFT in charge of Information and Communications
	Scope of the project	<ul style="list-style-type: none"> Reconsidering of organizing TFT in charge of ICT , which was derived from BPR Investigation into workload for management of ICT Understanding the technology of managing ICT such as system, communication, S/W and H/W Calculating the number of required personnel Establishment of operation and management scheme
	Output	<ul style="list-style-type: none"> Guidelines for management of ICT
	Introduction of device	N/A
	Consideration	<ul style="list-style-type: none"> Reinforcement of labor force in TFT(Minimum 3 people, maximum 5 people) according to the redesigned organization derived from BPR. Considering the distinct characteristics of DCC, one person is placed in the field of disability of PCs and one person is placed in the field of disability of system server and network and one person is placed in the field of program management. Overall, at least 3 people has to work in TFT Labor force in each sector has to take training classes related to specialties regularly. Since the change in personnel is inevitable so it has to be done under the close cooperation with HR department and human performance enhancement system needs to be taken into consideration.

4.7 Education and training of informatization on sections

Project components	Specific project contents	
Education and training of informatization on sections	Name of specific project	Education and training of informatization
	Scope of the project	<ul style="list-style-type: none"> Researching on demand of education and training Analysis on the employee's capability of utilizing ICT Research on training for specialist of ICT specialist Developing the training curriculum Execution and evaluation of education and training regularly

		<ul style="list-style-type: none"> • Performance management of education and training
	Output	<ul style="list-style-type: none"> • Manual for education and training of informatization
	Introduction of device	N/A
	Consideration	<ul style="list-style-type: none"> • Considering the employee's capability of utilizing ICT, easy-to-understand education has to be carried out primarily. • Classification of the employees into the beginner, intermediate, and advanced level by indentifying the each one's capability of utilizing ICT and making a curriculum for each class. After completing the preceding course, it is allowed to take upper level class. • For ongoing education and training, the demand for higher education such as computer literacy, internet browsing, document creation has to be surveyed so that the curriculum would be expanded. • TFT for ICT would be in charge of training and education and the important thing is maintaining the continuity. Through the international cooperation program, training for ICT specialist has to be done regularly.

4.8 Change of regulations governing efficient management of administrative affairs

Project components	Specific project contents	
Change of regulations governing efficient management of administrative affairs	Name of specific project	Change of regulations governing efficient management of administrative affairs
	Scope of the project	<ul style="list-style-type: none"> • Establishment of new regulations governing efficient management of administrative affairs as to utilizing the e-office system. • Establishment of new regulations as to distribution of official documents through the information device. • Reporting structure will be simplified by the function of the system such as creation of the document and approval of the document. So report regulation has to be changed, too. • Since administrative documents are digitally written and utilized, additional contents have to be added to the regulation for the management of form of document.
	Output	<ul style="list-style-type: none"> • Rulebook of administrative management
	Introduction of device	N/A
	Consideration	<ul style="list-style-type: none"> • For a certain period of time, using written document mixed with digitalized document is inevitable so it is recommend that within a short period of time, all the written document would be digitalized as soon as possible.

4.9 Foundation of operating procedure for e-document

Project components	Specific project contents	
Foundation of operating procedure for e-document	Name of specific project	Foundation of operating procedure for e-document
	Scope of the project	<ul style="list-style-type: none"> • Foundation of operating procedure for e-document such as determining when to abolish the written document and the structure of organization as to the introduction of e-document • Foundation of standard operating procedure of official document as to digital processing • Since administrative documents are digitally written and utilized, additional contents have to be added to the regulation for the management of form of document.
	Output	<ul style="list-style-type: none"> • Rulebook of administrative management
	Introduction of device	N/A
	Consideration	<ul style="list-style-type: none"> • Further examination as to whether it is feasible or not has to be preceded. • The status of e-government at the national level has to be examined and whether new operating procedure is against the upper level of law has to be considered.

