

# **AN ASSESSMENT OF THE CONSTRAINTS IN IMPLEMENTING E-GOVERNMENT IN BAYELSA STATE**

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## **DEDICATION**

This thesis is dedicated to God Almighty (Christ) for His awesomeness and faithfulness in my life and career.

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## ABSTRACT

Like the developing and developed countries in the world, Bayelsa State has also embraced and is involved in the processing of various aspects of e-government, particularly in its ministries, agencies and departments. The study is based on judgemental methodology in using to solve the thesis problem, whose objectives are to know the main obstacles in implementing e-government in Bayelsa State, to know which obstacle have the most effect in implementing e-government in Bayelsa State, and research question of the following main obstacle in implementing e-governance in Bayelsa State, solutions guidelines where recommended. It was discovered at the end of the thesis that four factors were seen as the obstacle in implementing e-government in Bayelsa State which were Lack of IT infrastructure, Lack of IT skill, Lack of Legal Obstacle, Lack of Security Obstacle. A model of estimate was obtain as  $.Y=4.21X_1+5.2X_2+3.3X_3+3.9X_4+16.8$

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## **CHAPTER ONE**

### **1.0 INTRODUCTION**

#### **1.4 The Background of the Study**

During the last decade a revolution in Information and Communication Technologies [ICTs] is being witnessed. This revolution is not only changing the daily life of people but also changing characteristics of the interaction between the governments and their citizens. These changes, in turn, are rapidly being transformed into new forms of government, namely, E-Government.

E-government is defined as the use of technology, particularly the internet, as a means to deliver services to citizens, business, and other entities. Operational benefits from the introduction of internet-based e-commerce, for government and public sector companies, include the reduction in paperwork, the provision of continuous service availability to customers, a reduction in response time, and a reduction in error rate. All of these factors contribute to the general increase in the efficiency of government business. E-government encapsulates a wide variety of meanings ranging from policies that foster the development of information infrastructures to particular measures for combating the digital divide. It also involves a series of measures to improve the operation of the state's administrative functions. E-government is often now seen as a synonym, or a condition for good governance, which has been linked to the presence of democratic institutions and participation of its citizens.

Though e-government has clear benefits for businesses and government themselves, citizens actually receive the widest array of benefits from e-government. For the citizens, e-government can offer a huge range of information and services including information for research, government forms and services, public policy information, employment and business opportunities, voting information, tax filing, license registration or renewal, payment of fines, and

submission of comments to government officials. This means that the key to making e-government work is not technology but the citizens as there are still many people who do not or cannot access to computers and internet. This is due to the gap between citizens attribute including gender, education, income, age households, business, and geographic areas at different socioeconomic levels with regard to both their opportunities to access ICTs and their use of the Internet for a wide variety of activities [Jaeger, 2002].

Among the potential benefits of e-government are savings in money and time for the government, citizens, and businesses. Moreover, users of governmental information services will benefit by greater 24 hours a day, 7 days a week access to higher quality services. Most importantly, the relationship between government and citizens can evolve from its traditional hierarchical one to a more reciprocal one where citizens are genuine stakeholders in their government. Although the use of these technologies is rapidly growing in the economic and production systems of the world, they are not available “off the shelf”. They have to be understood, absorbed, and mastered [Schware and Deane, 2003]

## **1.5 Statement of Problem**

Information and communications technologies [ICTs] are playing an increasingly vital role in the daily lives of people, revolutionizing work and leisure and changing the rules of doing business. In the realm of government, ICT applications are promising to enhance the delivery of public goods and services to citizens not only by improving the process and management of government, but also by redefining the traditional concepts of citizenship and democracy.

Although E-government promises some striking opportunities to improve the business of any government, but this vision is not without a series obstacles.

Hurdles such as citizen awareness of electronic services and information, the “digital divide” and an exodus of skilled workers must be overcome to get from where we are today to the vision of e-government. Also, the multidimensionality and complexity of e-government initiatives implies the existence of a wide variety of challenges and barriers to its implementation and management.

Nowadays, government around the world is embracing electronic government. In every region of the globe, from developing countries to industrialized ones, national and local governments are putting critical information online, automating cumbersome process and interacting electronically with their citizens. Also, Bayelsa State has been embracing e-government to meet the mentioned aims.

However, there are obstacles against establishing e-government in Bayelsa State. Since the topic of my thesis is “ The Obstacles of implementing e-government in the Bayelsa State, so I tried to distinguished the existing obstacles in order to make a better environment for implementation of e-government.

## **1.6 Objective of Study**

1. To know the main obstacles in implementing e-government in Bayelsa State.
2. To know which obstacles have the most effect in implementing e-government in Bayelsa State.

## **1.4 Research Questions**

To fulfill the purpose of this research questions shall be addressed,

1. What are the main obstacles of implementing e-government in Bayelsa State?
2. Which obstacles have the most effect on implementing e-government in the BayelsaState.

3. What solutions or guidelines about e-Governance could be offered to Bayelsa State

### **1.8 Statement of Hypothesis**

H0: There are no main obstacles in implementing e-government in Bayelsa State.

Ha: There are main obstacles in implementing e-government in Bayelsa State.

### **1.9 Significance of the Study**

The purpose of this research is to prove a more appropriate framework for assessing e-government initiatives to provide better services to the people through IT system, and thus inform decision-making about the design, acquisition and application of such system. Since the benefits and drawbacks of the e-government system will be presented, proper evaluation and assessment of such systems, and their application in public service will also contribute in designing improved public services to the people. The research should contribute to academic knowledge about how best practice is established and how the implementation of IT systems in public service proceeds. It will contribute new information, and affirm or challenge existing knowledge, from the evaluation of the IT experience of selected government department in Bayelsa State.

Study aimed to evaluate the development and have understanding towards the best practices for e-government initiatives or IT transformation among the given categories which in detail has to do with the main obstacle of implementing e-government in Bayelsa state.

### **1.10 Scope/Limitation of the Study**

A largely descriptive and exploratory approach has been utilized in this research project. In addition examining the Bayelsa State context, this will encompass

discussion of the characteristics of existing framework of e-government implementation performance management, the need and motivations for such performance management evaluation, the practice's impact on the general governance in Bayelsa and the economic benefit of having performance management system. This study is likewise resulted to the introduction of a new private sector. This reflected the researcher's aim to asses the worth of such initiatives in Bayelsa governance through using a case study research methodology.

Moreover, the data gathering procedures are intended to provide a holistic approach enabling an in-depth investigation into the overall effect of modernizing the operation systems in Bayelsa Government Departments. This addresses the research questions of this and thus should achieve the academic objectives set by the researcher.

I shall focus on population from Ministries Department and Agencies(MDA,S) and the target population I will be dealing with are perment secretaries, directors of ministries, directors of finance and supply, chief administrative officers , IT professionals in the civil service ,accountants ,engineers, cashiers, confidential secretaries

These people will consist of those in the public and civil service. *They are more familiar with activities of governance in the public sector and their response* will guide us in the required direction.

## **CHAPTER TWO**

### **2.0 LITERATURE REVIEW**

#### **2.1 Historical Development of e-Government in Bayelsa State.**

##### **2.1.1 Definition of e-Government**

E-government, however, is a term which is used much less often and for which there are fewer definitions. This is rather odd, given that the topic of governances has been very topical for over a decade and many OECD governments have incorporated governance issues in their reform programmes [Khosrowpour 2005].

Richard Heeks propose that the term “e-government” should be seen to encompass all ICTs, but the key innovation is that of computer networks, from intranets to the internet, which have created a wealth of new digital connections with the following

1. Connections within government, permitting “joined-up thinking”.
2. Connections between government and NGO/citizens, strengthening accountability.
3. Connections between government and business/citizens, transforming service delivery.
4. Connections within and between NGOs, supporting learning and concerted action.
5. Connections within and between communities, building social and economic development.

As a result, Heeks suggests, the focus of e-governance shifts from just parts of e-administration, in the case-government, to also encompass e-citizens, e-services and e-society.

The joint UNESCO COMNET-IT study of e-governance defines governance as “the process by which society steers itself”. It goes on to state that: “ in this process, the interactions between the state, private enterprise and civil society are being increasingly conditioned and modified through the influence of ICTs ” [Aicholzer and Schmutzer 2000]. Examples of these shifts in dynamics are exemplified by:

1. Use of the Internet by civil society, NGOs and professional associations to mobilize opinion and influence decision-making processes that affect them;
2. Increasing electronic delivery of government and commercial services and information.
3. Electronic publication of draft legislation and statement of direction for public feedback.
4. On the infrastructure side, the increased adoption of e-enable community centers, the liberalization of telecommunication markets and trends towards web-enabled mobile telephony and digital television are facilitating this evolution.

Jim Melitski describes the “e-governance journey” as a continuum which begins with information provision when organizations and public agencies publish statistic information to the internet, but then moves on as public organizations become more advanced and are able to provide more dynamics, transactional services. Ultimately the continuum leads to organizational transformation, the transparency of the public agencies, increased citizen participation in government, and facilitation of democratic processes. E-government is at one end of government, and facilitation of democratic processes. Kei Ho claims that the early 1990s was the starting point of the concept of e-government. The reason for this was the use of electronic mail, list-servers and the World Wide Web to deliver

services and information to its citizens. By the end of the 1990s, governments worldwide were pursuing e-government projects to provide information and services to citizens and businesses electronically [Kei Ho 2002].

Increasingly recognized the problems of successfully developing ICT systems that are significant when set against the backdrop of funding allocated to e-government project.

The terms used to define e-government are nebulous and it means many things to different stakeholder groups. However, in extrapolating common strands from the taxonomies proposed by Al-Sebie and in the various definitions that have been proposed the following key issues feature prominently [Al-Sebie and Irani 2003 .

1. Technology to deliver government services electronically
2. Transaction processes and the transformation of e-government services.
3. Benefit portfolio for delivery of government services electronically to the public.
4. Citizens as the central focus of service delivery.
5. Delivery of government services through a single online point of access.

E-government is a concept that is in a seemingly constant state of development. Given the diversity of concepts of e-government around the world, creating a workable definition of e-government is becoming very difficult. A simple definition of electronic government is considering as such every governmental action that is based on the use of computer networks. On this basis, different types of interactions can be distinguished. G2C (Government to Citizen), G2B (Government to Business), G2G (Government to Government) and recently, G2NGO (Government to Non-Governmental Organizations) and G2NPO (Government to Non-profit Organizations).

Different countries have perceived the meaning and content of e-government differently, which is related to their specific political systems. The New Zealand government suggests that e-government is a way for governments to use the new technologies to provide people with more convenient access to government information and services, to improve the quality of the services and to provide greater opportunities to participate in our democratic institutions and processes. The Italian government uses the term e-government to refer to the use of modern ICTs in the processes of modernizing the administration of the state and suggests that it comprises the following categories of activity:

1. Direct provision of information for improving the internal operating efficiency of administrative units.
2. Activities which lead directly to the information of the delivery of services to citizens and companies, which often implies the integration provided by several administrative units.
3. Activities which lead directly to providing end users with electronic access to public services and to all relevant information about them.

The OCED states that the term e-government focuses on the use of new information and communication technologies (ICTs) by governments as applied to the full range of government functions. In particular, the networking potential offered by the Internet and related technologies has the potentials to transform the structures and operation of government.

These definitions have strong parallels with the definition adopted by some individual OECD member governments. The Cabinet Office in the UK, for example, suggests that e-government focuses on better services for citizens and businesses and more effective use of the Government's information resources. The

UK also make it clear that transactions may be included in e-government, if certain conditions are met. Specifically, it suggests that electronic service delivery means delivery through internet protocols and other ICT methods and includes delivery by telephone if the transaction carried out is electronically enabled.

Academics have suggested various definitions for e-government. For Lenk and Traunmuller, it can be seen as a guiding vision that includes all proposals for modernization and reorganization of public administration (Montagna 2005). Whiston and Davis have defined e-government as implementing cost-effective models for citizens, industry, federal employees, and other stakeholders to conduct business transactions online. Tapscott has defined e-government as an inter-networked government, and Nadler and Tushman emphasized that technology is only one of the structural materials. Sprechler considers e-government as a technology to help simplify and automate transactions between governments and constituents, businesses, or other governments. Burn and Robins explain e-government as governments' efforts to provide citizens with the information and services they need, using a range of information and communication technologies. Luling defines e-government as online government services, that is, any interaction one might have with any government of this term, many authors include [Whiston and Davis 2001]. In a wide interpretation of this term, many authors include projects related to e-Democracy, e-Voting, e-Assistance, e-Health ware, etc. in a more delimited definition that is developed in this article, it refers just to the administrative processes related to what is called e-Administration.

Due to these views, definitions of d-government range from “the use of information technology to free movement of information to overcome the physical bounds of traditional paper and physical based systems” to “the use of technology to enhance the access to and delivery of government services to benefit citizens, business partners and employees”. The common theme behind these definitions is

that e-government involves the automation or computerization of existing paper-based procedures that will prompt new styles of leadership, new ways of debating and deciding strategies, new ways of transacting business, new ways of listening to citizens and communities, and new ways of organizing and delivering information [Patricia 2003].

In other cases, we come to the concept of e-government starting from e-commerce since in both cases the same infrastructure, hardware and sometimes, software are used. The internet has great influence creating e-services. Boyer et al. define them as comprising all interactive services that are delivered on the internet using advanced telecommunications, information and multimedia technologies [Fountain 2001]. Also, some recent definitions see e-government as the various ways government uses information and communication technologies to remain relevant in the knowledge society. It maybe concluded that the generic aspects to a series of organizational and management problems; implementation, organizational change and behavior bureaucracy, etc. it is an environment that is not completely defined from the academic point of view and that has been attacked both from the theoretical point of view by specialists in political sciences, sociology and economics, and from the practical point of view by disciplines such as public politics and management, organizational behavior, etc.