4.10 Development of network with international organizations for cooperation

Project components	Specific project contents	
Development of network with international organizations for cooperation	Name of specific project	Development of network with international organizations for cooperation
	Scope of the project	<ul style="list-style-type: none"> • Finding international organizations which DCC can cooperate with • Building cooperative network with international organizations which is favorable to DCC • Building the network of international organizations that fit for each improvement issues • Establishment of plan to strengthen cooperative network with existing international organizations
	Output	Plan for international cooperation
	Introduction of device	N/A
	Consideration	<ul style="list-style-type: none"> • Network with international organizations is build through the constant efforts for a long time. It is important to manage existing international cooperation and express interest to them constantly.

5. Project Budget

The Total Budget for three years is expected to be 215 million dollars. The budget is calculated in H/S, S/W, and Network sectors. Investment cost for the first year is expected to be 132 million dollars. Total cost of implementing the e-office system is described as follows:

Table VI-6 *Total cost of implementing the e-office system*

(Unit : USD)				
Division	Y	Y+1	Y+2	Total
Labor cost	400,000	420,000	200,000	1,020,000
H/W	429,000	210,000		639,000
S/W	456,000		40,000	496,000
Network	27,000			27,000
Total	1,312,600	630,000	240,000	2,182,000

The necessary budget for Labor is 1,020,000 USD. Details are described as follows:

Table VI-7 *The necessary budget for Labor*

(Unit : USD)			
Division	Cost	M/M	Total
Establishment of strategy for e-Office	20,000	7	140,000
Standardization of documents	15,000	8	120,000
Construction of Network	10,000	6	60,000
Development of e-office system	10,000	20	200,000
Consulting for promotion of e-documents	15,000	8	120,000
Development of systems for accounting and Human Resource Management	10,000	20	200,000
Training	15,000	12	180,000
Total			1,020,000

The necessary budget for H/W is 639,600 USD. Details are as follows:

Table VI-8 *The necessary budget for H/W*

(Unit : USD)				
Division	Specification	No.	Cost	Total
Main Server	4CPU, 8Core Double, 16G Ram	2	130,000	260,000
Network Server	2CPU, 2Core	4	7,000	28,000
Laptop	2.4GHz Intel Core 4G Ram 320GiGA(HD)	50	1,000	50,000
	2.4GHz Intel Core 4G Ram 320GiGA(HD)	50	1,000	50,000

Desktop	2.7GHz Intel Core 4G Ram 320GiGA (HDD)	30	800	24,000
	2.7GHz Intel Core 4G Ram 320GiGA (HDD)	200	800	160,000
UPS	1. Main Server	2	3,000	6,000
	2. Network Server	4	1,500	6,000
	3. Introducing Power Plant	1	20,000	20,000
SAN Switch	Over 64 Port	6	500	3,000
External Hard Disk	2 Tera	2	2,000	4,000
L4 Switch	10/100 Ethernet Port	5	600	3,000
Firewall	Over 2CPU 64Bit	4	1,500	6,000
IPS/IDS	1.0 Gbps	4	1,000	4,000
Misc.		1	15,000	15,000
Total				639,000

The necessary budget for S/W is 496,000 USD. Details are as follows:

Table VI-9 *The necessary budget for S/W*

(Unit : USD)

Division	Specification	No.	Cost	Total
Portal	2Core 300user	2	120	36,000
e-Office	2Core 300user	2	300	90,000
Document Distribution	2Core	2	20,000	40,000
Search Engine		1	40,000	40,000
DBMS		2	50,000	100,000
Web Server (WAS)		2	35,000	70,000
Clustering S/W		6	10,000	60,000
File Sharing S/W		5	9,000	45,000
Misc.		1	15,000	15,000
Total				496,000

The necessary budget for N/W is 27,000 USD. Details are described as follows:

Table VI-10 *The necessary budget for N/W*

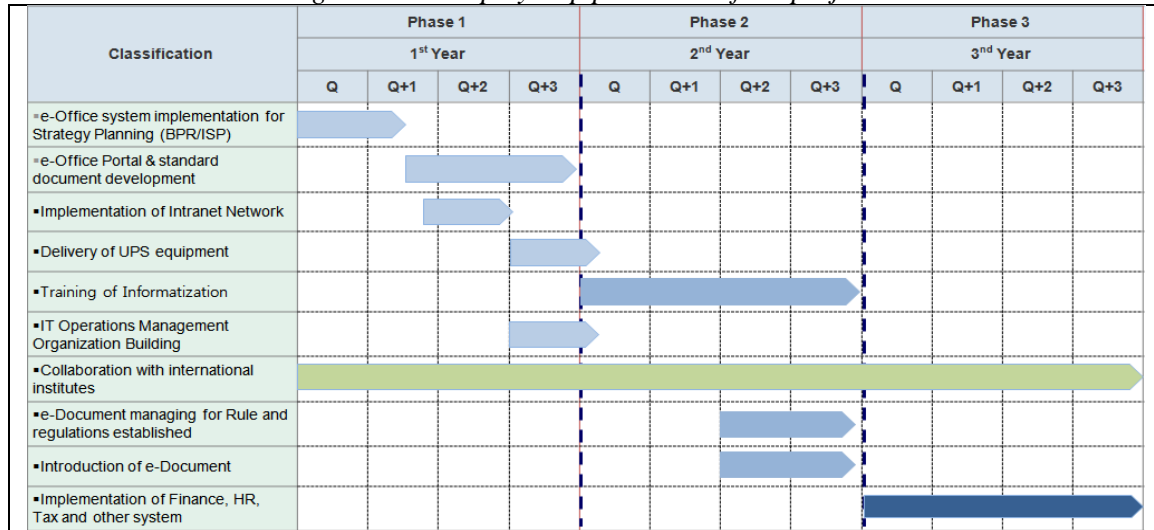
(Unit : USD)

Division	Phase	Cost	Total
Expansion of network in DCC	1	2,000	2,000
Expansion of network in IMC	3	2,500	7,500
Expansion of network in TMC	3	2,500	7,500
Expansion of network in KMC	3	2,500	7,500
Construction of Power Plant	1	2,500	2,500
Total			27,000

6. Schedule of the project

The stages of the project can be further divided in three sub-phases which are establishing the foundation, enlargement and advancement. Within 3 years, administration informatization project which is associated with the e-office would be promoted. Step by step procedure of the project is described as follows:

Figure VI-7 Step by step procedure of the project



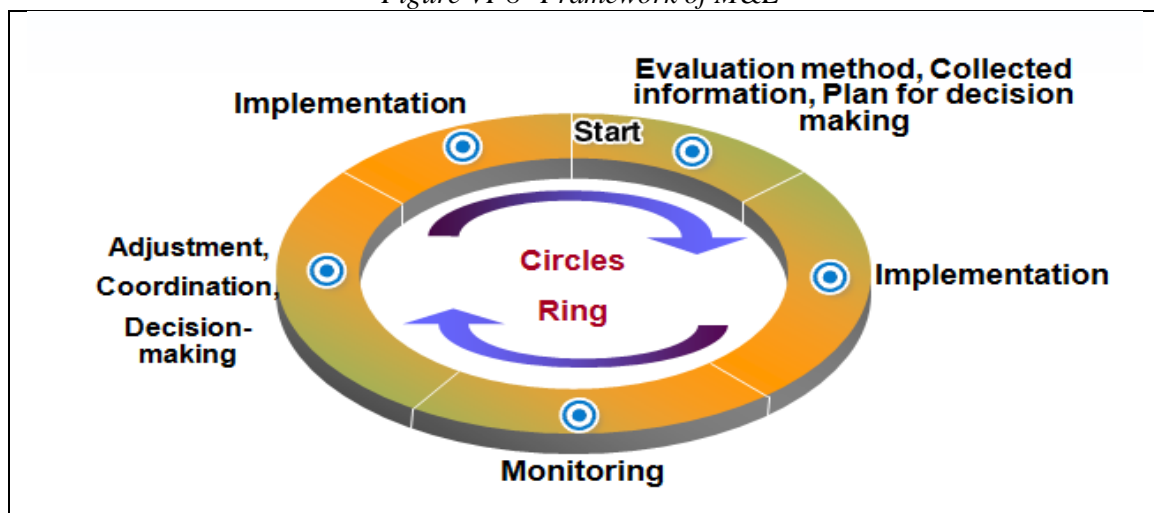
6.1.2 Monitoring and Evaluation

Monitoring and evaluation is the repetitive process to measure the efficiency, the adequacy and the ripple effect of the e-office system periodically for continuous improvement.

M&E involves collecting information continuously through monitoring activities, and planning the method of evaluation and improvement based on monitoring results.

After analyzing the information collected from monitoring, the management team adjusts the plan and executes activities as planned constantly through the decision-making process. The framework of M&E is described as follows:

Figure VI-8 Framework of M&E



Information monitored for evaluation is largely divided into 4 areas which are productivity, saving the paper document, stable operation and management and computer literacy competency. Specific information is described as follows:

Table VI-11 *Information monitored for evaluation divided into 4 areas*

Area	Information Monitored	Unit	Collection cycle
Productivity	Transmission and reception of e-document	The number of case	Month
	Approval of e-document	The number of case	Month
	Standby time	The time required	Week
Saving the paper document	Document written manually	Page	Week
Stable operation and management	Disorder of operating UPS	The number of case	Day
		The time required	Day
	Server system failure	The number of case	Week
		The time required	Week
	Network failure	The number of case	Week
		The time required	Week

Countermeasures are derived by analyzing the transition of the change from the data collected for various lengths of time. An action plan is established and executed for areas that have poor performance. Areas can be broken into specific fields, which are productivity, reducing the use of paper documents, stable operation and management and competitiveness.

The decrease in transmission and receipt of e-documents and the increase in standby time of e-documents imply that the e-office system is not used effectively. Therefore, research on the causes of inefficiency, such as inconvenience of utilizing the system, program failure, computer system fault and preference for manual work, must be done, and then the countermeasures must be established according to the research. The following table describes the specific countermeasures.

Table VI-12 *Countermeasure against low productivity*

Transition of the change	Cause	Countermeasure(examples)
The decrease in transmission and reception of e-document	Server failure	<ul style="list-style-type: none"> Analyzing the disability factors(OS, DB, Application, Network, UPS and etc.) and designing/executing the step by step recovery plan Rearrangement of the regular inspection
	Computer system fault	<ul style="list-style-type: none"> Inspecting the disability factors(OS, Device, Power supply, External power and etc.)and taking recovery actions.
	Inconvenience of utilizing the system	<ul style="list-style-type: none"> Investigating the inconvenience of users and taking action to solve the problem. In case those users do not have much understanding of the system, user training has to be conducted.
The increase in standby time of e-document	System failure	<ul style="list-style-type: none"> Factors for delayed transmission and reception of e-document are analyzed and resolving the issues.

	Inconvenience of utilizing the system	<ul style="list-style-type: none"> The application is modified through the analysis of user complaints but connection with other systems has to be considered, too.
--	---------------------------------------	--

After the e-office system is operated, the causes why paper-saving is not effective has to be grasped and change in business process and user training have to be conducted. Countermeasure related to manually written document are described as follows:

Table VI-13 *Countermeasure if there is a preference for paper documents*

Transition of the change	Cause	Countermeasure(examples)
The increased of document written manually	Preference of manual work	<ul style="list-style-type: none"> Understanding the status of user training and carrying out retraining programs
	Excess of non-informatization tasks	<ul style="list-style-type: none"> Understanding the work flow and the efficiency of work so as to promote the next project which would solve the problem.
	Overly demanding copy	<ul style="list-style-type: none"> Documents for reporting are transformed into digital files as far as possible.