### **2.1.3 The Advantages of e-Government.**

E-Government, if implemented properly, can improve current government services, increase accountability, result in more accurate and efficient delivery of services, reduce administrative costs and time spent on repetitive tasks for government employees, facilitate greater transparency in the administration of government, and allow greater access to services due to the around the clock availability of the internet. E-government also allows governments of offer

enhanced services by creating new ways to interact with the government, such as email, online meetings and forums for voicing opinion, online transaction, and online voting. A positive relationship has been identified between engagement on the internet and participation in civic and political issues. By creating viable internet presences, a government can generate interest in the political process among young citizens who frequently use the internet [Macintosh et al 2003]. E-government is even used in some locations as a method to reduce corruption in government functions, as a computer will not likely ask for a bribe to do its job. More important aims to help strengthen government's drive towards effective governance and increased transparency to better manage a country's social and economic resources for development.

The working Group on E-Government in the Developing World has identified four broad categories of goals commonly pursued for e-government. E-government is a means to accomplish these broader social goals, goals that move beyond more efficiency of government processes to that of overall reform and development. The existence goals of e-government are not listed in any Particular order of importance, as each country must determine its priorities in e-government. The existence goals are as follows:

**(a) Creating a better business environment.**

Technology is a proven catalyst in increasing productivity and economic growth, especially in rural and underserved communities. The use of ICTs in governance and the establishment of an e-government infrastructure help create a business friendly environment by streamlining the interaction and improving the interface between government and business, especially Small and Medium Enterprise (SMEs). By cutting our redundancies in procedures and emphasizing immediate

and efficient delivery of services, e-government creates the conditions that attract investors and investment.

This goal is highly dependent on the country, its industry strengths and its global competitive advantage. Once identified, these should be incorporated in the country's e-government strategy, with agencies, the bureaucracy and public services aligned towards promoting these sectors. E-government, for example, can open new markets to local businesses by opening up the government procurement process, making it more competitive, fair, effective and efficient.

**(b) Strengthening good governance and broadening public participation.**

Promoting transparency and accountability in government through the proliferation of ICT in managing and operations also opens opportunities for citizens to be more actively involved in the policy and decision-making processes of government. As a major tool in building a tradition of transparency and good governance, e-government can advance the fight against corruption. However, e-government by itself will not put an end to corruption. It must be accompanied by other mechanisms to be fully effective. At the same time, e-government facilitates the swift delivery of complete information. The broad dissemination of information helps empower citizens and facilitate informed decision-making. The transparency of information will not only further democracy but also instill a sense of accountability among government leaders and compel effective governance [Seifert and Peterson, 2002].

**(c) Improving the productivity and efficiency of government agencies.**

Reengineering processes and procedures to cut red tape facilitate delivery of services, increase productivity of the bureaucracy, and increase savings are inherent benefits in e-government. More specifically, e-government can help:

1. Increase government staff productivity, reduce overhead from fewer offices and less paper management, improve capacity for planning management by government [using better tools and improving access to critical information, for example, in city planning through the use of a GIS] and increase revenue as businesses and citizens actually apply for more licenses, due to the fact that the process is much easier and less corrupt.
2. Induce cost savings in the medium to the long term. In the short term, however, staffing and costs tend to increase as government must offer multiple delivery platforms [both the traditional and e-government] during the initial transition.
3. Streamline the operations of government. Most government processes have evolved over many years, and usually involve many steps, task, and activities. Streamlining government processes through ICT eliminate redundant procedures and helps to reduce red tape.

**(d) Improving the quality of life.**

ICT makes it possible for government to reach marginalized groups and communities and improve their quality of life. This means empowering them through their participation in the political process, as well as delivering much-needed public goods and services. Ultimately, the goal of e-government is to enhance the interaction between three main actors in society, government, citizens and business, in order to stimulate political, social and economic progress in the country [Aicholzer, Schmoltzer, 2000].

E-government has enormous potential to improve and advance the interactions between citizen, business and government. A mature, effective e-government has the capacity to create new methods and avenues for participation in government,

acting as an endless wire, electronically threading together citizens, businesses, and all levels of government in a nation. E-government covering changes of governance in a two fold manner: (1)

### **2.1.3 History of e-Government in Bayelsa State.**

The Government of Bayelsa state, established the Due Process and e-Governance Bureau for the purpose of transforming the way government business is undertaken by enthroning the culture of responsibility, accountability and transparency. It is using information and communication technology (I.C.T) to achieve good governance.

#### **This is simply:**

1. e-Responsibility: enthroning the culture of responsibility
2. e-Accountability: enthroning the culture of accountability
- 3 a-Transparency: enthroning the culture of financial transparency.

The Bayelsa State e-government bureau was launched in 2008, with the opening of the due process and e-governance bureau, today the e-governance bureau have been separated from the due process bureau, the e-governance bureau is headed by the senior special assistance to the governor on e-governance after the launch various request for various proposals where requested for the implementation, where various multinationals bided. The request detailed both technical and commercial aspect of it

After the request an e-governance retreat was held in brass local government area of Bayelsa state in July 2008 where emphases of

E-governance to improve government activities where properly highlighted

In 2009, implementation started with the training of 5000 civil servant sponsored by the state government

In 2010 certain infrastructures for e-government implementation was procured. Various e-government phases' strategies are in numerated below.

#### **2.1.4 e-Government Strategy.**

##### **(a) Focus for Phase1**

Enable its staff and contractors to coordinate and deliver projects across the State.

Manage resources

Define policy

Facilitate greater control and transparency of projects and Government activities within the State.

##### **(b) Phase 1 deliverables**

Communication and information infrastructure servers, phones, computers network, desktop office software, employee ID card system etc.

##### **(c) Bayelsa e-Governance**

To work towards the Sustainable Development of Bayelsa State by ensuring procurement best practice by all MDAs (Ministries, Departments and Agencies) enabling Sustainable Development through the integration of ICT solutions state-wide; and ensuring that the state Sustainable Development Strategy is properly and adequately deployed.

#### **(d) Bayelsa e-Governance Goals**

1. To improve good governance, including transparency, accountability and civil society participation in governance by the deployment of e-Governance Strategies and technologies.
2. To eliminate all forms of fraud and corruption in the public service through the deployment of appropriate technologies and procurement best practice and regulations.
3. To improve the state's economy by growing the ICT sector; ensuring savings through better procurement practices and by deploying ICT to all state transactions and other economic activities.

#### **(e) Bayelsa e-Governance Vision**

To support the Bayelsa Vision of a united, secure and prosperous society by providing innovations and information and communication technologies to meet the challenges of sustainable developed while ensuring procurement best practice and the proper coordination of the Bayelsa state Sustainable Development Strategy.

#### **(f) Bayelsa e-Governance Mandate**

1. To deploy e-Government coordination systems for Finance, Project Administration Electronic Document Management, Human Resources Management, Schools Administration Geographic and Land Management, etc.

2. To construct an information and communication strategy that can be applied to the Sustainable Development of Bayelsa State and the growth of the ICT sector.
3. To institute processes that will evolve a strong outsourcing sector in Bayelsa State.
4. To build state-wide ICT infrastructure including fibre optic backbone, reliable internet sources (fibre optic and V-SAT) for data convergence to meet household, business, education and other applications.
5. To continue training to build capacity within the public service in procurement best practice, ICT use and innovation and sustainable development strategy, construction and implementation.

**(g) Bayelsa e-Governance Objective**

1. Harmonization of existing government policies and practices on public procurement and ensuring probity, accountability and transparency in the procurement process.
2. Establishment of pricing standards and benchmarks.
3. Ensuring the application of fair, competitive, transparent, value-for-money standards and practices for the procurement and disposal of public assets and services; and
4. Attainment of transparency, competitiveness, cost effectiveness and professionalism in the public procurement system.

**(h) Bayelsa e-Governance Functions**

1. Formulation of general policies relating to public procurement for the approval of the State Executive Council, including regulations, guidelines, directives, instructions, technical notes and manuals.
2. Maintaining a list of procurement entities and subject to the approval of the Executive Council, make regulations or guidelines for the composition, functions, powers and procedure of the Procurement Board of any procurement entity;
3. Publicizing and explaining the provisions of the Public Procurement Law;
4. Certifying all procurement prior to award of contract in line with the thresholds approved by the Council.
5. Certifying all contract awards within the monetary review threshold defined by the State Executive Council on Public procurement.
6. Certifying all procurement in line with the establishment threshold before award and conducting process compliance review for procurement below the threshold.
7. Monitoring procurement and ensuring compliance with statutory and contracts requirements;
8. Monitoring the prices of tendered items and keeping a database of standard prices.
9. Maintaining a database of the particulars classification and categorization of suppliers, contractors and services providers;

10. Collating and maintaining in an archival system all procurement plans and information covered by the public procurement research and surveys.
11. Organizing training and development programs for procurement professionals.
12. Periodically review of the socio-economic effects of the policies on procurement and advising the Executive Council accordingly;
13. Advising the State Government on issues relating to public procurement.

**(i) Bayelsa e-Governance policy statement**

1. Enforcement of the monetary and prior review threshold approved by the Executive Council for the application of the provisions of the public procurement law by procurement entities.
2. Issuance of “Certificate of No Objection” for contract award within the prior review threshold for all procurements within the purview of the Law and “Certificate of No Objection” for payments at different stages of. Payment.
3. Stipulating to procurement entities the procurement and documentation prerequisite for the issuance of the “Certification of No Objection”.
4. Inspect or review any procurement transaction to ensure compliance with the law, if the need arises.
5. Review and determine violations by procurement entities.
6. Recommend to the executive council where there are persistent or serious breaches of the Law and guidelines.
7. Investigate and act upon compliant received

8. Nullify the whole or any part of any procurement proceeding or award which contravenes the Law: and
9. Do such other directives and perform such other functions as may be necessary to achieve the objectives of the law.
10. Request for and obtain from any procurement entity information including reports, memoranda and audited accounts, and other information; and
11. Liaise or collaborate with relevant bodies or institutions national or international for effective performance.

**Note:**

The Bayelsa State Public Procurement Law applies only to Ministries, Department and Agencies of the State Government (MDAs); agencies set up the State Government to provide public service and financed from public fund; public hospitals, schools, colleges and universities; and State-owned enterprises that utilize public funds. Procurement of special goods, works and services involving public security are excluded unless the governor gives approval.

**(j.) Bayelsa e-Governance Overreaching Objective**

1. Enabling Sustainable Development of Bayelsa State through the integration of ICT solutions state-wide.
2. Ensuring that the State's Sustainable Development Strategy is properly and adequately deployed.
3. Enhancing transparency in government through electronic handling of transactions in order to reduce corruption and thereby reinforce political credibility/accountability.

## **(k) E-Governance Network Infrastructure**

### **Aim:**

1. To manage government information and deliver services to the public and business partners effectively.

## **(L) Bayelsa e-Governance Project Objective.**

1. Provision of a scalable, reliable, secure, resilient and highly available routed and switched IP communication network.
2. Provision of an IP (Internet Protocol) communication network that can adequately support the hardware and software of collaborative applications to drive the e-Government business goals. procedure of the Procurement Board of any procurement entity;

## **(m) Bayelsa e-Governance Infrastructure Functions**

- I. Point to point radio solutions and active sites
- I. N.O.C (Network Operations Centre)
- II. Government House Complex
- III. Governor's lodge
- IV. Civil Service Commission
- V. State House of Assembly
- VI. Ministry of Finance

Phones Deployed. 83 pieces of Alcatel phones.

100% of SOC (System on a chip) completion in 11 sites.

100% completion of excavation of fibre route in the first phase

100% pulling and splicing of fibre optics cable -1<sup>st</sup> phase

65% completion of the installation and configuration of Cisco network

## **(2) POWER**

- i. Installation of 100KVA 3/3 gamatronics stabilizer
- ii. Installation of 50KVA gamatronics UPS
- iii. Installation of 100A 3/3 gamatronics rectifier

## **(3) VOICE**

- i. Installation of the Appliance servers
- ii. Network configuration of appliance servers; Media gateways, etc.
- iii. Installation of VPM 35 Voice mail processor
- iv. Installation of 4059 IP attendants console
- v. Installation of CCS supervision console

## **4. Capabilities of the Erp System.**

- It will integrate information across all MDAs in the state
- It will facilitate the flow of information among the different functions and processes of MDAs
- It will track a wide range of events in the MDAs in an integrated way
- It will help to plan future activities based on the events in the MDAs
- It will support analysis of trends to improve performance
- It will allow users to input data once and access it in other modules in a real time

- It will help to share common data and practices across the MDAs
- It will assist in the re-engineering of the processes in the MDAs.

## **5. HUMAN RESOURCES MANAGEMENT**

- Human resources
- Payroll

## **6 EXPECTED BENEFITS**

- Improved financial controls.
- Lower procurement costs
- Reduced paper flow
- Improved exception reporting capabilities
- Improved MDAs visibility via common database system integration
- Improved operational efficiency
- Improved decision by King via timely and accurate information
- Improved state-wide communication
- Improved employee satisfaction index.

## **(7) Enterprise Resources Planning (ERP)**

What is Enterprise Resource Planning (ERP)?

Enterprise Resource Planning (ERP) is a packaged business software system that processes transactions on a single software platform and a single database. The database in use here is Oracle.

### **(n) Modules to be Deployed**

#### **1. Financial/Procurement Management**

- General Ledger
- Public sector budgeting

- Accounts payable
- Accounts receivable
- Cash management
- Fixed Assets

## **2.1.5 Report on the Bayelsa State Website and other IT Infrastructure**

### **(a) Bayelsa state Website**

Bayelsa State website has grown from just website being a static website to a more dynamic and interactive.