Regular inspection has to be conducted as to power outage, system failure and network failure and action plan based on the cause has to be executed. Countermeasure against system failure is described as follows:

Table VI-14 *Countermeasure against system failure*

Transition of the change	Cause	Countermeasure(examples)
The increase in system failure	Limitation of UPS capacity	<ul style="list-style-type: none"> Checking the durable years of UPS and establishing plan of purchasing new one before it expires.
	Failure of operating system	<ul style="list-style-type: none"> Analyzing the disability factors(OS, DB, Application, Storage capacity of hard disk) designing/executing the step by step recovery plan Rearrange the regular inspection
	Network failure	<ul style="list-style-type: none"> Inspection of server system(failure of power supply, deterioration, performance of OS) and taking measures Checking the failure of network line(disconnection, low speed) and taking measures but it takes long time to recover the network line so alternative method has to be considered.

VII. Feasibility Analysis

1. Feasibility Assessment

1.1 Overview

A feasibility assessment is conducted to verify the efficiency of investment and prudently kick off the new information project by evaluating its economics from a political, technical, qualitative and quantitative standpoint through a general survey.

- Methods of feasibility assessment

A political and technical evaluation is conducted qualitatively. Economic feasibility is determined through a cost-benefit analysis. Finally, the appropriateness of this e-office implementation project is determined, and comprehensive suggestions are made.

Factors of political and technical evaluation include the goal of project promotion, intent and preferences of project promotion, readiness of project, consistency of policy and promotion intent, risk factors in promoting the project, special evaluation of project, and ripple effects. In particular, the economic analysis requires ROI to be calculated clearly with quantization of measurable entry. This guarantees the objectivity of the assessment of project feasibility.

Table VII-1 *Criteria of assessment*

Classification	Criteria
Political evaluation	Does the top decision maker have the will to promote the information project?
	How do public officials prefer to implement the e-office system?
	How is preparation for implementing the e-office system conducted?
	Is it consistent with the city hall information policies?
	What is the impact of the e-office system?
Technical evaluation	Is it possible to develop the e-office system with the current informatization level of City Hall?
	How possible is it to implement e-office system, in reality?
	How technically different are the current operating system and the e-office system?
Economic evaluation	How much paper does it save per year?
	What business productivity effects are expected?
	Is B/C ration over 1.0?

* If B/C ration is over 1.0, economic feasibility can be evaluated if appropriate

1.2 Political feasibility assessment

1.2.1 Political intent

Dar es Salaam city council has emphasized the need for efficiency in public administrative management, through means such as expansion of municipality's receptive capacity, collaboration in integrated and linked areas, which are two aspects of six core policies of Dar es Salaam during 2010~2013. Those in charge of 13 divisions of city hall have emphasized introducing e-office and education & training as remedial measures for the steadily increasing paper usage, inefficiency in distributing documents, etc.

Since 2007, e-government projects such as statistics system, construction of network, and tax system have been promoted through collaboration with international cooperation. In 2012, the key person in public administrative management participated in an education program of WeGO and the 2nd General Assembly of WeGO in order to implement e-government through collaboration with international cooperation.

1.2.2 Ripple effects

Thus far, Dar es Salaam has used its information system for revenues, lands, HR, etc. But it belongs to the central government. It isn't possible to integrate or link. Inefficient tasks performed offline will be digitalized. This will lead to greater efficiency of public administrative management, a change in the perception of IT, and expansion of IT capacity. It will also be expected to expand to surrounding cities.

1.3 Technical feasibility assessment

Dar es Salaam has sufficient knowledge regarding the operation of information systems, as it introduced information systems in 2007. But only a few IT experts have been in charge of development and planning in the technical area. For this reason, advanced knowledge from other countries is required through continuous education and training.