Visits to the website increased in the past few months from a meager average figure of 5,000 visits per month to 42,000 visits monthly. We believe these figures will increase when work is finished on the news feed.

The hosting plan was upgraded from shared hosting packages to a dedicated virtual server. This server will be able to cater for the hosting needs of other Ministries and MDAs in the Bayelsa State Government.

### **(b)HARDWARE**

To achieve full e-Governance implementation, the Bayelsa State Government has distributed over two thousand (2,000) desktop computers, printers, scanners, laptops and several units of UPS to various MDAs to improve performances in their work place. it is expected that at the end of the project, each functional desk should have a working system which will be networked across the MDAs.

### **(c)TRAINING**

To bring civil servants to the level where they can fully participate in the process, the bureau has trained over 2,000 civil servants in computer appreciation course and other introductory and professional training are ongoing.

## **2.2 Models and Theories Relevant to Research**

The traditional model of government is not working any longer and the emerging vast networks of interacting public, private, and voluntary organizations could not be served using the traditional setups of single administrations for single services and specific functions. Responding to complex problems of societies and providing solutions could only be provided through collaboration between government body members, and also with internal as well as external entities, including other governments.

To develop a robust e-government infrastructure demands a staged approach, which develops from the immature to the mature, where the latter offers full integration with public administration, will have required the fundamental re-think and change of government and its constituent components. An advantage of having a staged approach is the ability to generate momentum that can be maintained. This will allow public sector organizations to attract more and more citizens to using e-services to a point where it becomes natural, as well as securing business trust and confidence to deal with an e-government portal as part of their standard service chain operations.

The process of implementing an e-government system passes through different stages until it reaches its highest potential stage. That is the integration of government information and services in different departments, for different functions and at different levels of the government system thus, enabling customers to obtain government services and information online from a single point of access.

The normative literature is in agreement that there are different stages in e-government provision. An evolutionary perspective where the information systems and grows and evolves with confidence, acceptance and resources is one advocated, with governments going through a number of stages before reaching

maturity. The approaches can be divided into concepts that focus on aspects of development, i.e. simple information portals, providing communication facilities, transaction process, and finally, fully realizing the integration of government systems (United Nation, 2005). There remain alack of consensus regarding how many stages of maturity an e-government system goes through. Some believe that only three stages are necessary, others believe that four, five or even six stages are required. The various models of the stages of e-government and their perceptions can be seen below.

### **(a) Howard's Model**

Howard divides the stages of an e-government system into three, namely: Publication, Interaction and Transaction [Howard, 2001].

- I. Publication Stage:** means information about activities of government available online.
- II. Interaction Stage:** Enables citizens to have simple interactions with their government such as sending e-mail or chat rooms.
- III. Transaction Stage:** Provides citizens with full benefits from transactions over the internet, such as applying for programs and services, purchasing licenses and permits.

However, there is a short coming in Howard's study because it does not go as far as an integration stage. This is important because it is only the integration stage that facilitates any flow of government information between different levels of agencies and departments. This is essential to enable the citizen to obtain government services fro ma single point. Although the integration stage of e-government has been given different names, including transformation, almost all normative sources have included it as one of their final stages.

### **(b)Chandler and Emmanuel’s Model**

Chandler and Emmanuel divided e-government implementation into four stages [Chandler and Emmanuel 2002]

- I. **Information Stage:** Delivery of government services online. One-way communication between government and citizens.
- II. **Interaction Stage:** Simple interaction between citizens and governments.
- III. **Transaction Stage:** Services that enable transactions of value between citizens and government.
- IV. **Integration Stage:** Integration of services across the agencies and departments of government.

Chandler and Emmanuel, mention the stage of interaction. This makes an important distinction between facilitating unrestricted two way communication, with technologies like email and discussion boards, and explicit transaction processing whereby citizens carry out a complete transaction via an online interface.

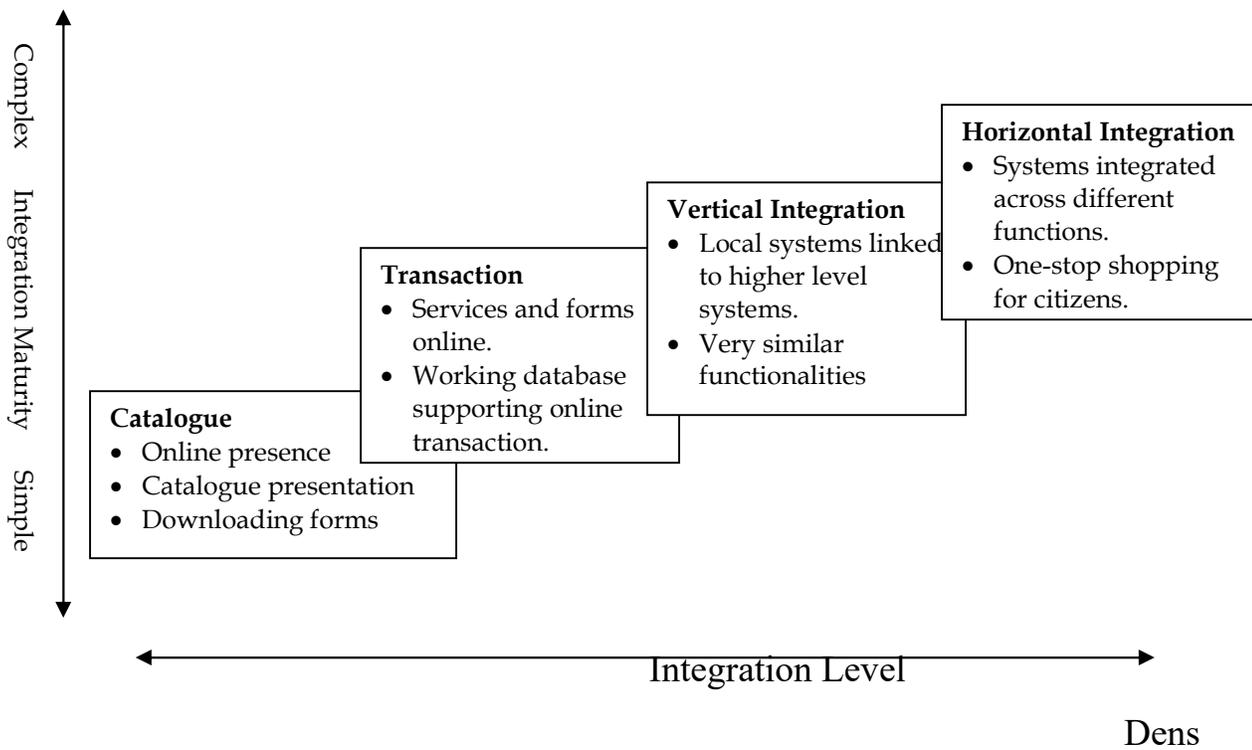
### **(c)Layne and Lee’s Model**

Layne and Lee have divided e-government implementation into four stages and most, including [Layne and Lee 2001]

- I. **Cataloguing Stage:** Creating websites and making government information and services available online.
- II. **Transaction Stage:** Enables citizens to interact with their governments electronically.
- III. **Vertical Integration Stage:** Focuses on integrating disparate levels.
- IV. **Horizontal Integration Stage:** Focuses on integration of government services for different functions horizontally.

Layne and Lee do not mention the interaction stage, instead, they move directly to the transaction stage. However, they have provided a unique contribution to the division of the stages of e-government by dividing the integration stage into vertical and horizontal integration phases. Traditionally government departments and organizations have maintaining separate database that are not normally connected to other government departments at the same level or with similar departments at a local or central level. The integration stage addresses breaking down these barriers [Layne and Lee 2001].

The successful development of an e-government infrastructure depends upon a clear implementation program and framework. Government development teams must layout a road map for the adoption process by fitting every stage of adoption into the appropriate timetable and determining the ICT and organizational requirements and barriers before starting to implement and adopt the initiative. Regardless of integration types, both levels of integration demand specific integration solutions, which in figure 2.1 have been mapped onto the work of Layne and Lee.



**Figure 2.1 Mapping technologies to e-government stages (Layne and Lee, 2001)**

#### **(d) United Nations Dpepa Model**

A report prepared by the United Nations (Division for Public Economics and Public Administration) divides e-government into five stages including [Howard, 2001]

- I. Emerging Stage:** Creating a government website with limited or static information.
- II. Enhanced Stage:** Updating information regularly.
- III. Interactive Stage:** Provides users with reasonable levels of interaction enabling them to download forms.
- IV. Transactional Stage:** Enables users to complete transactions such as obtaining visas, licenses, passports, birth and death records, etc, online safely and securely.
- V. Seamless or fully Stage:** Provides services across administrative and departmental lines with the highest level of integration.

Division for Public Economics and Public Administration splits the ‘publish’ stage or the ‘information stage into two by adding a new ‘enhanced’ stage that is not mentioned within any of the three and four stages model discussed earlier.

#### **(e) Deloitte’s Model**

Research by Deloitte, cited in Silcock [Ebrahim et al, 2003], divides e-government into six stages including:

- I. Information Publishing Stage:** creates websites by departments and agencies as a one-way communication.

- II. **Official Two-way Transaction Stage:** enables customers to have electronic interaction with government services such as renewing television licenses and paying parking tickets.
- III. **Multi-Purpose Portals Stage:** enables customers to obtain government services and information from a single point.
- IV. **Portal Personalization Stage:** provide customers with opportunities to customize portals according to their need.
- V. **Clustering of Common Service Stage:** with portals becoming better, government department will disappear where government will seek to gather common services to hurry the process of delivery.
- VI. **Full Integration and Enterprise Transformation Stage:** government departments will disappear others will appear; some departments will keep the same name s but become entirely different internally.

As with Layne and Lee, the interaction stage is not preset and the model moves directly to the transaction stage from stage one (information). It should also be noted that from stage three to stage five, the Deloitte focuses on delivery of government services from a single point by using a portal which provides a full range of services and enables customers to make easy and single access to government services without the need to know which agency is responsible for which service. It seems stage 3, 5 and 6 have similar functions, but do not make something like Layne and Lee's clear distinction between vertical and horizontal integration, they could be embedded or encompassed into one integration stage. Stage 4 (portal personalization) is clearly an enhancement to the quality of service.

The various models and the aforementioned stages of e-government and their perceptions have been summarized in the table 2.1 the purpose of this table is to identify and locate the transaction stage within the different models and the different models presented within the table will be discussed briefly.

**Table 2.1: Classification of the Stages of e-Government Implementation**

<b>Model</b>	<b>Stage</b>	<b>Measuring Index</b>
<b>Howard</b>	<b>Stage 1: Publish</b>	Percentage of information about activities of government available online.
	<b>Stage 2: Interact</b>	Number of citizens to have simple interactions with their governments such as sending e-number of mail or ‘chat rooms’.
	<b>Stage 3: Transact</b>	Percentage of full benefits from transactions over the Internet, such as applying for programs and services, purchasing licenses and permits.
<b>Chandler and Emmanuel</b>	<b>Stage1: Information</b>	Percentage of government services online one-way communication between government and citizens.
	<b>Stage 2: Interaction</b>	Amount of interaction between citizens and governments.
	<b>Stage 3: Transaction</b>	Percentage of services that enable transactions of value between citizens & government.
	<b>Stage 4: Integration</b>	Percentage of integration of services across the agencies and departments of government.
<b>Layne and Lee</b>	<b>Stage 1: Cataloguing</b>	Number of websites and making government information and services available online.
	<b>Stage 2: Transaction</b>	Percentage of citizens to interact with their governments electronically.
	<b>Stage 3: Vertical Integration</b>	Degree of on integrating disparate at different levels.
	<b>Stage 4: Horizontal Integration</b>	Degree of on integration of government services for different functions horizontally.
<b>United Nations – DPEPA</b>	<b>Stage 1: Emerging</b>	Number of government website with limited/static information.
	<b>Stage 2: Enhanced</b>	Percentage of updated information
	<b>Stage 3: Interactive</b>	Number of users with reasonable levels of interaction enabling them to download forms.
	<b>Stage 4: Transactional</b>	Number of users to complete transactions such as obtaining visas, licenses, passports, etc. online safely and securely.
	<b>Stage 5: Seamless or fully integrated</b>	Percentage of services across administrative and departmental lines with the highest level of integration.
<b>Deloitte Research</b>	<b>Stage 1: Information publishing</b>	Number of websites by departments and agencies. One-way communication.
	<b>Stage 2: Official two-way transactions</b>	Number of customers to have electronic interaction with government services such as renewing television licenses & paying parking tickets.
	<b>Stage 3: Multi-purpose portals</b>	Number of customers to obtain government services and information from a single tickets.
	<b>Stage 4: Portal personalization</b>	Number of customers with opportunities to customize portals according to their need.
	<b>Stage 5: Clustering of common services.</b>	Percentage of portals becoming better, government departments will disappear where government will seek to gather common services to hurry the process of delivery.
	<b>Stage 6: Full integration</b>	Number of government departments will disappear others will appear; some departments will keep the same names but become entirely different internally.

With regard to the different classification of the stages of e-government implementation, we can summarize the advantages and disadvantages of these models: Howard divides the stages of an e-government system into three, namely: publication, interaction, and transaction. However, there is a shortcoming in Howard's study because it does not go as far as an integration stage. This is important because it is only the integration stage that facilitates any flow of government information between different levels of agencies and departments [Howard 2001]. This is essential to enable the citizen to obtain government services from a single point. Although the integration stage of e-government has been given different names, including transformation, almost all normative sources have included it as one of their final stages.

Many studies such as Chandler and Emmanuel [Chandler and Emmanuel, 2002] and Layne and Lee [Layne and Lee, 2001] have divided e-government into four stages and most, including Chandler and Emmanuel mention the stage of interaction. This makes an important distinction between facilitating unrestricted two way communication, with technologies like email and discussion boards, and explicit transaction processing whereby citizens carry out a complete transaction stage, instead, they move directly to the transaction stage. However, they are provided a unique contribution to the division of the stages of e-government by dividing the integration stage into vertical and horizontal integration phases [Layne and Lee, 2001].

A few studies, Deloitte and DPEPA's, have divided e-government systems into five and six stages. These methodologies split the 'publish' stage or the 'information' ones into two by adding a new 'enhanced' stage that is not mentioned within any of the three and four stages model discussed earlier. Research by Deloitte [Ebrahim et al, 2003], divides e-government into six stages. As with Layne and Lee, the interaction stage is not preset and the model moves

directly to the transaction stage from stage one (information). It should be noted that from the stage three to stage five, the Deloitte research focuses on delivery of government services from a single point by using a portal which provides a full range of services and enables customers to make easy and single access to government services without the need to know which agency is responsible for which service. It seems that stages 3, 5 and 6 have similar functionality, but do not make something like Layne and Lee's clear distinction between vertical and horizontal integration, they could be embedded or encompassed into one integration stage. Stage 4 (portal personalization) is clearly an enhancement to the quality of service before reaching a conceptual framework for e-government model in Bayelsa State, we should take Bayelsa challenges and problems in field of e-government into consideration.

### **2.2.1 e-Government Readiness**

There are many of factors that promote the countries to be e-ready;

- I. The enormous advantages that ICT will bring along by. It will not only lead to a Simple, Moral, Accountable, Responsive and Transparent (SMART) Government, it will also lead to making the citizens life easy. ICT promises various social and economical benefits as well.
- II. Secondly, the countries are facing a threat of being left behind.

### **2.2.2 e-Government Architecture Framework**

A public sector organization planning to adopt an e-government initiative and formulate its IT strategies must evaluate its business models and select appropriate technology solutions that deliver on central government policy. Although there are significant differences in the composition of organizations,

there are a number of technologies and systems infrastructure that many organizations need to adopt in common to provide facilities for the integration of their systems in a way that enables them to build a platform for sharing their knowledge resources. For example, an e-government portal requires a common and integrated architecture framework that allows different organizations, provinces, and municipalities to share and exchange data, independent of formats, devices and underlying architecture [Sharma and Gupta, 2002]. Therefore, organization must have a clear understanding of architecture frameworks from both the technical and information management level.

The e-government architecture defines the standards, infrastructure components, applications, technologies, business model and guidelines for electronic commerce among and between organizations that facilitates the interaction of the government and promotes group productivity. A number of studies have discussed the architecture or components of e-government, such as Cabinet Office, Heeks, Sharma and Gupta, Office of Information Technology and Daniels. However, these studies did not address the aspect of business management model and how it is aligned with the IT infrastructure. Since e-government goes beyond the IT infrastructure, the contribution of this study is to provide an integrated architecture framework for e-government that represent the alignment of IT infrastructure with business process management in public sector organizations. In this section discusses the required business process for the successful implementation and management of e-government activities and also develop the framework architecture to incorporate it with integration applications and interaction tools. The reason for this is that they already play a significant role in enhance business process within organizations and their applications such as e-business, e-commerce, enterprise application integration [EAI], web services, etc. so, their inclusion was considered necessary. The significance of integration

technologies have been discussed and classified under the e-business layer section since these technologies and approaches are often and need to be used in e-government projects.

The reason is that they are designed to support e-business and e-commerce applications. The framework is structured into four layers connected through two-direction arrows which present the hierarchical level of e-government implementation and portray the logical connection of each relevant layer that allow two-way transmission of data and services. The top level of the framework represents the access layer that illustrates who might use the government services and what are the channels of access. Throughout these channels, the e-government portal should integrate all government information and services from disparate departments and organizations, which represent the e-government layer. In connection to the e-government layer, the e-business layer is emerged to manipulate and integrate government data sources across government bodies and make information and services available to the e-government portal in real-time. In the bottom level of the framework, the ICT infrastructure of e-government should be built to reach out all parts of government and hence, support the e-government operation and provide effective and reliable e-government services. This section now discusses the architecture that forms the framework of e-government architecture project.

Figure 2.5 shows the architecture framework of e-government which is divided into four layers: access layer, e-government layer, e-business layer, and infrastructure layer [Chan, and Chung, 2002].

### **(a) Access Layer**

Involves the channels that government users can access the various governments, and other Government users can be citizens, business, employees, other governments, and other community members. Access channels are critical components of e-government. As shown in figure 2.2, they consist of online and offline channels or routes of distribution through which products, services and information are used, accessed and communicated by multiple technologies. For example, web sites accessible from PCs, kiosks, mobile phone [WAP], digital TV, and call and contact centers. This layer considers of the simplest level of e-government architecture, since it is controlled and managed by government user. However, it is essential that public sector organizations provide a common way of finding all government information and services, maintain channel coordination, create a common look and feel across different channels, and comply with the guidelines of technical standards [Erasala et al. 2003].

### **(b) e-Government Layer**

This layer is about integrating digital data of various organizations into a web-portal of government services, in the form of a one-stop e-government portal. This may result in improved access to government resources, reduces service-processing costs, and enable organizations to provide a higher quality of service.

Government web portal are emerging as a key priority for public sector organizations, as they develop their e-government initiative and create electronic interaction between government and citizens (G2C), government and business (G2B), government and its employees (G2E), and government and government (G2G), According to Chan and Chug, this layer allows the user to use the web browser to get all corporate information needed through single window. The portal has a web based front-end application that allows dispersed source of information

to be linked together. Governments can access and manage all data and information while providing users with the opportunity to customize what they need from information sources (Ersala et,al. 2003). For example, when a citizen moves from his/her residence, there is no need to update this information to all organizations that require a current address. The use of an integrated portal will reduce overhead and improve information flow. Without such a resource, citizens will need to identify relevant organizations to contact, complete and submit change of address forms for each, which is clearly time consuming and non-value adding. So the use of an integrated web portal is increasingly becoming an important component of e-government infrastructure, since it allows citizens to reduce this cumbersome process to a single step.

Since government s are very complex organizations with hundreds of agencies, departments, directorates, commissions, and regulatory bodies, a single government portal is still in its infancy stage. One of the reasons is that it is difficult to determine which features and applications are most appropriate for creating a high-functioning e-government portal. Another reason is technical; providing integrated services can only be realized if all public authorities are interconnected and their systems are interoperable. It needs comprehensive technology, systems integration and project management skills as will be explained in e-business layer. IBM reports three levels of complexity: information publishing and linking of existing web sites, single organization transactions, and transactions requiring integration of multiple organizations (Chan, and Chung, 2002).

From a portal management perspective, it is necessary to maintain user interface construction abilities to increase user control, such as search capabilities, interactive media, and graphic design; and other key features such as e-mail, calendars, instant messaging, and chat areas. As well as including tools to register, dynamically recognize and classify users; and giving the organization the ability to

customize content, information access, and structure to meet the specific needs of employees. Security is another key element of this layer, through deploying government authentication and privacy standards to secure online transactions and protect the portal contents.

**(b) e-Business Layer**

This layer is focused on using ICT applications and tools to harness a networks of trust, knowledge sharing and information processing that takes place both within and between organizations. Practically, it integrates front-end- e-government layer applications, such as online catalogues and transaction interface in the government portal with back-end activities such as existing databases and data warehouse.

The implementation of this layer will make a strong foundation to build single e-government portal as stated in e-government layer and also support the relationship and interaction between G2G and G2E. It provides a seamless, automatic and real-time communication between their systems at both a data and process level. In terms of G2E, it enable employees to interact efficiently with other departments and agencies concerning human resource information, retirement plan, latest news releases, and drawing on the available resources in an optimal way. This results in supporting decision-making in the formation of new value chains, and reinforces the existing business partner's relationship in form of electronic procurement.

The integration of various IT applications and components inside and outside the organizational boundary remains costly and time consuming, due to the heterogeneity of the computing environments involved in public sector. As well, the legacy systems and applications across government organization need to be upgraded to a web-enabled level to extend their functionalities beyond

organizational boundaries and to achieve full communication between all the information systems and their processes.

Traditionally, government department and organizations have maintained separate databases that are not connected to other government departments at the same level or even different level such as the local or central government level. This create barriers communication, and therefore, makes implementation of e-government single portal not easy. Therefore, the integration of government database systems, processes and applications play a critical role in this layer since e-government relies to a significant degree on existing basic government data, existing systems and existing processes. This layer implies computer systems and applications of different public departments and organizations are being connected to or at least communicating with each other. As a result, the transaction from one system can be interchanged with another system. For instance, if a citizen performs a certain transaction at a local department or agency, the information and results of the transaction will be propagated to the city or central counterpart. Consequently, this connection will result in easier, more flexible and reliable access to government data, as well as improves the business processes and operations of organization and management of government IT resources. This should result in significant financial savings, by eliminating redundant data collection, increase the speed of transactions, improve the consistency of outcomes, and increase opportunities for cost-sharing partnership (Moodley, 2003).

The continual development in ICTs in the last two decades has presented private sector organizations with many choices of applications and technologies to support infrastructure integration of e-business applications and systems which can benefit the public sector to implement effective e-government portal and support their business process. Common approaches for e-business layer involve integrating legacy systems, or computer systems that are not connected and do not

share data. For example, enterprise resource planning (ERP), EAI, and web services. ERP systems are integrated and draw directly from live database linked to the systems. However, ERP systems do not allow organizations to make significant changes in their systems – changes of parameters.

The reason for this is that the customization of ERP systems is a difficult, costly, and risky. However, EAI system have emerged to overcome some of the limitations of ERP, through providing an integrated organizational infrastructure. It has the ability to control and distribute information throughout the organization and to effectively manage the control and distribution. Web services are the latest approach to developing e-business integration that can be adopted in government organizations, since it is less complex with costs also being reduced. Web services are standards-based and suited to build common infrastructure to reduce the barriers of business integrations, hence, enable e-government systems to collaborate with each other regardless of underlying infrastructure.

Additionally, this layer emerges widespread of applications and systems that help maintain governments' existing data and business processes. These applications can use access layer to deliver information and services to citizens by using different channels.

Among these are CRM, which focuses on managing citizen's interaction with the government. It represents a new concept of relationships between government and citizen's, "citizen-focused", through delivering services to citizens efficiently across different channels and enabling join-up and automated service delivery. It entails public sector organizations to offer their "customers" a host of online options, which allowing them to: manage individual personal profiles that contain user-specific information, such as the status of an accident report, and pay council, income, and road taxes. However, CRM systems cannot work independently in this layer, there is a need for integrated information systems and

applications that support its operations and provide essential data. Such common applications and systems are database management system (DBMS), document management systems, and data warehousing, which they can hold citizen's records, official documents, historical information, and maintain business processes and procedures.

Practically, this layer includes several applications and tools that are emerging to help determine, assess, and achieve consistent and integrated processes and information systems in public sector organization. However, it is difficult to predict which applications and information systems will be the most useful and adaptable in this layer (Themistocleous)

### **(c) Infrastructure Layer**

Building an information community by using e-business layer applications in an efficient manner requires a technology infrastructure that reaches out to all parts of public sector organizations is expensive and inefficient without an effective infrastructure and agreed standards and protocols between communicating systems. Therefore, this layer focuses on technologies that should be in place before e-government services can be offered reliably and effectively to the public. The potential of these technologies is to support and integrate the operations of information systems and applications in e-business layer across organizations (Figure 2.2) by offering the necessary standards and protocols through network and communication infrastructure approaches (e.g. intranet, extranet, and internet). This layer provides basic technologies, such as LAN that allow integration with current hardware resources such as PCs, laptops, and mobile phones straightforward and without complications which supporting the organization existing IT provision. As well as they should support the provision of user-friendly and innovative online services involving the transmission of data of various formats such as text , graphics, audio and video.

IBM concluded that to have a successful e-government strategy, the public sector must create an IT infrastructure that is optimized to support a new information systems and applications that are necessary for e-government as shown in Figure 2.2. They suggest that an e-government IT infrastructure may comprise of a number of technologies with a network infrastructure at its genesis; including as application server, hardware and operating systems, and data and application development tools.

IBM indicates that the key component of IT infrastructure in government organization is the application server. It is consisting of server hardware, server operating system, and different applications server software that runs the application logic and manages the user interaction. These servers are operated through efficient network technology and internet connectivity, which improves communication and information transmission within and between organizations, resulting in new ways of dealing with business partners and users such as online transactions and procurement services.