2. Economic Analysis

2.1 Overview

Benefit-Cost analysis, which is most widely utilized in public sector, is used for economic analysis of Dar es Salaam's public administration information. In general, economics considerations related to informatization of the public sector can be divided into internal cost savings through increased work efficiency and external improvement of the civil services. But for public administration informatization, it is hard to measure cost savings in terms of the improvement of civil service. So it is analyzed to cost saving focused on internal efficiency improvement.

2.2 Cost-Benefit Analysis of Dar es Salaam's public administration informatization

With three indicators; annual paper savings, DCC internal work efficiency, work efficiency between DCC and three municipalities, a cost-benefit analysis was performed.

The estimated amount of cost savings is 108,000 USD, based on information obtained from interviews during the 1st field trip, and is calculated as an approximately 70% annual savings rate.

Table VII-2 *Effect of annual paper savings*

Indicator	Annual paper savings	Criterion	Value amount							
Economic value	Effect value amount (annual/USD)	108,000 USD								
	Calculation basis	<table border="1"> <tr> <td>Amount of paper usage</td> <td>7200 BOX</td> </tr> <tr> <td>Cost (USD)</td> <td>144,000</td> </tr> <tr> <td>Annual savings rate</td> <td>70%</td> </tr> <tr> <td>Annual cost savings</td> <td>100,800 USD</td> </tr> </table> <p>Amount of annual paper usage and price of an A4 box were the information obtained from interviews during the 1st field trip.</p>		Amount of paper usage	7200 BOX	Cost (USD)	144,000	Annual savings rate	70%	Annual cost savings
Amount of paper usage	7200 BOX									
Cost (USD)	144,000									
Annual savings rate	70%									
Annual cost savings	100,800 USD									

The second indicator is DCC internal work efficiency. This is calculated with data from interviews during the first field trip quantitatively. As a result, it was found that 403,920 USD was saved annually.

Table VII-3 *Effect of DCC internal work efficiency*

Indicator	DCC internal work efficiency	Criterion	Value amount
Economic value	Effect value amount (annual/USD)	403,920 USD	
	Calculation basis	The number of public officials who can utilize public administration information	300
		Estimated time saved per person (per day)	3hrs
		Average monthly income of public officials	300 USD
		Average hourly wage of public officials	1.7 USD
		Working days in a year	264 days
		The total estimated cost savings	403,920 USD
		<p>The DCC and three municipalities have a total of 650 public officials. Of these, 300 public officials can handle documents. The estimated time per person per day spent writing and delivering documents is 3 hrs.</p> <p>The monthly average income is approximately 300 USD. This is based on the results of interviews during the first field trip. The average hourly wage: a monthly income/a monthly working hours</p> <p>(Calculation) $300 \text{ USD} / 176 \text{ hr (monthly)} = 1.7 \text{ USD}$</p> <p>Estimated cost savings: number of public officials * estimated saving hours per person*hourly wage per person*working days(per year)</p> <p>(Calculation) $300 \text{ persons} * 3 \text{ hrs} * 1.7 \text{ USD} * 274 \text{ days} = 403,920 \text{ USD}$</p>	

The third indicator is work efficiency between DCC and three municipalities. DCC and the three municipalities are separated physically. So by saving the document delivery time through the realization of e-office, it is determined that there will be the following benefit.

Table VII-4 *Effect of work efficiency between DCC and three municipalities*

Indicator	Work efficiency between DCC and three municipalities	Criterion	Value amount
Economic value	Effect value amount (annual/USD)	2376 USD	

	Calculation basis		IMC-DCC	TMC-DCC	KMC-DCC
		On foot	10 min	10 min	20 min
		By car	5 min	5 min	10 min
		Average hour per day	1hr 30min	1hr 30min	3 hrs
		Total cost saving annually	2376 USD		

The distances between each three municipalities and DCC are calculated using the information obtained during the 1st field trip.