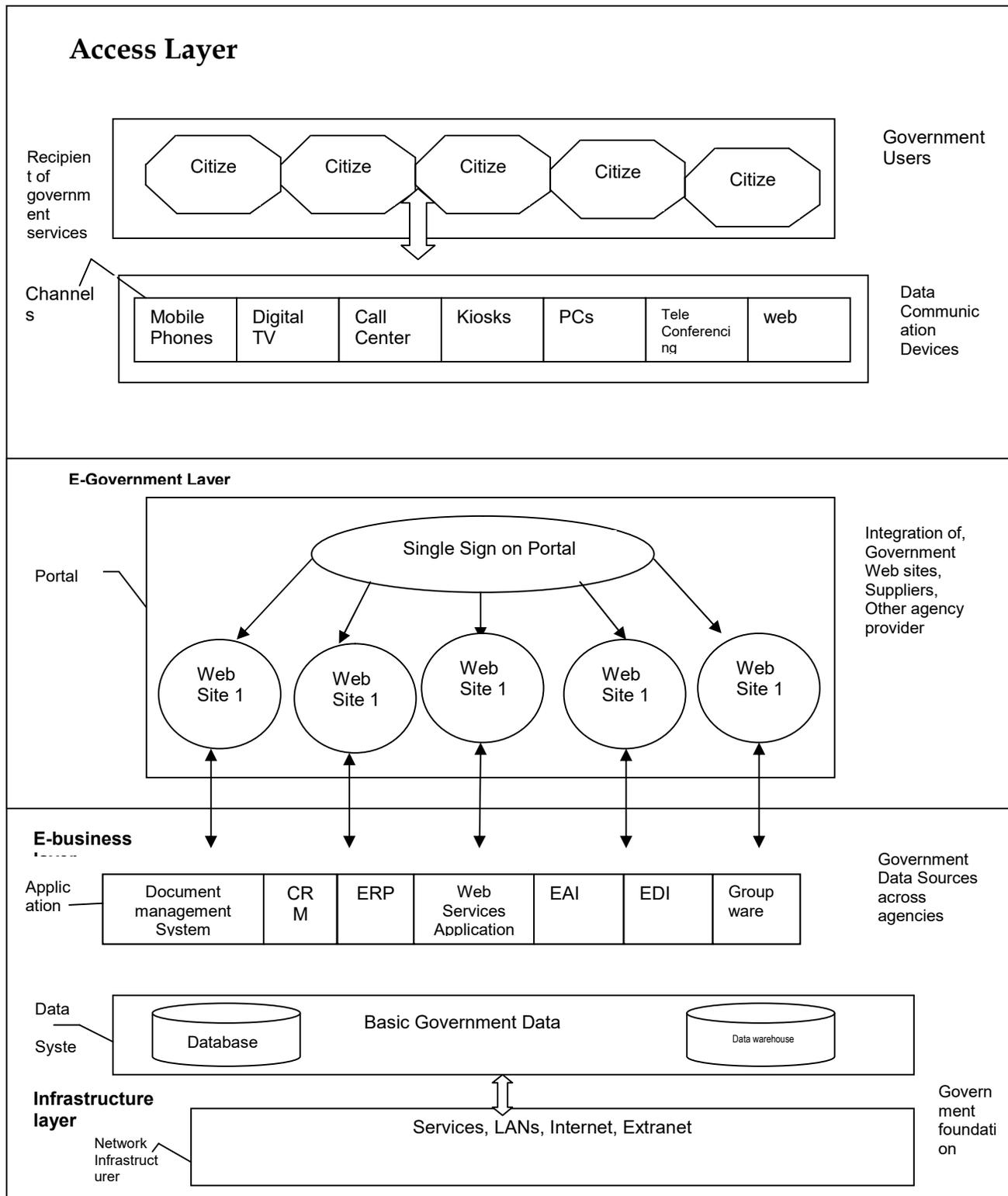
However, security of infrastructure is still one of the most crucial and least understood issues associated with internet-based communication and applications (Moodley, 2003).

Security is an ongoing risk associates with most of IT projects and in term of e-government, the degree of risk is escalating as the use of public networks increases together with databases that hold citizens profiles and government information.

Therefore, this layer needs to incorporate advanced security approaches and technologies such a PKI, reliable firewall, biometrics, digital signature and certificate, and sophisticated encryption technique, which secure e-government interoperation, government electronic transactions, and delivery systems to ensure

protection against fraud and other vulnerabilities at all levels of the government information infrastructure.

The significance of e-government architecture framework is about integration between government existing technologies and essential applications and information systems required for e-government operations. As well as, the consistency of layers should be given the required attention during the implementation of e-government, as Figure 2.2 shows that each layer connected to the adjacent layer, which poor implementation of one layer could affect the performance of the rest of layers, and therefore, will degrade the performance of e-government (Medjahed and Rezqui, 2003).



**Fig 2.2: Architectural firm work of e-government**

### **2.2.3 Proposed E-Government Readiness Model**

After studying the components of e-readiness, comparative studies and e-government architecture framework, major layers for the implementation of e-government became clear (Economist Intelligence Unit 2006). Since the indicators related to e-government architecture framework are commonly used in the both models of EIU and APEC, so our proposed e-government readiness model would consist of a combination of these two models as follows:

#### **(a) Basic Infrastructure and Technology (IT Infrastructure)**

- Active information technology department in organization.
- Possibility of servicing to citizen and business via company website
- Internet connection
- Access to IS analyst in organization
- Affordability of internet access
- Broadband access availability
- Ownership of URL address
- Access to E-mail
- Website availability for business promotion
- Number of people who access the internet per account
- Percent of business accesses directly
- Government use internet technologies
- Ease of access and use of the network
- Access to internet and the World Wide Web by staff
- Quality of connectivity to the network
- Existing internal systems
- Active computer network

**(b) Skills and Human Resources (ICT education)**

- Staff levels of awareness towards ICTs
- Diversity of staff ICT education qualifications and skills
- Attitudes towards use of ICTs by staff for business transactions
- Existence of formulated plan to train EC needed skill for employees
- Access to internet for access to up-to-date information by employees
- Familiarity of employees with essential concepts of e-government.
- Familiarity of employees with EC costs and benefits
- High ratio of young employees
- Developing website by skilled staff
- Usage of ICTs

**(c) Security Infrastructure**

- Security feeling towards personal data in e-government
- Codification of information and using digital signature

**(d) Legal and Regulatory Environment**

- Security rules, policies and privacy laws
- Privacy of personal data

**(e) Social and Cultural Infrastructure**

- Degree of organizational innovation
- Degree of organizational risk acceptance
- Employees perceptions about possessiveness of EC effects on themselves
- Positive perception about EC across the organization
- Believing to increase flexibility because of EC implementation.
- Believing to spread access to information via EC.

Based on the proposed e-government readiness model and the above mentioned indicators, we designed our questionnaire.]

Services and to illustrate the research question which underlies the empirical work in the thesis.

### **(f) e-Readiness Objective**

The main e-readiness objectives are:

**(g) e-Infrastructure:** if the objective is on E-infrastructure then the focus should be on institution, hardware and software. Here e-readiness equals computers and access computer hardware and network access are required to be e-ready and bridge the digital divide, and government and private initiatives should supply them.

**(h) e-Economy:** if the objectives is on e-commerce then the focus should be on ICT Business. Here e-readiness equals computers, access, and economy, computer hardware and network access are required for e-readiness, but the market will solve this problem on its own.

**(i) e-Society:** if the objectives is on the society then the focus should be complete population. Here e-readiness requires basic literacy, poverty, health and other social issues to be addressed first, computers are useful, but nothing will make a society e-ready and bridge the digital divide until basic literacy, poverty, and healthcare issues are addressed.

**(i) e-Governance:** if the objective is E-Governance then the focus should be on Government Process Reengineering and faster and transparent means of delivering government services to the citizens. Here e-readiness equals computers, access, and effective usage of computers; hardware and access are not enough for real e-readiness, there must be extensive training programs, locally relevant content, and

a local ICT sector; and a Business Process Reengineering along with (Brazilian-Nohon, K, (2006).

### **2.2.3 Components of e-Readiness/Choice of Indicators.**

Depending upon the objective for assessment, a model is chosen and indicators under the same worked out for assessment. The wide range of indicators can be classified in the following main groups:

- **Network Access:** What are the availability, cost and quality of ICT networks, services and equipment?
- **Networked Learning:** Does the educational system integrate ICTs into its processes to improve learning? Are there technical training programs in the community that can train and prepare an ICT workforce?

**Networked Society:** To what extent are individuals using information and communication technologies at work and in their personal lives? Are there significant opportunities available for those with ICT skills?

### **2.3 Contribution of Related Works & Comparative Study.**

In order to acknowledge the offered solutions from the governments which have been successful in implementing e-government in their relevant ministries and could distinguish, decrease and remove the existing obstacles of e-government, we need to study the objective samples which is taken into consideration in the section of comparative studies. In this regard, the strategies and policies applied by some countries including Cyprus, United Kingdom, Sweden and Italy are assessed.

### **2.3.1 e-Government in Cyprus**

In 1987 a strategic study was carried out to examine the information needs of the Government of Cyprus and to identify candidate applications for computerization. Based on the recommendation of this study, the council of ministers adopted a Government Computerization Master Plan (GCP) in March 1989. In 1989 the Council of Ministers approved a revised version of the Government Computerization Plan. Rapid technology changes, evolving user demands and EU accession requirements necessitated the revision of the master plan to include new infrastructure and strategic projects and to adjust the national information systems strategy to a fast-changing technology environment. A National Strategy for e-Government was subsequently drafted, focusing on key issues required to make the implementation of e-government successful. This strategy is expected to be finalized in 2005 [DABC, 2005].

#### **(a) e-Government Strategy**

The e-government vision of the Government of Cyprus is to deliver one-stop services to the public via the web or through other electronic channels [Kiosks, call centers, citizen support centers etc.] for this e-government vision to be achieved, three fundamental “building blocks” need to be implemented.

- I. At the “Front end”, a multi-channel portal aggregating all information and services in one place, based on the life-event-cycle.
- II. A “middle ware”, a government gateway providing the tier that enables interoperability, security and authentication, with web-based workflow for interconnection of back-end systems.
- III. At the “back end”, web-enabled information systems and processes involved in service delivery.

On the basis of the e-government policy, several Government Ministries, Departments, Services will be offering online services to the public, thus creating a dynamic government, with the aim of improving the quality of services offered to the public. The process of developing web-enabled systems in order to provide online and better productivity, speeds the communication between office workers, reduces operational costs, and also provides distance-working capability. The web-enabled version of the office Automation System is currently under development and its implementation and rollout in other Ministries, Departments, and Services will start in the second half of 2005. Additionally, the majority of the Government Ministries, Departments, and services have their own website. A small number of websites for some ministries, Departments, and Services is still under study or development. During 2004, 38 new websites were developed from which 23 have also been published. The majorities of the websites are formative and provide downloading of forms and other documents. Some also support user interaction. It is anticipated that all Government ministries, Departments, Services will have their own website by June 2005. In order to promote e-inclusion, public web pages are developed on the basis of the Web Accessibility Guidelines [IDABC, 2005].

In order to connect departmental information systems, the Government has set up a Government Data Network [GDN]. The GDN is a broadband network based on ATM/frame relay technology over which all government systems are interconnected to exchange information utilizing web workflow technologies. Complementary to this is the Government Internet node [GIN], which provides an interface between Government information systems and the Internet. It allows civil servants to communicate within Government [Internet] and with external users [Extranet].

The e-Government portal, which will support multi-channel access to government information and services, is due for release in mid 2005. At the same

time, more e-enabled services will be launched. The interconnection of departmental back-end systems and the completion of the government gateway will enable secure access to a range of transactional services. The gateway is currently under and is expected to be completed in 2007.

The fundamental infrastructure require for the provision of e-government services is already in place since it is part of the Information Systems Strategy. However, this infrastructure is continuously upgraded in order to enable the provision of more and more advanced and secure government services to the public.

Beyond 2005, priorities will include the creation of government-wide warehouse, the completion of the rollout of the Office Automation System, and the delivery of e-services over public kiosks and mobile devices.

#### **(b) e-Government Infrastructure**

The main e-Government infrastructure components in Cyprus are:

**I. Portal:** The Government portal is an institutional website as well as an entry point to public information and services. A new multi-channels e-government portal, through which the public will have access to various government information and services from a single point of entry, based on the life-event cycle, is due to be launched shortly. This portal will incorporate transactional capabilities, when the “government gateway” middle tier will be completed. The gateway, which will provide security, authentication, encryption and decryption, as well as web-based workflow for interconnection of departmental back-end systems, is currently under study and is expected to be completed within 2007.

## **II. Network: Government Data Network [GDN] and Government Internet/Intranet/ Extranet Node [GIN]**

GDN is a broadband network based on ATM/frame relay technology over which all government systems are interconnected to exchange information utilizing web work flow technologies. It is completed by a Government Internet Node [GIN], which provides an interface between Government information systems and the internet. It allows civil servants to communicate within government [Intranet] and with external users [Extranet].

- III. **e-identification:** The Cyprus Government intends to introduce electronic identification/authentication [e-ID, smart cards] for public services, in cooperation with the other EU Member State, in order to realize seamless access to public services across borders. E-ID standardization/interoperability is essential in order to put in place key pan-European services such as cross-border company registration, electronic public procurement, job search, e-voting, e-health [IDABC, 2005].

### **2.3.2 e-Government in the United Kingdom**

The UK e-government strategy was set in e-Government as a strategic framework for public services in the information Age', published in April 2000.

#### **(a) e-Government Strategy**

This strategic framework aims to create a favorable environment for the transformation of government activities by the application of e-business methods throughout the public sector [IDABC, 2005].

The strategy also aims to support the target set by the Prime Minister that all public services should be available online by 2005. To this end, it challenges all

public sector organizations to innovate, commits all central government departments to develop e-business strategies and challenges the centre of government to provide the necessary common infrastructure and leadership.

The UK e-government strategy has three guiding principles:

- Building services around citizens choices
- Making government and its services more accessible.
- Fostering social inclusion.

#### **(b) Citizen-Focused Government**

The e-government strategy aims to deliver high quality services that are accessible, convenient and secure, enabling people to interact with government on their own terms. Electronic public services must therefore be joined up across organizational boundaries and layers of government, and sector organization must co-operate in new partnerships that will deliver their services in ways that make sense to the customers. Partnerships also need be formed with innovators in the private sector who can find new ways of meeting changing patterns of demand.

#### **(c) Accessible public service**

All services which can be electronically delivered should be accessible over the Internet and through mobile phones, digital TV, and call centers as well as through personal computers. The mix for any service will be determined in relation to demand. Electronic service delivery must also enhance personal contact when required. Services should be tailored to individuals' needs, and accessible through a series of customizable portals. The Government also aims to create the conditions for voluntary and private sector organizations to create innovative service offerings. Access to information will be firmly established under the freedom of

information legislation, and Government will make sure that people can trust the systems in use, by ensuring that their personal data protected and that systems are secure.

**(d) Inclusiveness**

New services must be developed so that they are available to all and easy to use. The Government is committed to making it easier for all people to get access, whether individually or through community facilities, and through multiple channels [Computer, Digital TV, telephone, mobile devices, etc.]. call centers must be improved by giving their staff access to information networks that enable them to provide better service. Better information systems will support the work of those who have face-face contact with the public. Online public services will also be provided for minority language groups and those with disability or limited mobility.

**(e) e-Government Infrastructure**

The main e-Government infrastructure components in UK are:

- **Portal:** Government's citizen's portal's provides citizens with a single entry-point to online public services. The depth of information presented on this site is also much greater, reducing the need for users to navigate further sites. Since April 2004 the portal's service is also available via digital TV, enabling the more than ten million UK households equipped with digital television to access public services information through their TV sets. A separate e-government portal for business was launched in November 2003, providing access to government information and services for businesses, business owners and managers [IDABC, 2005].
- **Network: Government Secure Intranet [GSI]**

Initially launched in April 1998, the Government secure Intranet [GSI] is the primary network infrastructure for connecting and joining up central government

to the department and agencies. It provides a secure and reliable connection to the internet, including secure access to the web, file transfer and research facilities, directory services, web publishing, and mechanism for exchanging electronic mail both within the GSI community and over the internet. An upgraded and improved version of the GSI went live in February 2004, providing users with restricted-level access to better services and functionalities while at the same time driving down costs. The new service is based on an Virtual Private Network, is capable of carrying voice and video data, involves broadband technology, and allows for separate virtual private networks for closed user groups. It also expands beyond the boundaries of the previous network to cover local authorities. Already connecting over 280,000 users in central and local government, the new GSI is designed to become a central infrastructure for e-government countrywide. It could be extended to organizations such as the National Health Service and the Ministry of Defense, and may ultimately link a million users.

- **e-Identification Infrastructure, Government Gateway**

The Government Gateway, launched in February 2001, is a central registration and authentication engine enabling secure authenticated e-government transactions to take place over the Internet. Users need to register with the Gateway in order to enroll for using online government services and subsequently transact securely with government departments. Built on open standards, the Gateway also enables the joined-up delivery of government services by allowing different systems in different departments to communicate with the Gateway and with each other. Depending on the type of government transactions, user identification is based either on a digital certificate issued by an accredited certification authority, or on a user [supplied by the Government Gateway] and a password [chosen by the user] for government services that do not require the level

of security provided by digital certificates. Over the longer terms, electronic ID cards are likely to become the preferred identification method for e-government services. The Government has laid down plans for the phased introduction of e-ID cards in the UK, which are currently before parliament. Under these plans, UK e-ID cards would contain a microchip storing personal data, biometric identifiers, and an electronic signature for secure access to e-service. Distribution of the cards would start in 2008.

### **2.2.3 e-Government in Sweden**

Internationally, Sweden is one of the leading countries in the use of personal computers and the internet.

More than two thirds of the population between 18 and 64 years has a computer at home. More than 80 percent have access to the internet from home, at work or at school. An important driving force has been the PC tax freeform which was initiated 1998 by the Government. Amendments were made to the Swedish tax legislation, removing the tax charge on the benefit of the use of an employer's computer equipment for private purpose. This means that employees can lend a computer for private purpose from their employers without having to pay tax for the benefit; and neither does the employer have to pay social security contributions.

The high penetration means good opportunities for rapid development of e-Government in Sweden.

Public information and services should, as far as possible, be available electronically 24 hours a day seven days a week. This is the goal of the Swedish Government policy for developing a 24-hour Public Administration- the Swedish model for e-Government.

The notion of a 24-hour public administration encompasses much more than offering better services to citizens and enterprises by new electronic channels for information and services delivery.

**(a) e-Government Strategy**

An important aim is to strengthen democracy by enhanced transparency and citizen participation in the policy-making and processes. Different needs and condition must be taken into account so that no citizens are excluded from then new opportunities offered by e-government. A multi-channel approach should be offered, so that citizens can choose between different service channels-Internet, face to face and telephone. Websites must have a design and a language that facilitate access for everyone [IDABC, 2005].

A citizen-focused public administration must build on a close co-operation between the different government authorities and levels of government t. today, almost all public agencies have websites and all public officials can be reached by e-mail. The number of visitors on the public websites has more then doubled in the last three years. In April 2005, nearly half of all Internet users visited a public website. The most popular agency websites are the National Labour Market Board for job-seekers and the National Tax Board for tax-payers. For the first time this year almost half a million Swedes used the Internet to deliver their income tax return forms electronically.

• **Implementing The 24-Hour Public Administration**

The strategy for delivery is based on the Swedish decentralized model for public administration. Sweden has small policy ministries and a large number of relatively autonomous agencies which are responsible for implementing government policies. The agencies are managed by a system of performance

management, where the Government sets target, allocates resources, appoints managers and follows up and evaluates the results. Public agencies have thus been given substantial freedom in deciding how to use their resources in order to produce the desired services and results. In line with this 'light touch' strategy the Government has when it comes to e-government limited its role to set the overriding goals, remove obstacles in the form of, for example, legal barriers and support the agencies by providing guidelines and methods; and ensuring that the necessary common infrastructure for e-government comes into place [IDABC, 2005].

- **Measure Taken**

As an initial step the Government commissioned the Agency for public Management to stimulate and support the development of the 24-hour public Administration. The work is carried out in close co-operation with all agencies concerned and includes the development of methods, guidelines and agreements as well as the implementation of projects of common interest.

To ensure high security in the electronic communication the Government has also commissioned the National Tax Board to co-ordinate the administration of certificates for electronic identification and electronic signatures. A framework agreement has been reached with several banks and other actors offering services for electronic signatures. The strategy is to establish an open solution in co-operation with the private market. The final aim is to offer the citizen a single electronic identity for all kinds of e-services. To remove unnecessary obstacles for electronic communication the Government has also decided on a review of all legislation prescribing written procedures with the aim of promoting the use of electronic documents and electronic signatures.

- **The Way Ahead**

The main responsibility for the development of the 24-hour Public Administration must rest on the agencies themselves as they have the best knowledge of their customers needs. However, more co-ordinate efforts are needed to establish the common rules, infrastructure and basic functions necessary for the joined-up services based on networked agencies which are the final goal for citizens focused administration. the Government will therefore take further measure to step up the development of the 24-hour Public Administration in the years ahead. Some of these measures are:

- To set mote explicit targets for the agencies e-service development;
- To stimulate the development of e-services of great benefit for citizens and enterprises, but not cost-efficient for the separate agencies;
- To decide on a minimum of binding rules and standards necessary for a well-functioning electronic communication within the public administration and with its customers;
- To provide supporting set of basic functions as common infrastructure for the communication and co-operation between the different public agencies;
- To deepen the co-operation between state, regional and local government in the development of public e-services;
- To provide a common entrance and guide –based on life events and business situations-to all electronic information and services offered by the different parts of the Public Administration [IDABC, 2005].

**(b) e-Government Infrastructure**

The main e-Government infrastructure components in Sweden are:

- **Portal:** The e-government portal was launched in October 2004. While portal was merely a directory of public agencies, the new portal is intentions –based.

However, it still not intended to become a single entry point to the public sector but to serve as an orientation portal, a starting point for people looking for public sector information and services. It provides links and contacts for Swedish parliament, government, country councils, municipalities and authorities, social insurance offices and universities [IDABC, 2005].

- **Network:** There is currently no government-wide network in Sweden, but the Swedish Agency for Public Management has carried out a feasibility study and is expected to propose the creation of a Government Secure Internet.
- **e-Identification infrastructure:** In 1998, the SIS [Swedish Standards Institute] approved standards regarding electronic ID as proposed by the SEIS [secured Electronic Information in Society] association. E-ID Cards based on these standards are sold by the Swedish post acting as a Certification Authority [the Post's CA business was taken over by telecom company TaliaSonera in September 2003]. Following a framework agreement signed between the Swedish Agency for Public Management and digital certificates suppliers, software-based e-IDs [in particular the Bank ID developed by the largest Swedish banks] can also be used for certain e-government services. For the future, the government has plans to introduce "officials" e-ID card containing biometric identifiers.

#### **2.2.4 Government in Italy**

The Government intends to reform public administration to make it more responsive to the needs of users [individual citizens or businesses], provide modern services and create "public" value while ensuring ease of access and interaction.

Ensuring the efficiency and transparency of government operations and information is above all a key for innovation and competitiveness in Italy.

### **(a) e-Government Strategy**

The creation of this model of e-government is based on modern “enabling” infrastructure that ensures the efficient and secure provision of a number of basic functions.

As the e-government system advances it will also become a powerful tool for stimulating citizens’ involvement and participation in decision-making, sparking evolution towards innovative models of e-democracy.

These advances can be only made by coordinating all of its elements: laws, financing, organization, procedural issues and above all human resources, which are the key factor in all major transformations [IDABC, 2005].

Within this model, e-government is a fundamental innovative step, one that is part of the far-reaching transformation that all public agencies are undergoing in order to serve citizens and business as “customers” to be treated with the greatest possible care. The concept of “customer” does not mean that government departments will become profit seeking bodies, but rather that their objectives will be that of delivering services that meet the needs of those who use them. Satisfying service users is a key instrument for assessing service quality. It must be emphasized that “customer” –citizens must also include Italian citizens residing abroad, and in this case modern technology plays an essential role.

To implement this concept in real terms, the Department for Innovation and Technologies has developed a strategic reference model for e-government, composed of six key elements:

- I. Service provision: A set of high-quality services delivered with innovative methods to user-customers [citizens and businesses]. In order to focus development efforts, a number of priority services for users have been identified for inclusion in digitalization initiatives. These services will be

provided through a unified access point even when they involve more than one government department. In other words, the complexity of the public administration will not be apparent to users.

- II. Digital identification: Techniques for user identification and secure signatures adopting the e- ID Card, the National Services Card and digital signatures.
- III. Access channels: a multiplicity of innovative channels for accessing services such as the Internet, call centers, cell phones, third-party networks, etc.
- IV. Service provision agencies: efficient and low-cost back office operations for service providers.
- V. Interoperability and cooperation: establishment of standards for interfaces between departments that permit efficient and transparent communication with the outside world.
- VI. Communication infrastructure: A communication infrastructure that links all government departments.

In addition to these components, the technologies available today can also be used to increase the efficiency of internal government procedures and to leverage internal human resources by increasing their skills and know-how [IDABC, 2005].

#### **(a) e-Government Infrastructure**

The main e-Government infrastructure components in Italy are:

- I. **PORTAL:** this portal is an e-government portal for citizens, launched in 2002. a separate portal has been built for online services to businesses, which was fully launched in early 2005.
- II. **Network: Unitary Network of the public Administration [RUPA]**

RUPA [Rete unitariadellapubblica Administration] is a broadband network interconnecting all public administration bodies across the country. It is due to be

replaced in the coming years with a public Connectivity System, with increased quality and security standards, which is currently under development.

### III. e-Identification Infrastructure

The Italian electronic ID card launched in 2001. the card contains a set of personal data, including the holder's fiscal code and blood group, and fingerprint scans. The personal data, the biometric key and a digital signature are only stored on the card. In accordance with data protection legislation, this data is not kept on any central database and can only be released and used if the holder gives his permission by inserting a PIN code. The cardholder's fingerprint is template is stored in both the microchip and the optical memory and does not allow fingerprint reconstruction. In order to enable citizens to securely access e-government services even before the widespread dissemination of electronic ID cards, the Italian Government has also developed a National Services Card [CNS], a smart card allowing to securely identifying citizens online. Contrarily to the e-ID card, the CNS does not constitute a 'proof of identity' and is neither a legal identity document nor travel document [IDABC, 2005].

## 2.4 SUMMARY

It is summarized from the above theories: the demands for e-services from the e-government may vary from culture to culture.

Some requirements may be common from all communities such as reliability and quality of service from e-government. Government can seek the way of their citizen input and expectations about different services. This will direct to make a hierarchy and priority of e-services and to illustrate the research question which underlies the empirical work in the thesis. receive information in a variety of digital anywhere in the world using a variety of transmission media and E-Readiness in the preparedness for this networked world.

A society's electronic preparedness can be seen as the degree to which the society can participate in the advantages and opportunities of a knowledge-based society, and accept the challenges that such environments pose. We can formally define e-readiness as: the degree in which a community is qualified to participate in the Networked World. It is measured by judging the relative advance of the most important areas for the adoption of the ICTs and their most important applications.

## CHAPTER THREE

### 3.0 RESEARCH METHODOLOGY

#### 3.1 Preamble

This chapter highlights the procedure adopted in carrying out this research work. It begins with a restatement of the research question and hypotheses discuss the features of the population and data collection instrument and conclude with the limitations encountered in the project.

#### 3.2 Research Question and Hypothesis

The research questions answered are:

- (1) What are the main obstacles of implementing e-government in Bayelsa State?
- (2) Which obstacles have the most effect on implementing e-government in the Bayelsa State?
- (3) What solutions or guidelines about e-government could be offered in Bayelsa State?

The hypotheses tested are:

- (1) There are no main obstacles in implementing e-government in Bayelsa State.
- (2) There are no obstacles in implementing e-government in Bayelsa State.