The average hours per day is calculated using the average time of on foot and by car *2.5 persons*5times

The total cost savings are calculated using the average time of on foot and by car*2.5 persons* 5times*the average hourly wage of public officials.

All three indicators and benefits are organized as follows:

Table VII-5 *Economical benefits*

Indicators	Economic value
Paper cost savings per year	100,800 USD
Internally working efficiency in DCC	403,920 USD
Working efficiency between DCC and three municipalities	2,376 USD
Total amount	507,906 USD

To estimate the economic effect of public administration informatization through a cost-benefit analysis, the total amount of investment cost and benefits are calculated as the present value.

According to the Korea Development Institute, in case of a discount rate, a 7~8% discount rate is applied to social overhead capital in developing countries. In developed countries, a 5~6% discount rate is applied to social overhead capital.

The future value amount of the investment is organized as follows:

Table VII-6 *Annual investment costs*

Years	Investment costs	Discount rate (7.5%)	Present value
2012	0	1	0
2013	1,312,000	0.9305	1,220,816
2014	630,000	0.8650	544,950
2015	240,000	0.8050	193,200
2016	0	0.7490	0
2017	0	0.6970	0
2018	0	0.6480	0
2019	0	0.6030	0
Total	2,182,000		1,958,966

Also, economic benefits are organized as follows:

Table VII-7 *Annual economic benefits and present value*

Years	Realization of economic benefits	Economic benefits	Discount rate (7.5%)	Present value
2012	0	0	1	0
2013	60	304,258	0.9305	238,112
2014	90	456,386	0.8650	394,774
2015	100	507,096	0.8050	408,719
2016	100	507,096	0.7490	375,707
2017	100	507,096	0.6970	353,446
2018	100	507,096	0.6480	346,854
2019	100	507,096	0.6030	305,779
Total		3,296,124		2,468,391

Therefore, feasibility of investment for Dar es Salaam's public administration information system is accepted with benefit-cost ratio of 1.26 and ROI (Return Of Investment) rate 26%.

Table VII-8 *Result of benefit-cost analysis*

Indicators	Value of indicators	Remark
Total benefit value amount	2,468,391 USD	
Total cost value amount	1,958,966 USD	
Benefit-Cost Ratio	1.26	BCR= total investment effect value amount/ investment cost
Net Present Value	509,425 USD	NPV= total investment effect value amount-investment cost
Rate of Return Of Investment	26%	ROI=NPV/ total investment cost

3. Final proposal

Through implementing e-office system, the efficient public administration management of Dar es Salaam's city hall is initiated, which will ultimately vitalize e-government implementation. Finally, it is evaluated to realize the expansion of City Hall's competitiveness as global city.

- Effective innovation of public administration management

By transforming Dar es Salaam's currently inefficient public administration management into a digital public administration culture, the efficiency of public administration will be maximized. Simultaneously, the improvement of public administration services, civil administration, reliability and transparency will be guaranteed through the informatization capacity building of public officials.

The benefit-cost ratio is calculated as 1.191. In terms of finance, the feasibility of this project is regarded as sufficient and it is also expected to grow the basis of e-government implementation. However, Dar es Salaam is highly dependent on foreign aid. As such, it is necessary to obtain official development assistance from international organizations and continuously build a network with international organizations.

- Reinforcement of global city competitiveness

African countries and cities such as Nigeria (Abuja), Cameroon (Yaoundé), Kenya (Nairobi), Senegal (Dakar), and Sudan (Khartoum) have tried to implement advanced e-government since 2010 in order to strengthen the global competitiveness of their cities and nations. As the best practices have shown, the main factors of city competitiveness that are based on the public administration information system are globalization, city infrastructure, welfare, security, and education. For this reason, it is considered that the public administration information system is the most urgent informatization project for Dar es Salaam.