#### 3.3 Research Design

This research work took the form of a survey research of the explanatory type. A major characteristic of all survey research designs is lack control. The researcher is interested in observing what is happening to sample subjects or variables without any attempt to manipulate or control them (Asika, 1991). It involves a one-time observation of independent and none manipulate variables. Primary and secondary data were employed to accomplish this work. The primary

data was generated from administered questionnaires while the secondary data was got from the regulatory body (Nigeria communication commission) company records, journals, texts, and other materials relevant to the topic. Three approaches exist for conducting explanatory research namely: literature search, experience survey and analysis of insight stimulating examples.

In the immediate preceding chapter, past literatures on the subject were reviewed. The requirements of exploratory and explanatory survey will be fulfilled through the use of questionnaire instrument and secondary sources of data. Sample is a representative part of a population. One characteristic of a good sample is that it must be quite representative. According to **Nworuh G.E. (2004)**, a good sample must be quite representative of the population and this is directly related to:

- a. Precision by which we ensure that random fluctuations or error variance or sampling error is minimal.
- b. Absence of systematic variance or sampling bias which is caused by some known or unknown influences that cause the scores to tend more to one side than the other.

### **3.4 Population of Study and Data Collection.**

According to [Saunders et al, 2000], enquiries can be classified in terms of their purpose as well as by the research strategy which is used [Robson, 1993]. The classification which is most often used is the three-fold of exploratory, descriptive and explanatory:

- Exploratory studies: are a valuable means of finding out “what is happening; to seek new insights; to ask questions and to assess phenomena in a new light” [Robson, 1993]. It is a particularly useful approach if you wish to clarify your understanding of a problem and is suitable when the researcher is uncertain

which theories are relevant and when important characteristics and relations are difficult to determine.

- Descriptive studies: The object of descriptive studies is ‘‘to portray an accurate profile of persons, events or situations’’ [Robson 1993]. This may be an extension of an exploratory research. It is necessary to have a clear picture of the phenomena on which data will be collected prior to the collected of the data.
- Explanatory studies: is characterized by flexibility regarding the methods applied. Instead of following formal procedures, the researcher has to be open to new idea and insights which may redirect the exploration in a new direction. Consequently, the focus of the research may swift as the work proceed and new knowledge is obtained [Malhotra, 1996].

The research problem of this thesis indicates that this study is mainly descriptive, aiming to find out and describe the effective factors, which influence the implementation of e-government in Bayelsa State so population of study was from Bayelsa state .it also provides a basic understanding of the effective factors in implementation of e-government with a new model. Since towards the end of the thesis, conclusions are presented in order to explain the effective factors which have been described, it begins to explain the phenomena so the study becomes somehow explanatory.

The target population has to be identified .The target population is the specified group relevant to the research project, the group that the information relevant to the research .[Malhotra,1996].The target population for this study are permanent secretary references, Directors, chief admin officers, Director of finance/supply Accounts and IT professionals in ministries Department Agencies [MDA] in Bayelsa State.

### **3.8 Sampling Design and Procedure.**

A sample is a representative part of a population. One characteristic of a good sample is that it must be quite representative. According to **Nworuh G.E. (2004)**, a good sample must be quite representative of the population and this is directly related to:

- a. Precision by which we ensure that random fluctuations or error variance or sampling error is minimal.
- b. Absence of systematic variance or sampling bias which is caused by some known or unknown influences that cause the scores to tend more to one side than the other.

### **3.6 VALIDATION OF THE INSTRUMENT**

To ensure the validity of the instruments, the researcher subjected the instruments to face-to-face validity by giving it to professional statisticians and scholars. They examined the items contained in the questionnaire and ensure that they were in line with the objectives of the study. The structure and language of the questionnaire were also modified as necessary to reflect their corrections. The design instruments were structured in such a way as to minimize the effect of errors of inconsistency and ambiguity.

### **3.7 METHOD OF DATA ANALYSIS**

The methods of data analysis to be used for the study are multiple regressions and correlation analysis as well as likert-5 scaling. The likert summated rating will be used to elicit responses to questions, capture information and measure data dealing with the extent of agreement or disagreement on the variables namely:

Lack of IT infrastructuralDevelopment

Lack of IT Skill

Lack of legal Obstacles

Lack of Security Obstacle

The aim is to statistically and quantitatively establish the contribution of each of the identified factors affecting e-government in Bayelsa state.

Considering the large volume of data to be gathered, and the need for accuracy and precision in calculations, the study will avoid the use of manual approach to the analysis. The methods of multiple regressions and correlation analyses structure and effects will therefore be used to establish the relationship between variables (factors affecting e-government growth in Bayelsa State) and their aggregate and disaggregate effect on growth of e-govermemnt in Bayelsa State.

Bernard Philip (in:Asika, 1991) defined scale as a ‘procedure for the assignment of numbers (or other symbols) to a property of objects in order to impart some of the characteristics of numbers depends on the individual’s or object’s possession of what the scale is expected to measure.

The type of scale used in this research is called summated rating scale of Likert type scale. A likert scale measures the intensity or degree of agreement by the respondent to a statement that describes a situation. Phenomenon, item or a treatment. Likert scale varies from 3 points to as high as 7 points. The commonest likert scale has 5 points (Asika, 1991)

The advantages of likert scale are as follows:

- a. The scale easily transforms feelings into a seemingly interval scale which is amenable to statistical analysis.
- b. It is flexible and consequently can be used to measure in minute detail, the degree of intensity of feeling or attitudes.
- c. Likert scale though an elegant attitudinal measuring scale, it is very easy to construct and also easy to interpret.

## CHAPTER FOUR

### 4.0 RESULT AND DISCUSSION

This chapter will be committed to an analysis of the findings from questionnaires i.e. where surveys are presented

### 4.1 RESULTS, PRESENTATIONS AND DESCRIPTION

#### 4.1.1 Regression

**Table 4.1 Descriptive Statistics**

	Mean	Std. Deviation	N
E - GOVERNANCE PERFORMANCE	30.37	1.668	100
IT INFRASTRUCTURE OBSTACLE	31.73	1.896	100
LACK OF IT SKILLS	31.98	2.079	100
LEGAL OBSTACLES	28.17	1.706	100
SECURITY OBSTACLES	29.15	2.783	100

**Table 4.2 Correlations**

		E-GOVERNANCE PERFORMANCE	IT INFRASTRUCTURE OBSTACLE	LACK OF IT SKILLS	LEGAL OBSTACLES	SECURITY OBSTACLES
Pearson Correlation	E - GOVERNANCE PERFORMANCE	1.000	.619	.571	.003	.848
	IT INFRASTRUCTURE OBSTACLE	.419	1.000	-.206	.099	.427
	LACK OF IT SKILLS	.171	-.206	1.000	-.056	.289
	LEGAL OBSTACLES	.003	.099	-.056	1.000	.033
	SECURITY OBSTACLES	.848	.427	.289	.033	1.000
Sig. (1-tailed)	E - GOVERNANCE PERFORMANCE	.000	.000	.044	.490	.000
	IT INFRASTRUCTURE OBSTACLE	.000	.000	.020	.164	.000
	LACK OF IT SKILLS	.044	.020	.000	.290	.002
	LEGAL OBSTACLES	.490	.164	.290	.000	.373
	SECURITY OBSTACLES	.000	.000	.002	.373	.000
N	E - GOVERNANCE PERFORMANCE	100	100	100	100	100
	IT INFRASTRUCTURE OBSTACLE	100	100	100	100	100
	LACK OF IT SKILLS	100	100	100	100	100
	LEGAL OBSTACLES	100	100	100	100	100
	SECURITY OBSTACLES	100	100	100	100	100

**Table 4.3 Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.853 <sup>a</sup>	.727	.715	.890

a. Predictors: (Constant), SECURITY OBSTACLES, LEGAL OBSTACLES, LACK OF IT SKILLS, IT INFRASTRUCTURE OBSTACLE

b. Dependent Variable: E – GOVERNANCE PERFORMANCE

**Table 4.4 ANOVA<sup>b</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	200.097	4	50.024	63.184	.000 <sup>a</sup>
	Residual	75.213	95	.792		
	Total	275.310	99			

a. Predictors: (Constant), SECURITY OBSTACLES, LEGAL OBSTACLES, LACK OF IT SKILLS, IT INFRASTRUCTURE OBSTACLE

b. Dependent Variable: E - GOVERNANCE PERFORMANCE

**Table 4.5 Coefficients**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	16.888	2.716		6.217	.000		
IT INFRASTRUCTURE OBSTACLE	.041	.057	.046	.716	.476	.695	1.438
LACK OF IT SKILLS	-.053	.049	-.066	-1.089	.279	.783	1.277
LEGAL OBSTACLES	-.033	.053	-.034	-.623	.535	.989	1.011
SECURITY OBSTACLES	.508	.039	.848	12.939	.000	.669	1.494

**Table 4.6: Dependent Variable: e-Government Performance**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	16.888	2.716		6.217	.000		
IT INFRASTRUCTURE OBSTACLE	.041	.057	.046	.716	.476	.695	1.438
LACK OF IT SKILLS	-.053	.049	-.066	-1.089	.279	.783	1.277
LEGAL OBSTACLES	-.033	.053	-.034	-.623	.535	.989	1.011
SECURITY OBSTACLES	.508	.039	.848	12.939	.000	.669	1.494

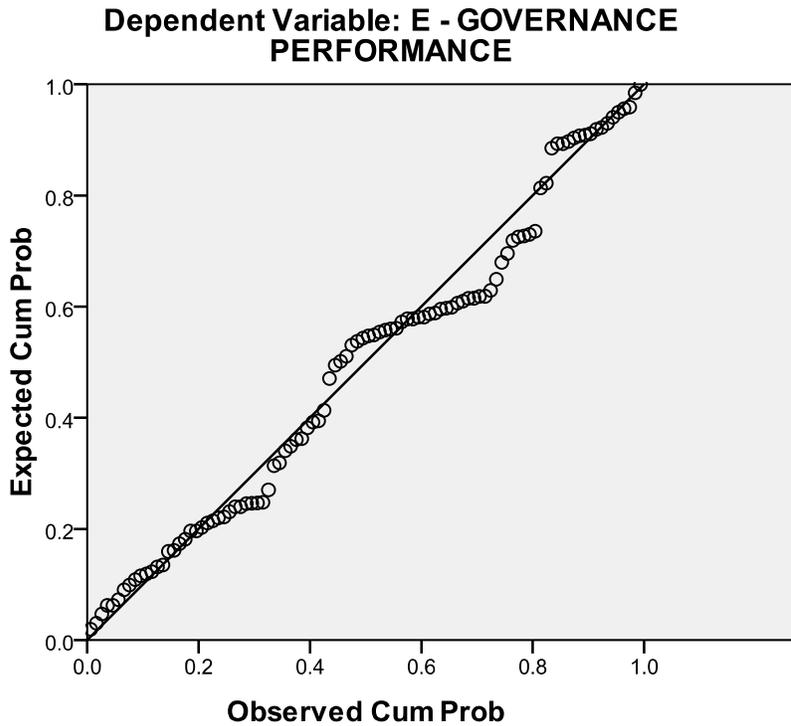
**Table 4.7 Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	28.48	33.43	30.37	1.422	100
Std. Predicted Value	-1.327	2.154	.000	1.000	100
Standard Error of Predicted Value	.099	.368	.192	.053	100
Adjusted Predicted Value	28.45	33.46	30.37	1.426	100
Residual	-1.843	3.100	.000	.872	100
Std. Residual	-2.071	3.484	.000	.980	100
Stud. Residual	-2.275	3.574	.001	1.010	100
Deleted Residual	-2.224	3.262	.001	.928	100
Stud. Deleted Residual	-2.327	3.821	.003	1.025	100
Mahal. Distance	.231	15.966	3.960	2.919	100
Cook's Distance	.000	.214	.013	.031	100
Centered Leverage Value	.002	.161	.040	.029	100

a. Dependent Variable: E - GOVERNANCE PERFORMANCE

## CHARTS

### Normal P-P Plot of Regression Standardized Residual



**Fig 4.1 Normal p-p plot of Regression Standardized Residual**

#### 4.2 Model of Estimation

Y = Lack of e-Government performance

X<sub>1</sub> = IT infrastructure obstacle

X<sub>2</sub> = Lack of IT skill obstacle

X<sub>3</sub> = legal obstacles

X<sub>4</sub> = security obstacle

The model estimate

$$Y = 4.21x_1 + 5.32x_2 + 3.3x_3 + 3.98x_4 + 16.8$$

### **4.3 Discussion of results**

**Results were discussed from research question and test of hypothesis**

#### **4.3.1 Research Questions**

##### **A. Research QUESTION 1**

*What are the main obstacles of implementing e – governance in Bayelsa State?*

The table descriptive statistics show the following values for the factors identified as obstacles out of a total value of 35;

IT Infrastructure obstacle (Mean=31.73, Standard deviation=1.896),

Lack of skills (Mean=31.98 standard deviation=2.079),

Legal obstacles (Mean=28.17 standard deviation=1.706)

security obstacles (Mean=29.15 standard deviation=2.783)

Inferring from the weight of the means above the factors above, lack of IT skills, IT infrastructure obstacle, security Obstacles and legal obstacles respectively constitute the main factors against e governance in Bayelsa state with means 31.98, 31.73, 29.15 and 28.17.

##### **B. Research Question 2**

*Which obstacles have the most effect on implementing e- government in the Bayelsa State?*

From the table descriptives also and the analysis above the obstacle that has the most effect in the implementation of e – governance in Bayelsa State is lack of IT skills with a mean 31.98 and a standard deviation of 2.079.

Also looking at the table coefficients the t value of lack of IT skill is higher than the other t values and they all are greater than the t tabulated = 1.6607. this

confirms that lack of skill has the most effect on implementing e – governance in Bayelsa State.

### **C. Research question 3**

What solutions or guidelines about e – government could be offered in Bayelsa state?

Since the obstacles have been identified the Bayelsa State Government should formulate policies that would remove or minimize the effect of these factors

#### **4.3.2 Test of Hypothesis**

HO: There are no main obstacles in implementing e - government in Bayelsa State

HA: There are main obstacles in implementing e – government in Bayelsa State

When we look at the table; **Model Summary**, the R square value is .727 which means that 72.7% of of obstacles in implementing e – governance in Balyesa State is contributed by the combined effect of Lack of IT infrastructure, lack of IT skills, Legal obstacles and security obstacles.

Also looking at the table **ANOVA**  $F_{cal_{0.95}}^{(4,95)} = 63.184 > F_{tab_{0.95}}^{(4,95)} = 2.45$ . shows a significant influence of the factors: lack of IT infrastructure, Lack of skills, legal obstacles and security obstacles on lack of e – g0vernment performance in Bayelsa state.

Based on all the facts we reject HO and accept HA.

## CHAPTER FIVE

### 5.0 Conclusions and Recommendation

In this chapter I will comment on the result of this study in chapter 4 together with recommendation to implementing e-government in Bayelsa state, at the end the further research on the related to study will be recommendation.

### 5.1 Summary of Findings and Conclusion.

After the statistical analysis of the data in chapter 4, I found out that there are some obstacles against implementing e-government in Bayelsa State, moreover, I explored that lack of IT skill obstacle among other obstacles is the most important barrier for implementation of e-government in Bayelsa State following the lack of IT skill are these obstacles respectively.

- IT infrastructural obstacle
- Legal obstacle
- Security obstacle

Likert scale methodology was chosen to conduct my solutions for this study among top public and civil servants from ministries department and agencies. Likert and regression analysis model is a very useful when there is limited background information available to facilitate decision making or generating idea or when measuring test. Opinion or community values [Skutsch and Hall 1973] and when information is either intangible or shrouded in uncertainty (Pill, 1971).

Those participants of my likert model & regression analysis are permanent secretaries, Directors, of finance & supply, chief administrative officers,

Accountants, Cashiers engineers IT professionals in public and civil government activities.

**(a) Lack of IT Skill**

Lack of IT infrastructure obstacle as a main obstacle, some guidelines were given to the personnel with a mean of 31.98 standard deviation = 1.896.

**(b) Lack of IT Infrastructure.**

Lacks of IT infrastructure as a second obstacle, some guideline were given to the personnel. The recommended guidelines by me along with the mean with a mean of 31.73 standard deviation = 1.896

**(c) Security Guideline Personnel**

As a third obstacle, a few guidelines were given to the personnels be ranked. The recommended guidelines by me along with the mean of personnels points of view are the followings

1. Using the digital signature for increasing the security feelings of all the users of e-government, mean = 29.15 standard deviation 2.783

**(a) Legal and regulatory guidelines**

For legal and regulatory obstacle as another obstacle, a few guidelines were given to the personnel to be ranked. The recommended guidelines by me along with the mean of point of view are the following:

1. Making transparency in the executive regulations of the MDA's in order to specify an incumbent within the same MDA's for implementation of e-government, mean = 28.17 standard deviation 1.706

## 5.2 Recommendations

With regard to the specific situation and existing barriers of Commerce and based on the comparison and study of the present models in the area of e-government, which is mentioned in chapter 2, the proposed model of this thesis would be an efficient model. Our proposed model framework ITs' comprised of the following element shown in fig 5.1

**1. Cataloguing Stage:** The Ministry MDA's (Ministry Department Agencies) commits to create websites and make government information and services available online for becoming an e-government player. A formal but limited web presence is established through a few independent government websites which provide users with static organizational or political information. Sites may include contact information (i.e. telephone numbers and addresses of public officials). In rare cases, special features like FAQs may be found.

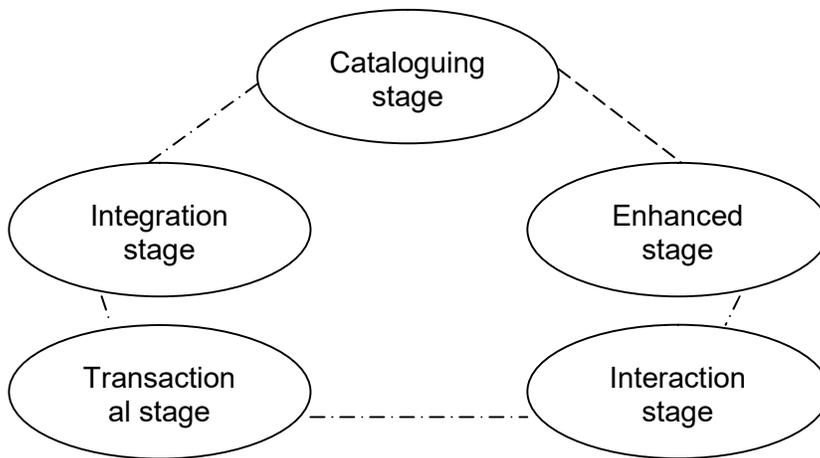
**2. Enhanced Stage:** The MDA's online presence begins to expand as its number of official websites increase. Content will consist more of dynamic and specialized information that is frequently updated; sites will link to other official pages. Government publications, legislation, newsletters are available. Search features, - and e-mail addresses are available.

**3. Interaction Stages:** The presence of the MDA's on the Internet expands dramatically with access to a wide range of its affiliated institutions and services. More sophisticated level of formal interactions between citizens and service providers is present like e-mail and post comments areas. The capacity to search specialized databases and download forms and applications or submit them is also available. The content and information is regularly updated.

**4. Transactional Stage:** Complete and secure transactions like obtaining commercial card, obtaining visa for foreign commercial purchasers, licenses,

permits where a user can actually pay online for services such as obtaining license of quality system. Digital signatures may be recognized in an effort to facilitate procurement and doing business with the government.

5- Integration Stage: Capacity to instantly access any service in a "unified package". Ministerial/departmental/agency lines of demarcation are removed in cyberspace Services will be clustered along common needs.



**Figure 5.1 The Five stages proposed framework for Bayelsa**

The justification behind the proposed model of e-government is the compatibility of this model to the political, social and cultural environment in Bayelsa state developing state. It is noteworthy that the two former stages are being done now and of course it has a long way ahead in the field of e-government Accordingly the three latter stages have been adopted based on the experiences done in the other developing and developed countries. Since the element of transaction's common to all other models in e-government, so the importance of this stage or element is felt more essential rather than the other elements for realizing the proposed framework in Bayelsa state.

The fact that all e-government maturity models mention a transaction stage of some form indicates the importance of this stage. However, the importance of the transaction stage of e.-government comes from its impact on implementing e-government systems in their broader organizational context. The roles of the initial stages, such as information and interaction, are only to reduce the need for physical resources to inform or communicate with customers (citizens, businesses, public administrations). Although there may be a direct cost saving, this has little impact on their level of satisfaction with the service. The maximum benefit of these initial stages is in downloading forms and returning them by email. These initial stages enable one way (or limited two-way) communication 'push e-government' services where government information is pushed by government organizations to be available for customers online. The transaction stage, on the other hand, enables two-way communication 'push/pull e- government' where government services are pushed by government organizations to be available for customers online, where data can be pulled from customers online. Therefore, the transaction stage enables customers to carry out complete transactions, such as renewing a commercial card, with specified government organizations online. This means that the transaction stage can reduce both costs and time. It leads to a high level of interactivity between government organizations and customers. Consequently, government organizations might seek to reach the transaction stage of an e-government system for several reasons such as saving time, effort and cost of delivery of services by increasing the efficiency of internal government processes as well as making the delivery of external services quicker, and enabling customers to implement complete transactions electronically.

Since the transaction stage arises immediately before integration; horizontal or vertical, it - can be considered as an introduction to the integration stage whereby each government organization can reach the highest level of interactivity with the

customers-Due to the importance of the transactional stage of the e-government system, and its positive impact, the MDA's (Ministry Department Agencies).

Will endeavor to react this stage in search of complete in search of complete integration. However, reaching the transactional stage of an e-government system is not easy because at this stage, the customers (citizens, businesses and public administrations) should be able to implement a complete transaction with specified government organizations electronically. Since this stage represents a high level of interactivity between the Ministry of Commerce's organizations and customers, it requires, (Layne and Lcc, 2001):

1. A high level of privacy and security of personal data, which is provided as part of obtaining government services. At this stage the organization system, such as the application servers and database, can be accessed directly by the public 'via the Internet.
2. The upgrading and reengineering of the internal business process and structure of the organization before implementation of this stage.
3. The training of workers to deal with new ways of implementing procedures and management more efficiently, such as using electronic receipts and digital signatures.

### **5.3 Conclusions**

The main challenge of e-government implementation in any developing state like Bayelse state is whether the intended objective of reaching the citizens is actually achieved. E-government should, reach all the people who need government services regardless of their location, age status, language, or access to the internet. The e-government global, survey is a means by which governments can assess their level of preparedness for the provision of services to their citizens using modem ICT and telecommunication techniques. This can be achieved by the

provision, of, adequate ICT infrastructure, improving online services and citizens access to these services and dedicating itself to improving then Bayelse state information technology literacy level. Bayelse state will benefit if it if it critically examines its present state of lack of IT literacy and then identifies those obstacles that it needs to improve. Bayelse state will needs to improve further on its lack of ICT infrastructure and telecommunications systems.

e-governance for example e-governance holds some promise for increasing access for marginalized sectors of the population. For example the introduction of mobile telephoning has seen an exponential growth in mobile subscriptions in Nigeria and all Nigerian states now have some form of mobile coverage, however, there are still millions of Nigerians with limited to no access to ICT services due to lack of IT infrastructure. ICT infrastructure cannot work without a regular source of, electrical power. More effort should, be devoted to improving the country's elileptic power supply. The nation still needs to commit more resources into the development of its human capitals by making IT a compulsory subject,

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## APPENDICES

### APPENDIX A Questionnaire

Dear Sir/Madam

The available questionnaire is part of my thesis titled “The Obstacles of Implementing E-government in Bayelsa State. This questionnaire is categorized based on five kinds of obstacles which are the following:

- 1) **IT infrastructure obstacles:** The meaning of IT infrastructure obstacles from the governments’ point of view is the lack of technical infrastructure, which exists as an important obstacle against the expansion of the capabilities of the governmental organizations for planning services and online transaction.
- 2) **Lack of IT Skills:** Lack of IT skills are another potential obstacle which is recognized as a most important governmental challenge with the aim of providing electronic services for the next generation.
- 3) **National and Legal Obstacles:** The purpose of national and legal obstacles is the lack of laws, security policies and grand planning regarding the implementation of e-government.
- 4) **Security Obstacles:** The purpose of security obstacles is the lack of personal data security.
- 5) **Social and Cultural Obstacles:** Another obstacle for implementation of e-government is social and cultural obstacles, including a degree of non-acceptance of organizational risk and also negative perception among the employees concerning implementation of e-government.

Thus, you are kindly requested to declare the degree of your agreement with any indicator based on the scale 1 to 5, 1: strongly Disagree, 2: Disagree 3: Neutral 4: Agree, 5: Strongly agree, and in case of having another indicator in mind, you can add it at the end of each section.

In advance, I appreciate and thank you for your patience regarding completing the questionnaire

Yours faithfully,

**Bubagha Stephen Z.**

## IT Infrastructural Obstacle

Measures		Score				
1.	Non accessibility to internet network	1	2	3	4	5
2.	Insufficiency of computers in an organization					
3.	The shortage or being inactive of information sector in MDA's					
4.	Unavailability website					
5.	Insufficient accessibility of users to internet network					
6.	Low speed of network					
7.	Unavailability to the e-mail in MDA's					
	Total					

## Lack of IT Skills

Measures		Score				
1	Shortage of literacy among the staff	1	2	3	4	5
2	Shortage of literacy among the user					
3	The lack of IT educational programmes for the state-owned sector					
4	The low level of senior official IT knowledge					
5	Inaccessibility to the human resources having high skills in the English language					
6	Inaccessibility to the IT motivated forces in the organization					
7	Inadequate understanding of employee in the organization of advantages and usage of e-government.					
	Sub total					

## Legal Obstacles

Measures		Score				
1	Lacking security policies and laws	1	2	3	4	5
2	No protect by state and cultural makers of community e0government					
3	The lack of a strategic plan for implementation of e-government					
4	Non grand and investment for making telecommunication and technical infrastructure					
5	Non-allocation of budget for meeting the expenses of connection to the internet network in the international organizations.					
6	Non-allocation of budget for meeting the expenses of connection to the internet network in the international organization.					
7	Financial weakness for holding training courses for the employees of organizations.					
	Sub total					

## Security Obstacles

		Score				
Measures		1	2	3	4	5
1	Non Security feeling towards personal data in e-government					
2	Lack of codification of information and using digital signature					
3	Non-Utilization of different security facilities including filtering, logging and authentication.					
4	Non-Utilization of the softwares for fighting the viruses.					
5	Lack of acquaintance of technical employees of the organization with the issues concerning network security.					
6	Lacking security policies and laws					
7	No protect by state and cultural makers of community of e-government.					

## Lack of e-governance

		Score				
		1	2	3	4	5
Measures						
1	There is no utilization of e-governance in government hospitals					
2	There is no substantial utilization of e-government in government parastatals					
3	There is no substantial utilization of e-governance in the education sector					
4	There is no utilization of e-governance ICT infrastructure in government transport system					
5	There is no substantial utilization of e-governance in the agricultural sector					
6.	There is no substantial utilization of ICT techniques in government ministries					
7.	There is use to a great extent of non ICT modes of communication in government offices					
<b>Sub Total</b>						
<b>Grand Total</b>						



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